

Addressing Humanitarian and Environmental Harm from Nuclear Weapons
Monte Bello, Emu Field and Maralinga Test Sites
Commonwealth of Australia

‘Many are still suffering today. The emotional, mental and physical suffering is felt by generations. ... We are constantly reminded of what has taken away from us as a family and the suffering we have gone through.’

– Karina Lester, Yankunytjatjara-Anangu woman,
in speech to the 2017 Treaty on the Prohibition of Nuclear Weapons negotiations.

Executive Summary

Australian prisoners of war and occupation forces in Japan were exposed to the effects of the atomic bombings. The UK government carried out 12 atmospheric nuclear weapon tests on Australian territories from 1952 to 1957. Further radiological and toxic experiments continued until 1963. The nuclear weapons tests displaced Aboriginal communities, contaminated land and had long-lasting impacts on the health of veterans, civilians and the environment. Australia was also affected by fallout from French Pacific nuclear weapons tests. Interwoven with this

complex history are highly contested nuclear projects including uranium mining and proposals for nuclear waste disposal. The 2017 Treaty on the Prohibition of Nuclear Weapons obligates assistance to victims and remediation of contaminated environments. Despite significant pressure from Australian civil society, Australia boycotted the negotiations. To honor nuclear weapons survivors throughout the Pacific and beyond, Australia should sign and ratify the Treaty.

** Aboriginal and Torres Strait Islander people should be aware that this paper contains images and/or names of deceased persons in photographs or stories.*

Recommendations

Australia and the international community should:

1. Sign and **RATIFY** the Treaty on the Prohibition of Nuclear Weapons.
2. Assess and **RESPOND** to the humanitarian needs of survivors, including nuclear veterans, Aboriginal and other communities affected by nuclear weapons use and testing.
3. Survey and **REMEDiate** contaminated environments in the testing grounds surrounding the Monte Bello islands, Emu Fields and Maralinga.
4. **RESPECT**, protect and fulfil the human rights of nuclear veterans and test survivors.
5. **RETELL** the stories of the humanitarian and environmental impact of the tests.



Figure 1: Aunty Sue Coleman-Haseldine with the International Campaign to Abolish Nuclear Weapons' 2017 Nobel Peace Prize, Canberra, September 2018. Photo: Martin Ollman.

Australians in Hiroshima and Nagasaki, 1945-1952

During World War II some 22,000 Australian military personnel and around forty Australian nurses were taken prisoner by Japanese forces in the Pacific. Of these, around 8,000 died by the end of the war in Pacific outposts. Thousands of Australian and other Allied prisoners of war were held in Japanese POW camps when the atomic bombs were dropped in August 1945.¹ At least 24 Australian Prisoners of War (POWs) survived the bombing of Nagasaki.²

In the months immediately following the atomic bombings, Australian military forces were deployed to Hiroshima and other Japanese locations as an occupying force during the transition between surrender and the establishment of the British Commonwealth Occupational Force (BCOF). Some of these early Australian troops worked to repatriate POWs and secure facilities ahead of the BCOF.³

BCOF was officially established in February 1946 and was operational until 1952.⁴ Over these years, 16,000 Australians,⁵ some with family members, served as part of

Key Indicators of Humanitarian, Human Rights and Environmental Harm

- 16,000 Australian personnel risked exposure to radiation from the atomic bombings in Japan, as POWs and occupation forces.
- 16,000 military and civilian Australians took part in the 12 atmospheric British nuclear weapons tests between 1952-1963 on Australian territories.
- The British nuclear weapons tests left a legacy of environmental contamination.
- There were an additional 600 British ‘minor trials’ – subcritical tests – that spread radiological and toxic contamination across the South Australia desert.
- Many veterans of the tests and Japanese occupation have health problems consistent with exposure to radiation; descendants also report multi-generational health problems.
- Mining of uranium and storage of nuclear waste poses humanitarian and environmental hazards, especially to Indigenous communities in Australia.
- Australia was exposed to fallout from French Pacific nuclear testing from 1966 to 1974. The population (24 million people) may be considered at risk of being potential victims of nuclear weapons testing.
- Venting and leaching of radioactive materials from France’s underground test sites into the ocean poses environmental risks to the South Pacific region.

Position on the Treaty on the Prohibition of Nuclear Weapons (TPNW)

Boycotted negotiations

Official Development Assistance (OECD DAC Status)?

Donor country

¹ Australian War Memorial. (2017) ‘General information about Australian prisoners of the Japanese’ Canberra, Australian War Memorial.

<www.awm.gov.au/articles/encyclopedia/pow/general_info>

² Mick Broderick & David Palmer. (10 August 2015) ‘Australian, British, Dutch and U.S. POWs: Living under the shadow of the Nagasaki Bomb.’ *The Asia-Pacific Journal*. 13(32). No. 3; David Palmer. (5 August 2015) ‘Hiroshima and Nagasaki: living under the shadow of the bomb.’ *Sydney Morning Herald*.

<<https://www.smh.com.au/opinion/hiroshima-and-nagasaki-living-under-the-shadow-of-the-bomb-20150804-girmoj.html>>; Prue Torney-Parlicki.

(2000) ‘Whatever the thing may be called’: The Australian news media and the atomic bombing of Hiroshima and Nagasaki.’ *Australia Historical Studies*. 31(114). pp. 49-66; James Wood. (n.d.) ‘The Australian Military Contribution to the Occupation of Japan, 1945-1952.’ Canberra, Australian War Memorial.

<https://www.awm.gov.au/system/files/documents/BCOF_history.pdf>. p. 7.

³ James Wood. (n.d.) ‘The Australian Military Contribution to the Occupation of Japan, 1945-1952.’ Canberra, Australian War Memorial.

<https://www.awm.gov.au/system/files/documents/BCOF_history.pdf>. pp. 7-8; Federal Register of Legislation. (2017) ‘Explanatory Statement: Australian Participants in British Nuclear Tests and British Commonwealth Occupation Force (Treatment) (Extension of Eligibility) Instrument 2017 (Instrument 2017 No.R31).’ p. 3. <www.legislation.gov.au/Details/F2017L01455/Explanatory%20Statement/Text>.

⁴ Australian Government. (2017) ‘Factsheet DP83 – British Nuclear Test Participants and Members of the British Commonwealth Occupation Force.’ Canberra, Department of Veterans Affairs.

⁵ John Clarke. (January 2003) *Report of the Review of Veterans’ Entitlements*, (The Clarke Review). Canberra, Department of Veterans’ Affairs. p. 362.

the 45,000 strong Allied force, as well as an unconfirmed number of Australian members of the Women's Auxiliary Service (Burma).⁶ Veterans of these operations claimed to have health problems consistent with radiation exposure.

British Nuclear Weapons Testing, 1952-1957

One aspect of the British and US wartime efforts was focussed on developing nuclear weapons development programs.⁷ Collaborations between the US and UK were fraught with defensive secrecy and scientific jealousy, as well as espionage scandals.⁸ In 1946, the US Atomic Energy Act (known as the McMahon Act) brought to a halt any collaborations between the two major powers, restricting transfer of information and technology around nuclear projects. It also ruled out any potential UK use of US testing grounds in the Marshall Islands or Nevada desert.⁹

In 1947, an elite special committee led by British Prime Minister Clement Attlee was established in the UK to begin work on a British bomb. Australian Prime Minister Robert Menzies was approached by Attlee in private correspondence in September 1950, to ask, 'whether the Australian Government would be prepared in principle to agree that the first United Kingdom atomic weapon should be tested in Australian territory,' and to give consent for 'detailed reconnaissance' surveys by British.¹⁰ Attlee stressed the top-secret nature of these discussions. While Menzies agreed immediately, he did so without consultation or consent of his Cabinet.¹¹ British surveys found that the Monte Bello islands off Western Australia



Figure 2: Lieutenant General H. C. H. Robertson, Commander-in-Chief, BCOF, indicating to Dr. Herbert Vere Evatt, Australian Minister for External Affairs, the damage caused by the atomic bomb. Hiroshima, Japan. 1947. Photo: Australian War Memorial, public domain.

were suitable for the first nuclear weapon test, though a 1984-1985 Royal Commission was to conclude it was not.¹² In December 1951, as Winston Churchill defeated Attlee in the UK elections, Menzies received notice from Britain that Australia was set to become the testing ground for the first British nuclear weapons tests.

More than 20,000 British military personnel were involved in the British nuclear testing program in Australia and the Pacific between 1952-1962.¹³ This included Aotearoa New

⁶ Robin Gerster. (2008) *Travels in Atomic Sunshine: Australia and the Occupation of Japan*. Melbourne, Scribe Publications; Matthew Bolton. (January 2018) *Humanitarian and Environmental Action to Address Nuclear Harm: The Treaty for the Prohibition of Nuclear Weapons as a Normative Framework for Assisting Victims of Nuclear Weapons Use and Testing and Remediating Contaminated Environments*. New York, International Disarmament Institute, p. 4; James Wood. (n.d.) 'The Australian Military Contribution to the Occupation of Japan, 1945-1952.' *Australian War Memorial*, Canberra, pp. 1-68; Mick Broderick & David Palmer. (10 August 2015) 'Australian, British, Dutch and U.S. POWs: Living under the shadow of the Nagasaki Bomb.' *The Asia-Pacific Journal*. 13(32). No. 3; John Clarke. (January 2003) *Report of the Review of Veterans' Entitlements*, (The Clarke Review). Canberra, Department of Veterans' Affairs. pp. 361-362; Mick Broderick & Stuart Bender. (2015) *Fading Lights: Australian POW and Occupation Force experiences of Hiroshima and Nagasaki*. <<http://www.fadinglights.com.au>>.

⁷ Elizabeth Tynan. (2016) *Atomic Thunder: The Maralinga Story*. Sydney, NewSouth Publishing; Nic Maclellan. (2017) *Grappling with the Bomb: Britain's Pacific H-Bomb Tests*, Canberra, ANU Press; Wayne Reynolds. (2000) *Australia's Bid for the Atomic Bomb*, Carlton, Melbourne University Press; Stewart Firth. (1987) *Nuclear Playground: Fight for an Independent and Nuclear Free Pacific*. Sydney, Allen and Unwin.

⁸ James McClelland. (1985) *The Report of the Royal Commission into British Nuclear Tests in Australia*. Vols. I & II. Canberra, Australian Government Publishing Service. p. 10.

⁹ James McClelland. (1985) *The Report of the Royal Commission into British Nuclear Tests in Australia*. Vols. I & II. Canberra, Australian Government Publishing Service. pp. 14-15.

¹⁰ James McClelland. (1985) *The Report of the Royal Commission into British Nuclear Tests in Australia*. Vols. I & II. Canberra, Australian Government Publishing Service. pp. 10-11.

¹¹ James McClelland. (1985) *The Report of the Royal Commission into British Nuclear Tests in Australia*. Vols. I & II. Canberra, Australian Government Publishing Service. p. 18.

¹² James McClelland. (1985) *The Report of the Royal Commission into British Nuclear Tests in Australia*. Vols. I & II. Canberra, Australian Government Publishing Service. p. 109.

¹³ Peter Yeend & Amanda Biggs. (9 October 2006) 'Australian Participants in British Nuclear Tests (Treatment) Bill 2006.' No. 31, 2006-07. Canberra, Australian Parliamentary Library. p. 3.

Zealand,¹⁴ Canadian and Fijian¹⁵ service personnel who also took part in the British operations. Australian military personnel involved in the British nuclear tests in Australia include 3,235 Navy, 1,658 Army and 3,223 Airforce.¹⁶ In addition, a Nominal Roll¹⁷ of test participants compiled in 2001 included 8,907 civilians, including ten Aboriginal people. In total, an estimated 17,023 Australians took part in the nuclear tests, with approximately 52% civilians and 48% classified as military personnel.¹⁸

On 3 October 1952, the British exploded their first nuclear weapon off the Monte Bello islands, approximately 8.5 feet below the waterline within the Royal Navy frigate HMS *Phym*.¹⁹ The bomb yield was 25 kilotons, and the resulting cloud rose to around 10,000 feet within four minutes. Monitoring teams reported that most material was deposited to the West and North-West of Ground Zero.²⁰ However, the 1985 Royal Commission found that fallout reached the mainland following the *Hurricane* test²¹ around 30 hours after the blast.²² (See Annex 1 for table summarizing British nuclear weapons tests in Australia and Annex 2 for a map).

The second series of tests, named *Totem*,²³ was held on the mainland at Emu Field, in South Australia the following year. Both *Totem 1* and *Totem 2* tests involved nuclear devices mounted on a tower. *Totem 1* was detonated on 15 October 1953 with a yield under 10 kilotons. *Totem 2* was detonated on 27 October 1953, with a yield under 8 kilotons.²⁴

The third test series, named *Mosaic*,²⁵ returned to Monte Bello islands in 1956. *Mosaic G1* was detonated from a tower on Trimouille Island, on 16 May 1956, with an explosive yield around 16 kilotons. The resulting cloud rose to 21,000 feet, and radioactivity was detected on the mainland within a day.²⁶ The second test, *Mosaic G2*, was detonated from a tower mount on Alpha Island on 19 June 1956. The Royal Commission recorded a 60 kiloton yield, but later estimates suggest it was 98 kilotons.²⁷ *Mosaic G2* was the largest test conducted by the British on Australian testing grounds, a precursor to the thermonuclear weapons they would later test on Christmas Island.²⁸ The cloud rose to over 47,000 feet, and 'low level radioactive deposition on the mainland' was recorded, though the Atomic

¹⁴ International Disarmament Institute. (2018) *Addressing Humanitarian and Environmental Harm from Nuclear Weapons: Aotearoa New Zealand*. New York, International Disarmament Institute.

¹⁵ Matthew Bolton. (2018) *Addressing Humanitarian and Environmental Harm from Nuclear Weapons: Kirisimasi (Christmas and Malden Island) Veterans, Republic of Fiji*, New York, International Disarmament Institute.

¹⁶ Peter Yeend & Amanda Biggs. (9 October 2006) 'Australian Participants in British Nuclear Tests (Treatment) Bill 2006.' No. 31, 2006–07. Canberra, Australian Parliamentary Library pp. 2-3.

¹⁷ Bruce Scott. (6 August 2001) 'Reply to Question on Notice, Question 2548.' *Australian Hansard*. pp. 29227-29228.

¹⁸ These figures are from Peter Yeend & Amanda Biggs. (9 October 2006) 'Australian Participants in British Nuclear Tests (Treatment) Bill 2006.' No. 31, 2006–07. Canberra, Australian Parliamentary Library pp. 2-3. However, figures quoted on the Parliament Budget Review 2010-11 Index differ slightly, while referencing the same source. For comparison, view:

www.aph.gov.au/About_Parliament/Parliamentary_Departments/Parliamentary_Library/pubs/rp/BudgetReview201011/VeteransNuclear

¹⁹ James McClelland. (1985) *The Report of the Royal Commission into British Nuclear Tests in Australia*. Vols. I & II. Canberra, Australian Government Publishing Service. p. 106.

²⁰ James McClelland. (1985) *The Report of the Royal Commission into British Nuclear Tests in Australia*. Vols. I & II. Canberra, Australian Government Publishing Service. p. 115.

²¹ For details on the *Hurricane* test, see: James McClelland. (1985) *The Report of the Royal Commission into British Nuclear Tests in Australia*. Vols. I & II.

Canberra, Australian Government Publishing Service. pp. 103-136. See also: Elizabeth Tynan. (2016) *Atomic Thunder: The Maralinga Story*. Sydney, NewSouth Publishing. pp. 70-73; Roger Cross & Avon Hudson. (2006) *Beyond Belief, The British bomb tests: Australia's veterans speak out*. Mile End, Wakefield Press. pp. 13-21.

²² James McClelland. (1985) *The Report of the Royal Commission into British Nuclear Tests in Australia*, Volumes I and II, Canberra, Australia, Australian Government Publishing Service, p. 118.

²³ For details on the *Totem* tests, see: James McClelland. (1985) *The Report of the Royal Commission into British Nuclear Tests in Australia*. Vols. I & II. Canberra, Australian Government Publishing Service. pp. 137-228. See also: Elizabeth Tynan. (2016) *Atomic Thunder: The Maralinga Story*. Sydney, NewSouth Publishing. pp. 78-82; Roger Cross & Avon Hudson. (2006) *Beyond Belief, The British bomb tests: Australia's veterans speak out*. Mile End, Wakefield Press. pp. 22-40.

²⁴ James McClelland. (1985) *The Report of the Royal Commission into British Nuclear Tests in Australia*. Vols. I & II. Canberra, Australian Government Publishing Service. p. 140.

²⁵ For details on the *Mosaic* tests see: James McClelland. (1985) *The Report of the Royal Commission into British Nuclear Tests in Australia*. Vols. I & II. Canberra, Australian Government Publishing Service. pp. 231-272. See also: See also: Elizabeth Tynan. (2016) *Atomic Thunder: The Maralinga Story*. Sydney, NewSouth Publishing. pp. 85-90; Roger Cross & Avon Hudson. (2006) *Beyond Belief, The British bomb tests: Australia's veterans speak out*. Mile End, Wakefield Press. pp. 41-55.

²⁶ James McClelland. (1985) *The Report of the Royal Commission into British Nuclear Tests in Australia*. Vols. I & II. Canberra, Australian Government Publishing Service. p. 232.

²⁷ ARPANSA. (n.d.) 'British nuclear weapons testing in Australia.' <www.arpansa.gov.au/understanding-radiation/sources-radiation/more-radiation-sources/british-nuclear-weapons-testing>

²⁸ Nic Maclellan. (2017) *Grappling with the Bomb: Britain's Pacific H-Bomb Tests*. Canberra, ANU Press. p. 34.



Figure 3: Taranaki Test Site, Maralinga, South Australia.
Photo: Jessie Boylan, jessieboylan.com

Weapons Tests Safety Committee (AWTSC)²⁹ insisted the test ‘posed no hazard to persons nor damaged livestock or other property.’³⁰

Following the Monte Bello tests, the Maralinga testing grounds in South Australia became the host to the final tests. The first in this series, titled *Buffalo*,³¹ included live animals in test experiments for the first time. *Buffalo 1* was a tower mounted bomb, detonated on 27 September 1956, with a yield of 13 kilotons. *Buffalo 2* was exploded at ground level on 4 October 1956 with a yield around 1.5 kilotons. *Buffalo 3* was dropped from the air by a Royal Air Force (RAF) plane, exploding at 500 feet on 11 October 1956 with a yield of 3kt. *Buffalo 4* was mounted on a tower

and detonated on 22 October 1956, with a yield just under 11 kilotons. Just weeks after these tests, in November 1956, Australia was scheduled to host the Olympic Games in Melbourne. Sue Rabbitt Roff notes, ‘meteorological records show that prior to the Games there was rain in Melbourne which could have deposited radioactivity on the ground.’³²

The final three tests in Australia were titled *Antler*.³³ These were again conducted at test sites within Maralinga. *Antler 1* was a ‘small’ bomb just under 1 kiloton, detonated from a tower mount on 14 September 1957. *Antler 2* was also tower mounted and exploded on 25 September 1957 with a yield of around 6 kiloton. The final test device, *Antler 3*, was suspended from a balloon at around 300 metres off the ground and exploded on 9 October 1957. With a yield of 26.6 kiloton, this last test was the largest conducted on Australia’s mainland.

The British had already commenced their testing operations on Malden Island, in the British colony of Gilbert and Ellice Islands in May and June 1957. After the final Antler series in Maralinga, the British tested their first megaton hydrogen bomb, *Grapple X*, in November 1957 on Christmas Island.³⁴ Christmas (now Kiribati) and Malden Islands are now part of the Republic of Kiribati.

The total yield of the bombs detonated across the Monte Bello Islands, Emu Field and Maralinga testing grounds over the five years is estimated at 181 kilotons.³⁵

British nuclear tests in Australia raised concerns of sovereignty and democratic processes as well as an abhorrent neglect for the safety of civilian and military

²⁹ The Atomic Weapons Tests Safety Committee (AWTSC) was established in 1955, after the first two series of tests, to ‘monitor the safety of the tests on behalf of the Australian Government. The Safety Committee had the power to veto a proposed firing if, in the opinion of its members, safety criteria were not fully met.’ See: James McClelland. (1985) *The Report of the Royal Commission into British Nuclear Tests in Australia*. Vols. I & II. Canberra, Australian Government Publishing Service. p. 231

³⁰ James McClelland. (1985) *The Report of the Royal Commission into British Nuclear Tests in Australia*. Vols. I & II. Canberra, Australian Government Publishing Service. p. 233.

³¹ For details on the *Buffalo* tests, see: James McClelland. (1985) *The Report of the Royal Commission into British Nuclear Tests in Australia*. Vols. I & II. Canberra, Australian Government Publishing Service. pp. 273-347. See also: Elizabeth Tynan. (2016) *Atomic Thunder: The Maralinga Story*. Sydney, NewSouth Publishing. pp. 98-102; Roger Cross & Avon Hudson. (2006) *Beyond Belief, The British bomb tests: Australia's veterans speak out*. Cambridge, Wakefield Press. pp. 56-75.

³² Sue Rabbitt Roff. (19 October 2017) ‘Australia’s nuclear testing before the 1956 Olympics in Melbourne should be a red flag for Fukushima in 2020.’ *The Conversation*. <<https://theconversation.com/australias-nuclear-testing-before-the-1956-olympics-in-melbourne-should-be-a-red-flag-for-fukushima-in-2020-85787>>.

³³ For details on the *Antler* tests, see: James McClelland. (1985) *The Report of the Royal Commission into British Nuclear Tests in Australia*. Vols. I & II. Canberra, Australian Government Publishing Service. pp. 349-393. See also: Elizabeth Tynan. (2016) *Atomic Thunder: The Maralinga Story*. Sydney, NewSouth Publishing. pp. 111-112; Roger Cross & Avon Hudson. (2006) *Beyond Belief, The British bomb tests: Australia's veterans speak out*. Mile End, Wakefield Press. pp. 76-86.

³⁴ Nic Maclellan. (2017) *Grappling with the Bomb: Britain’s Pacific H-Bomb Tests*. Canberra, ANU Press. pp. xii-xiii, 140; Matthew Bolton. (2018) *Addressing Humanitarian and Environmental Harm from Nuclear Weapons: Kiribati (Christmas) and Malden Islands Republic of Kiribati*. New York, International Disarmament Institute. p. 3.

³⁵ ARPANSA. (n.d.) ‘British nuclear weapons testing in Australia.’ <www.arpansa.gov.au/understanding-radiation/sources-radiation/more-radiation-sources/british-nuclear-weapons-testing>.

personnel.³⁶ The test program failed to take into account and ensure the safety of Aboriginal peoples. Crippling official secrecy stymied both transparency and accountability for the impacts of nuclear tests, both in the major tests and the ‘minor trials’ (see below), for generations. The recommended reading list at the end of this paper contains several key books and reports which expand on these impacts.

British ‘Minor Trials’, 1953-1963

In addition to the twelve major atmospheric nuclear tests, the British conducted over 600 ‘minor trials.’ These subcritical tests were conducted between 1953 and 1963, mostly within the Maralinga testing range (though several were conducted earlier in Emu Field). The minor trials, innocuously named ‘Kittens’, ‘Rats’, ‘Tims’ and ‘Vixen’,³⁷ tested various components of nuclear devices and safety mechanisms. Some studied the possible effects of accidents or ‘broken arrow’ events, where accidental or uncontrolled detonation of a nuclear weapon occurs.³⁸ Toxic and radioactive materials were frequently burned or exploded in these trials, including toxic elements such as Beryllium or short-lived radiological materials such as Polonium-210, Lead-212 and Scandium-46. Most dangerously, the use of Uranium-238, Uranium-235, depleted Uranium and around 24 kg of Plutonium were also used.³⁹

Fallout from French Pacific Nuclear Tests, 1966-1996

Between 1966 and 1996, France conducted 179 nuclear weapons tests at Moruroa⁴⁰ Atoll (42 atmospheric; 137 underground) and 14 at Fangataufa Atoll (4 atmospheric;



Figure 4: One of the hundreds of warning sings spread across the former nuclear test site at Maralinga. Photo: Mick Broderick.

³⁶ Stewart Firth. (1987) *Nuclear Playground*. Sydney, Allen and Unwin; Nic Maclellan. (2014) *Banning Nuclear Weapons: A Pacific Islands Perspective*. Melbourne, ICAN Australia. <<http://www.icanw.org/wp-content/uploads/2014/01/ICAN-PacificReport-FINAL-email.pdf>>.

³⁷ For details and dates, see: Department of Veteran Affairs. (2014) ‘Minor Trials.’ *Military Compensation SRC A Manuals and Resources Library*. <<http://clik.dva.gov.au/print/book/export/html/20155>>; James McClelland. (1985) *The Report of the Royal Commission into British Nuclear Tests in Australia*. Vols. I & II. Canberra, Australian Government Publishing Service. pp. 395-415.

³⁸ Elizabeth Tynan. (2016) *Atomic Thunder: The Maralinga Story*. Sydney, NewSouth Publishing. p. 119.

³⁹ Matthew Bolton. (January 2018) *Humanitarian and Environmental Action to Address Nuclear Harm: The Treaty for the Prohibition of Nuclear Weapons as a Normative Framework for Assisting Victims of Nuclear Weapons Use and Testing and Remediating Contaminated Environments*. New York, International Disarmament Institute. p. 6; P.N. Grabosky. (1989) ‘Chapter 16: A toxic legacy: British nuclear weapons testing in Australia.’ *Wayward governance: illegality and its control in the public sector*. Canberra, Australian Institute of Criminology. <<http://aic.gov.au/publications/previous%20series/lcj/1-20/wayward/ch16.html>>

⁴⁰ Note on spellings and place names: When covering the colonial period, the report uses English or French names places, such as ‘Christmas Island’ and ‘Gilbertese.’ When referring to contemporary post-colonial states where there is wide consensus on names, the report will use their naming and spelling conventions, such as ‘Kiritimati’ and ‘I-Kiribati.’ Where there is a persistent dispute over names I will use both, listing first the legally-recognized name, such as ‘French Polynesia/Te Ao Maohi.’ Given the emerging convention, the report uses Aotearoa New Zealand as the country name that includes both the indigenous and Anglicized names. Unless their ethnicity is specified, people from New Zealand/Aotearoa are referred to as ‘New Zealanders.’ For ‘Moruroa’, the report uses the indigenous Maohi spelling, rather than the French ‘Mururoa’, since that is also the conventional spelling in English. This paper uses the term Aboriginal for the Australian First Nations people where a generalized term is called for. Some historical quotes may use the term Aborigines and more general internationally focused discussions may use the term Indigenous to describe Aboriginal peoples. Where possible, I use the name of the nation group. More detail of Australia’s Aboriginal language and place names can be found on this map <<https://aiatsis.gov.au/explore/articles/aiatsis-map-indigenous-australia>>



Figure 5: Avon Hudson, nuclear test veteran, at Taranaki, Maralinga, South Australia. Photo: Jessie Boylan, jessieboylan.com

10 underground) in French Polynesia. The nuclear explosions caused ‘intense radioactive pollution of marine ecosystems’ and ‘increased incidence of thyroid cancer in the local population’ mainly as a result of contaminated of the food and water supply.⁴¹ The tests inflicted ‘extensive physical damage’ to the atolls themselves ‘with ongoing risks of collapse and leakage’; ‘radioactive, chemical and other waste on land, in lagoons and in the ocean remains both at the former testing sites and at a network of facilities and infrastructure supporting the massive nuclear weapons enterprise.’⁴² Radioactive particles were dispersed over much of French Polynesia, including its most populated island, Tahiti.⁴³ However, the impact of French nuclear weapons testing extended far beyond French Polynesia.⁴⁴

Indeed, concern about French atmospheric tests led Australia to establish a system for monitoring extra-territorial fallout. However, data and documentation from their system has only selectively been released to the public, notably in the 1973 ICJ case against France. Nevertheless, a report submitted by Australia to the ICJ described a ‘26 station network’ sampling ‘major milk supplies’ and undertaking ‘air filter sampling.’ Australia reported that this system detected for iodine-131 in milk supplies showing tropospheric fallout from French Pacific nuclear tests.⁴⁵

Australia’s filing with the ICJ asserted that ‘artificial radio-nuclides – mainly fresh fission products – were present in ground-level air’ between 6 and 27 August 1973. Australia claimed that ‘on the statistical evidence’ these particles ‘can

⁴¹ Remus Pravalie. (2014) ‘Nuclear Weapons Tests and Environmental Consequences: A Global Perspective.’ *Ambio*. 43(6). pp. 729-744.

⁴² Tilman A. Ruff. (2015) ‘The humanitarian impact and implications of nuclear test explosions in the Pacific region.’ *International Review of the Red Cross*. 97(899). pp. 775-813.

⁴³ Tilman A. Ruff. (2015) ‘The humanitarian impact and implications of nuclear test explosions in the Pacific region.’ *International Review of the Red Cross*. 97(899). pp. 775-813.

⁴⁴ See: Matthew Bolton & Sydney Tisch. (2018) *Addressing Humanitarian and Environmental Harm from Nuclear Weapons: Fallout on Countries Downwind from French Pacific Nuclear Weapons Testing Aotearoa New Zealand, Australia, Cook Islands, Republic of Fiji, Niue, Independent State of Samoa, Tokelau, Kingdom of Tonga and Tuvalu*. New York, International Disarmament Institute.

⁴⁵ Australia. (1974) ‘Iodine-131 in Australian Milk Supplies and Estimated Thyroid Doses for Young Children Following Nuclear Tests by France in Polynesia During July and August 1973.’ *Pleadings, Oral Arguments, Documents: Nuclear Test Cases, Volume I: Australia vs. France*. <<https://www.icj-cij.org/files/case-related/58/11831.pdf>>. p. 538; Australia. (1974) ‘Fall-Out in Australia from French Nuclear Tests in Polynesia during 1973.’ *Pleadings, Oral Arguments, Documents: Nuclear Test Cases, Volume I: Australia vs. France*. <<https://www.icj-cij.org/files/case-related/58/11831.pdf>>. p. 548.

be attributed unambiguously to fresh fall-out', not to earlier nuclear tests.⁴⁶

Australia also filed with the court the report of a 1973 meeting between Australian and French scientists at the Australian Academy of Science, which noted that Iodine-131, Strontium-90 and Caesium-137 had been detected in Australia as a result of fallout from French nuclear tests. However, the Australian and French scientists disagreed on the implications of what were described as low levels of radiation. The Australian scientists estimated that 'as a result of the French tests that have already occurred, there could be approximately one death or serious disability in Australia from genetic causes during the first generation and 18 deaths in all subsequent generations; these are minimum estimates, and maximum estimates based on present information ... would be approximately 15 times these figures.'⁴⁷ They concluded with a precautionary argument, calling for an end to French nuclear tests. The French scientists disputed these conclusions, arguing that the Australian scientists had 'greatly overestimated' the risks.⁴⁸

In a 22 July 1973 letter to the French Foreign Minister, the Australian Prime Minister asserted that a French atmospheric test scheduled for that day 'will cause widespread radioactive fall-out' and that 'There is a virtual certainty that this will include the deposit of radioactive fall-out on Australian territory.'⁴⁹

Other Nuclear Weapons Activities – Uranium Mining and Nuclear Waste

While first mined in Australia in the early 1900s, uranium was known to many Aboriginal groups through stories surrounding the mineral. Martu elder from the Western Deserts region, Waka Taylor, describes, 'Forever that uranium belongs to that place, underground. But it's poison when you dig it up – when it gets exposed.'⁵⁰

During World War II Australia became more engaged with uranium mining, exporting to Britain to aid their nuclear weapon program. Then Prime Minister John Curtin directed the head of Army to 'put all the resources needed into uranium mining.'⁵¹ Australia hoped to gain access to atomic research in exchange for supplying uranium, but was thwarted by secrecy imposed by the Anglo-American Quebec Agreement of 1943.⁵² However, after the war, Australia supplied uranium to the UK and US for their military programs⁵³ and later to the world market for broader nuclear power supplies.⁵⁴ Secrecy surrounded uranium mining, ostensibly because of its security risks. In 1952, government records show that the Acting Prime Minister was advised that the United States required Australia, 'to ensure secrecy concerning uranium production, processes, recoveries and grades of products, tonnages of products delivered and the terms of the agreement. Any breach of the obligation contains the danger that the Americans will refuse to give us, in future years, classified information connected with the industrial use of uranium.'⁵⁵

Australia continues to play a major role in the nuclear industry. Despite having over a third of the world's known

⁴⁶ Australia. (1974) 'Estimated External Gamma-Radiation Dose to the Whole Body from Fall-Out over Australia following Nuclear Tests by France in Polynesia during July and August 1973.' *Pleadings, Oral Arguments, Documents: Nuclear Test Cases, Volume I: Australia vs. France*. <<https://www.icj-cij.org/files/case-related/58/11831.pdf>>. p. 539.

⁴⁷ 'Report of Meeting between Australian and French Scientists, 7-9 May 1973, at the Australian Academy of Science, Canberra.' In: Australia. (1974) *Pleadings, Oral Arguments, Documents: Nuclear Test Cases, Volume I: Australia vs. France*. <<https://www.icj-cij.org/files/case-related/58/11831.pdf>>. pp. 540-544.

⁴⁸ 'Report of Meeting between Australian and French Scientists, 7-9 May 1973, at the Australian Academy of Science, Canberra.' In: Australia. (1974) *Pleadings, Oral Arguments, Documents: Nuclear Test Cases, Volume I: Australia vs. France*. <<https://www.icj-cij.org/files/case-related/58/11831.pdf>>. p. 542.

⁴⁹ 'Note of 22 July 1973 from the Australian Prime Minister and Minister of Foreign Affairs to the French Foreign Minister.' In: Australia. (1974) *Pleadings, Oral Arguments, Documents: Nuclear Test Cases, Volume I: Australia vs. France*. <<https://www.icj-cij.org/files/case-related/58/11831.pdf>>. p.

⁵⁰ Conservation Council WA et al. (2015) 'Ensuring a Nuclear Free Future for WA.' 2015 Briefing paper produced by Conservation Council of WA, Electrical Trades Union, United Voice and Australian Manufacturing Workers Union (WA)

⁵¹ Wayne Reynolds. (2000) *Australia's Bid for the Atomic Bomb*. Carlton, Melbourne University Press. p. 63.

⁵² Prue Torney-Parlicki. (2000) 'Whatever the thing may be called': The Australian news media and the atomic bombing of Hiroshima and Nagasaki.' *Australia Historical Studies*. 31(114). p. 51.

⁵³ Wayne Reynolds. (2000) *Australia's Bid for the Atomic Bomb*. Carlton, Melbourne University Press. pp. 148-149; Elizabeth Tynan. (2016) *Atomic Thunder: The Maralinga Story*. Sydney, NewSouth Publishing. p. 6.

⁵⁴ Australian Government Department of the Environment and Heritage. (2007) 'Case Study – Strategic Importance of Australia's Uranium Resources.' Submission to the Standing Committee on Industry and Resources Inquiry Into Developing Australia's Non-Fossil Fuel Energy Industry. Canberra, Department of the Environment and Heritage. pp. 1-2.

⁵⁵ David Horner. (2014) *The Spy Catchers: The Official History of ASIO 1949-1963*. Crows Nest, Allen and Unwin. p. 235.

recoverable uranium resources,⁵⁶ with known deposits in South Australia, Western Australia, Queensland and the Northern Territory, there are currently only three operating uranium mines in South Australia and the Northern Territory. This is in part the result of the strong community sentiment against uranium mining, with social and political consent for such projects being disputed over many decades, particularly by local communities, Indigenous rights advocates and environmental organisations.⁵⁷ (See Annex 2 for a map of Australian uranium mining sites).

Nevertheless, as one of the world's largest suppliers of uranium, Australia exported over 7,000 tonnes of uranium in the 2016-17 year alone,⁵⁸ despite the price of uranium being at its lowest point in a decade.⁵⁹ Australia currently exports to ten countries, including the UK, USA, France and China, all nuclear weapon states. There are agreements in place for several others, including the Russian and Indian governments, though there are no current exports to these two nuclear powers. The Australian Safeguards and Nonproliferation Office (ASNO) has noted that post-Brexit, appropriate arrangements will be needed to ensure continued nuclear cooperation and uranium exports to the UK, outside of the existing Euroatom agreements.⁶⁰

The Australian government established strict regulatory safeguards regimes proposed to prohibit Australian uranium from being utilised in nuclear weapons programs. These safeguards comply with the 1997 IAEA Additional Protocols.⁶¹ As part of these, the Australian government specifies that all countries importing Australian uranium must be party to the NPT, with an exception granted to India in 2008. Importing countries must also provide assurance that Australian Obligated Nuclear Materials (AONM) 'will not be diverted to non-peaceful or

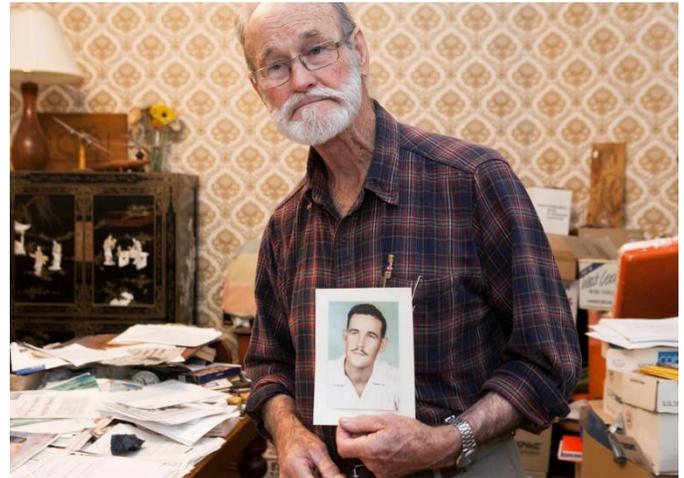


Figure 6: Avon Hudson, nuclear test veteran and whistleblower, with a younger photo of himself. Photo: Jessie Boylan, 'Whistleblower Series', jessieboylan.com

explosive uses and accept coverage of AONM by IAEA safeguards.⁶²

However, critics argue that at the least, exporting Australian uranium to nuclear-armed states frees up domestic or other imported sources for nuclear weapons programs, therefore contributing to the maintenance of nuclear weapons programs. The Australian government regulatory body, ASNO, acknowledges that conventions for the nuclear industry, known as 'principles of equivalence and proportionality,' mean that the 'tracking of individual uranium atoms is impossible.'⁶³ Nuclear materials are 'routinely mixed during processes such as

⁵⁶ Australian Safeguards and Nonproliferation Office. (2017) *Annual Report 2016-2017*. < <https://dfat.gov.au/about-us/publications/corporate/annual-reports/asno-annual-report-2016-17/html/section-2/australias-uranium-production-and-exports.html>>. p. 33.

⁵⁷ Examples of effective opposition to uranium mining in Australia are many, and often led by affected communities, including the Mirarr and Djok nations in the Northern Territory, the Martu people of the Pilbara in Western Australia, as well as Kokatha, Arabunna, and Adnyamathanha Peoples in South Australia. More can be seen through the Australian Nuclear Free Alliance, a decades' old civil society alliance of groups from affected Aboriginal communities and non-government organisations. For further details, see: <www.anfa.org.au>.

⁵⁸ Australian Safeguards and Nonproliferation Office. (2017) *Annual Report 2016-2017*. < <https://dfat.gov.au/about-us/publications/corporate/annual-reports/asno-annual-report-2016-17/html/section-2/australias-uranium-production-and-exports.html>>. p. 34.

⁵⁹ Australian Safeguards and Nonproliferation Office. (2017) *Annual Report 2016-2017*. < <https://dfat.gov.au/about-us/publications/corporate/annual-reports/asno-annual-report-2016-17/html/section-2/australias-uranium-production-and-exports.html>>. p. 33.

⁶⁰ Australian Safeguards and Nonproliferation Office. (2017) *Annual Report 2016-2017*. < <https://dfat.gov.au/about-us/publications/corporate/annual-reports/asno-annual-report-2016-17/html/section-2/australias-uranium-production-and-exports.html>>. p. 20.

⁶¹ Australian Safeguards and Nonproliferation Office. (2017) *Annual Report 2016-2017*. < <https://dfat.gov.au/about-us/publications/corporate/annual-reports/asno-annual-report-2016-17/html/section-2/australias-uranium-production-and-exports.html>>. p. 31-33.

⁶² Department of Foreign Affairs and Trade. (n.d.) 'Australia's Uranium Export policy, Nuclear Non-Proliferation, Trade and Security, Nuclear Exports and Safeguards.' <<https://dfat.gov.au/international-relations/security/non-proliferation-disarmament-arms-control/policies-agreements-treaties/Pages/australias-uranium-export-policy.aspx>>

⁶³ Australian Safeguards and Nonproliferation Office. (2017) *Annual Report 2016-2017*. < <https://dfat.gov.au/about-us/publications/corporate/annual-reports/asno-annual-report-2016-17/html/section-2/australias-uranium-production-and-exports.html>>. p. 37.



Figure 7: Yami Lester, Wallatina Station. Photo: Jessie Boylan, www.jessieboylan.com/inhabited

conversion and enrichment and as such cannot be separated by origin thereafter.⁶⁴

Proposals to establish repositories for high level nuclear waste are also contested. Such proposals have been raised and defeated consistently in the past couple of decades,

with Aboriginal communities again bearing the brunt of industrial and political pressure. Recent years have seen extensive community opposition defeat a proposal to import 160,000 tonnes of international high-level radioactive waste for storage and disposal in South

⁶⁴ Australian Safeguards and Nonproliferation Office. (2017) *Annual Report 2016-2017*. < <https://dfat.gov.au/about-us/publications/corporate/annual-reports/asno-annual-report-2016-17/html/section-2/australias-uranium-production-and-exports.html>>. p. 37.

Australia.⁶⁵ The Australian government is currently examining siting a co-located federal facility at one of three possible sites in regional South Australia. This facility would be for disposal of low-level waste, but also for the extended interim storage of long-lived intermediate level wastes, pending the development of a future disposal option. Aboriginal landowners, agricultural producers and an alliance of civil society organisations actively oppose the plan.⁶⁶

Humanitarian and Human Rights Impact

Nuclear testing has had considerable negative humanitarian and human rights impacts on Australians directly involved in the testing programs, and those living in the fallout zones or downwind of tests. The experience of nuclear veterans and Aboriginal communities impacted by nuclear testing is notably recorded in the 1985 Royal Commission report into British nuclear tests in Australia. Further evidence is found in subsequent reports and other research on the impacts of nuclear testing, fallout monitoring projects and the human rights consequences of uranium mining practices and nuclear waste dumping proposals.

Amongst the earliest victims were likely to be those affected by uranium mining for weapons programs during World War II. The Mount Painter mine in South Australia was chosen as a key deposit for exploitation for the 'increased production of uranium for Empire and War purposes' in 1944, according to a declassified cable from then Australian Prime Minister John Curtin to the UK Acting Prime Minister Forde.⁶⁷ This mine was located on the lands of the Adnyamathanha peoples.⁶⁸

A long-serving Member of Parliament and a Minister in the Whitlam and Hawke governments, Tom Uren, witnessed the Nagasaki bombing as a POW. He had been a prisoner of war for three years on the Burma-Thailand railway in the Hintok camp but was shipped to Japan in the final months of the war to work in a factory at Omuta, about 80 km from Nagasaki. Recalling the crimson skies on the day of the bombing, Uren reflected later, 'As I got to understand nuclear war and the nuclear industry I realised the dropping of those bombs on Japan was a crime against humanity.'⁶⁹ Uren went on to become a prominent politician, working over his lifetime to bring attention to peace and nuclear disarmament issues.⁷⁰ He was a strong advocate for the Royal Commission into British nuclear tests in Australia.

The veterans of the British Commonwealth Occupying Forces (BCOF) waged a campaign from the 1990s onwards to gain recognition of their service and the associated health impacts from what they believed was exposure to radiation, particularly due to the early years of the occupation.⁷¹ The 2003 Clarke Review, established to assess veterans' entitlements, found that the Department of Veterans Affairs relied on advice from Australian radiation authorities that 'the level of radiation had fallen to acceptable levels by the time the Australian BCOF contingent arrived in Japan.'⁷² The Review found that no health study of BCOF veterans had ever taken place, and that in the year 2000 the Minister advised that 'the small number of surviving BCOF veterans would limit the value of a health study.'⁷³ Eventually the Gold Card (health benefits provided through the Department of Veterans Affairs to personnel who served in war) was granted to the remaining members of the BCOF who had served from February 1946-April 1952.⁷⁴ In 2017, further amendment

⁶⁵ South Australian Government. (2016) *Nuclear Fuel Cycle Royal Commission*. <<http://nuclearrc.sa.gov.au/>>; Sophie Power. (2018) 'Radioactive waste management.' Briefing for the Australian Parliamentary Library, Commonwealth of Australia <www.aph.gov.au/About_Parliament/Parliamentary_Departments/Parliamentary_Library/pubs/BriefingBook45p/RadioactiveWaste>.

⁶⁶ For more detail, see: Australian Conservation Foundation. (2018) <www.acf.org.au/nuclear_free>; No Dump Alliance of South Australia. (2018) <<https://www.nodumpalliance.org.au/>>; Cat Beaton, Jim Green et al. (2017) *Standing Strong 2015-2017: How South Australians won the campaign against an international high-level nuclear waste dump*. <www.nodumpalliance.org.au/standing_strong>.

⁶⁷ John Curtin. (18 May 1944) Cablegram from Australian PM Curtin to UK Acting PM Forde. National Archives of Australia. A571, 1944/1789. pp. 43-44.

⁶⁸ Australian Nuclear and Uranium Sites. (2017) 'Mt Painter.' <<https://australianmap.net/mt-painter/>>

⁶⁹ In: Tony Wright. (8 October 2012) 'At 91, peacemaker still fights nuclear threat.' *The Age*, <<https://www.theage.com.au/national/victoria/at-91-peacemaker-still-fights-nuclear-threat-20121007-277bw.html>>.

⁷⁰ Anthony Albanese. (24 July 2015) 'Remarks at the launch of the Tom Uren Memorial Fund at the Australian Labor Party National Conference in Melbourne.' <www.icanw.org/tom-uren-memorial-fund>.

⁷¹ For example, see 2007 letter to the Prime Minister from veteran Roger Dunlop, cited in: Alan Ramsey. (25 August 2007) 'Old soldier gets the mushroom treatment again.' *Sydney Morning Herald*. <<https://www.smh.com.au/national/old-soldier-gets-the-mushroom-treatment-again-20070825-gdqy4c.html>>.

⁷² John Clarke. (January 2003) *Report of the Review of Veterans' Entitlements*, (The Clarke Review). Canberra, Department of Veterans' Affairs. p. 365.

⁷³ John Clarke. (January 2003) *Report of the Review of Veterans' Entitlements*, (The Clarke Review). Canberra, Department of Veterans' Affairs. p. 365.

⁷⁴ Tilman A. Ruff. (2015) 'The humanitarian impact and implications of nuclear test explosions in the Pacific region.' *International Review of the Red Cross*. 97(899). p. 785.

of legislation recognised Australian personnel who served in the forces in Japan between 16 August 1945 and the end of January 1946 as ‘nuclear test participants,’⁷⁵ making them also eligible for the Gold Card. The same amendments also recognised and extended services to other categories of military and civilians who were exposed to radiation from the British nuclear tests in the 1950s and 1960s.⁷⁶ While in no way considered as compensation, the Gold Card is the top-level care granted to military personnel to access public and private health care services, at the department’s expense.⁷⁷

While the UK Ministry of Defence maintains that ‘Almost all the British servicemen involved in the UK nuclear tests received little or no additional radiation as a result of participation,’⁷⁸ Australian nuclear veterans continue to claim that they were adversely affected by ionizing radiation. Veterans continue to seek recognition and compensation for the harm they suffered in the line of duty. As nuclear veteran and whistleblower Avon Hudson (see Figures 5 and 6) explains, ‘We were innocent – lambs to the slaughter – and have been treated with contempt by Australian governments of both political persuasions trying to sweep their tarnished history under the carpet. We *have* suffered; for many of our friends, life was cruelly taken away or changed forever by an unseen and largely unknown foe – ionising radiation.’⁷⁹

The Royal Commission provided detailed insights to the impact of the testing on the military, nearby communities and downwind populations. The Commission found significant concerns about worker safety at the major test sites, including failures to adequately monitor and provide protection gear to personnel, unplanned exposures and increased cancer risks.⁸⁰

Systematic denial and secrecy have hindered the calls of veteran and civilian survivors when dealing with the UK authorities. Seeking compensation but also more transparency, veteran and civilian survivors have sued the UK government in both British courts and the European Court of Human Rights. So far, British and European judges have decided against survivors, expecting a high burden of proof that specific illnesses were caused by the testing and not by other factors like genetics, smoking or exposure to other carcinogens.⁸¹ While they were ultimately unsuccessful, the court cases did result in limited release of official documentation.⁸²

In 1993, following intense political, media and public pressure,⁸³ the UK agreed to contribute to the clean up of the contamination found in studies during and after the Royal Commission. While far short of the initial claims made against the UK for the clean up and for compensation for the Maralinga Tjarutja peoples,⁸⁴ the agreement was finalised in 1994, with a payment of £20 million made to Australia.⁸⁵ This payment covered only

⁷⁵ Australian Government. (13 July 2017) ‘Australian Participants in British Nuclear Tests and British Commonwealth Occupation Force (Treatment) Act 2006, No 135, 2006, Amended 13 July 2017.’ Canberra, Office of Parliamentary Counsel.

⁷⁶ Federal Register of Legislation. (2017) ‘Explanatory Statement: Australian Participants in British Nuclear Tests and British Commonwealth Occupation Force (Treatment) (Extension of Eligibility) Instrument 2017 (Instrument No.R31).’ <www.legislation.gov.au/Details/F2017L01455/Explanatory%20Statement/Text>.

⁷⁷ Department of Veterans Affairs. (n.d.) ‘Veterans Health Cards.’ <<https://www.dva.gov.au/health-and-wellbeing/veterans-health-cards>>.

⁷⁸ UK Ministry of Defence. (June 2008) ‘UK atmospheric nuclear weapons tests: UK programme.’ Factsheet 5. p. 2. <https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/82781/ntvfactsheet5.pdf>.

⁷⁹ In: ICAN. (2014) *Black Mist: The impact of nuclear weapons on Australia*. Melbourne, ICAN. <www.icanw.org/black-mist>. p. 9.

⁸⁰ See, for example, the conclusions of the Royal Commission relating to safety of service personnel in the major nuclear tests: James McClelland. (1985) *The Report of the Royal Commission into British Nuclear Tests in Australia*. Vols. I & II. Canberra, Australian Government Publishing Service. pp. 122-136, 194-228, 262-272, 324-347, and 381-393.

⁸¹ UK High Court. (1988) *Pearce vs. Secretary of State for Defence*. AC755; European Court of Human Rights. (1998) *L.C.B. vs. the United Kingdom*. Reports of Judgements and Decisions 1998-III; European Court of Human Rights. (1998) *McGinley vs. the United Kingdom*. Reports of Judgements and Decisions 1998-III; UK Court of Appeal (Civil Division). (2010) *Ministry of Defence versus AB and Others*. EWCA Civ 1317, Case No. B3/2009/2205; War Pensions and Armed Forces Compensation Chamber. (December 2016) *Decision: Ministry of Defence vs. Abdale et al.* <<http://www.llrc.org/campaigns/testvets/testvettranscripts//Determination.pdf>>. For a review of the cases, see: Nic Maclellan. (2017) *Grappling with the Bomb: Britain’s Pacific H-Bomb Tests*. Acton, ANU Press. pp. 311-322.

⁸² Matthew Bolton. (2018) *Addressing Humanitarian and Environmental Harm from Nuclear Weapons: Kiritimati (Christmas) and Malden Islands Republic of Kiribati*. New York, International Disarmament Institute.

⁸³ Elizabeth Tynan. (2016) *Atomic Thunder: The Maralinga Story*. Sydney, NewSouth Publishing. pp. 274-296.

⁸⁴ Ian Anderson. (12 June 1993). ‘Britain’s dirty deeds at Maralinga: Fresh evidence suggests that Britain knew in the 1960s that radioactivity at its former nuclear test site in Australia was worse than first thought. But it did not tell the Australians.’ *New Scientist*. Issue 1887. <<https://www.newscientist.com/article/mg13818772-700/>>

⁸⁵ UK Government. (1994) ‘Exchange of Notes between the Government of the United Kingdom of Britain and Northern Ireland and the Government of Australia concerning the former nuclear test and experimental programme sites at Maralinga, the Monte Bello Islands and Emu Field.’ *Treaty Series* 22. <<http://treaties.fco.gov.uk/docs/pdf/1994/TS0022.pdf>>

around 45% of the estimated costs of the clean up of the sites alone. There was no agreement for the compensation for Maralinga Tjarutja.⁸⁶

Several key studies in Australia⁸⁷ prior to the Royal Commission attributed evidence of increased cancers to 'chance' or denying that there was any harmful exposure.⁸⁸ While fraught with 'major methodological limitations of a retrospective study with incomplete data fifty years after the nuclear tests began',⁸⁹ the Department of Veterans Affairs published in 2006 the *Australian participants in British nuclear tests in Australia Dosimetry and Mortality and Cancer Incidence Study*. As Dr Tilman Ruff notes, 'it found statistically significant 23% higher rates of cancer and 18% higher cancer mortality between 1982 (twenty-nine years after the first test) and 2001 in veterans exposed to nuclear tests, compared with the general population.'⁹⁰ The study had limitations, including, as explained in a later publication by the authors, exclusion of 'subjects deceased before 1982.'⁹¹ The original study also did not take into account Aboriginal Australians exposed to the nuclear testing, stating, 'There are insufficient data to enable epidemiological studies of the central Australian Aboriginal population of the 1950s. Therefore, the Nuclear Tests Veterans Cancer Incidence and Mortality Study excludes Aboriginal people living near the testing areas. Likewise, this report does not attempt to reconstruct any possible radiation exposures of those Australian Aboriginals.'⁹²

Australia ran monitoring programs related to the nuclear testing, both from the time of the British nuclear tests and

through much of the time of the French atmospheric testing of nuclear weapons. Most of the nuclear weapons test era monitoring programs were supervised initially under the Atomic Weapons Tests Safety Committee (AWTSC), established in July 1955 to monitor fallout from the nuclear tests, ostensibly to protect the interests of the Australian population. In 1957, arrangements for monitoring safety were split between the AWTSC and the newly formed National Radiation Advisory Committee (NRAC).⁹³ Noting evidence that many of the monitoring programs in the Pacific and Australia in particular were deeply flawed, Dr Tilman Ruff points out, 'the sound epidemiological principle that *absence of evidence of effects does not constitute evidence of absence of effect* applies all too often to the many settings where inadequate data have been gathered.'⁹⁴

The monitoring programs focussed largely on measuring ionising radiation, and elements such as iodine-131 (which was most commonly affects thyroid, with a short half-life of around 8 days), caesium-137 (affecting large muscle, with a half-life of around 30 years) and strontium-90 (a bone seeking radionucleotide with a half-life of 28.8 years), amongst others.⁹⁵ These elements have dramatic impact on younger children, particularly girls, as explained again by Ruff, 'For intake of fluid containing the radioactive isotope strontium-90, infant girls exposed to the same level of contamination are assessed to have a 20.6-fold higher risk of breast cancer than women aged 30 years. For the same level of contamination of ingested fluid with iodine-131,

⁸⁶ Mark Smith & Lorna Arnold. (2006) *Britain, Australia and the Bomb: The Nuclear Tests and Their Aftermath*. 2nd Ed. New York, Palgrave Macmillan. pp. 243-244.

⁸⁷ Reports investigating claims of harm to veterans include: Australian Ionising Radiation Advisory Council. (January 1983) 'Report to the Minister for Science and the Environment.' *AIRAC Report No. 9*; The Department of Health. (1983) *Survey of Atomic Personnel*, (The Donovan Report); C. B. Kerr (31 May 1984) 'Report of the expert committee on the review of data on atmospheric fallout arising from British nuclear tests in Australia.' Atmospheric Fallout Committee; K. N. Wise & J. R. Moroney. (May 1992) 'Public health impact from fallout from British nuclear weapons in Australia.' *Australian Radiation Laboratory*. Department of Health, Housing and Community Services; Richard Gun, et al. (2006) 'Australian Participants in British Nuclear Tests in Australia, Vol. 2: Mortality and Cancer Incidence.' Canberra, Department of Veterans Affairs. pp. 118-124; IPPNW, (1991) *Radioactive Heaven and Earth: The Health and Environmental Effects of Nuclear Weapons Testing In, On, and Above the Earth*, London, Zed Books. p. 19.

⁸⁸ Peter Yeend & Amanda Biggs. (9 October 2006) 'Australian Participants in British Nuclear Tests (Treatment) Bill 2006.' No. 31, 2006-07, Canberra, Australian Parliamentary Library. pp. 3-6.

⁸⁹ Tilman A. Ruff. (2015) 'The humanitarian impact and implications of nuclear test explosions in the Pacific region.' *International Review of the Red Cross*. 97(899). p. 784

⁹⁰ Tilman A. Ruff. (2015) 'The humanitarian impact and implications of nuclear test explosions in the Pacific region.' *International Review of the Red Cross*. 97(899). p. 784.

⁹¹ Richard Gun, et al. (2008) 'Mortality and Cancer Incidence of Australian Participants in the British Nuclear Tests in Australia.' *Occupational and Environmental Medicine*. 62(12). p. 5.

⁹² Richard Gun, et al. (2006) 'Australian Participants in British Nuclear Tests in Australia, Vol. 2: Mortality and Cancer Incidence.' Canberra, Department of Veterans Affairs. p. 168.

⁹³ James McClelland. (1985) *The Report of the Royal Commission into British Nuclear Tests in Australia*. Vols. I & II, Canberra, Australian Government Publishing Service. pp. 234-236, 474-478, 496.

⁹⁴ Tilman A. Ruff. (2015) 'The humanitarian impact and implications of nuclear test explosions in the Pacific region.' *International Review of the Red Cross*. 97(899). p. 800. Emphasis added.

⁹⁵ See the table 'Table 3. Radioactive isotopes from nuclear test explosions most significant in human health impact' in: Tilman A. Ruff. (2015) 'The humanitarian impact and implications of nuclear test explosions in the Pacific region.' *International Review of the Red Cross*. 97(899). p. 806.

the risk for infant girls compared with 30-year-old women is 32.8 times higher. This means that for the same level of radioactive contamination, the cumulative breast or thyroid cancer risk by ingestion over the first five years of life for girls is greater than that accumulated by women over their entire adult lives.⁹⁶

The AWTSC and the NRAC conducted monitoring programs throughout the nuclear weapons tests in Australia. As noted above, during the period when France was conducting atmospheric nuclear weapon tests, Australia also ran monitoring programs, which regularly reported to the government.⁹⁷ Many of these monitoring programs were not transparent in their reporting, which was not easily accessed or understood by the public, with the reports made to government or published in scientific publications. As noted by Ruff, 'An intrinsic structural conflict of interest was inevitable and manifest in every testing program, where the military organizations prosecuting the tests were also in charge of monitoring and protection of the environment and downwind populations. The overall priority was nuclear weapons development, whatever the cost.'⁹⁸

An example of this was the Strontium-90 (Sr-90) Testing Program. Conducted between 1957 and 1978, the Australian government ran testing on soil, water, feed and animal subjects, looking for the presence of Sr-90. They also tested nearly 22,000 bones and body parts of citizens from Australia and Papua New Guinea (then a colony),

using samples taken at autopsy without the knowledge or consent of family members. The program particularly sought bones of infants and young children, especially infants and children under five, as these were thought to record the Sr-90 uptake best.

This program came to broad public attention in 2001 with the discovery of human bone samples left over from these programs.⁹⁹ The public outrage led to investigations from the government of the time, including reports from the ARPANSA,¹⁰⁰ and the Australian Health Ethics Committee (AHEC).¹⁰¹ The APRANSA report showed that around 4,771 samples (around 22%) were taken from the bodies of babies under one year, including stillborn babies as early as 30 weeks.¹⁰² Fifty-one per cent were recorded as 'measuring in years' meaning anything from one-year-old and up, with a further 27% at the time having no ages recorded. There was no evidence of consent being sought for the taking of the bone samples.

As with similar projects in the USA (such as Project Sunshine)¹⁰³ and the UK,¹⁰⁴ non-consensual fallout monitoring programs raise legal and ethical questions that should be further investigated. These programs arose only as a result of nuclear weapons testing. Re-examination of the recorded results is also crucial.

Australian collaboration in British nuclear weapons testing programs created intergenerational harm to military, civilian and particularly Aboriginal communities. There

⁹⁶ Tilman A. Ruff. (2015) 'The humanitarian impact and implications of nuclear test explosions in the Pacific region.' *International Review of the Red Cross*. 97(899). p. 804; Arjun Makhijani, Brice Smith and Michael C. Thorne. (19 October 2006) 'Science for the Vulnerable: Setting Radiation and Multiple Exposure Environmental Health Standards to Protect Those Most at Risk.' Takoma Park, Institute for Energy and Environmental Research. p. 40.

⁹⁷ For examples, see: National Radiation Advisory Committee (NRAC). (March 1969) 'Biological Aspects of Fallout in Australia from French Nuclear Weapons Explosions in the Pacific, July-September 1968.' Canberra, NRAC; NRAC. (March 1971) 'Biological Aspects of Fallout in Australia from French Nuclear Weapons Explosions in the Pacific, May-August 1970.' Canberra, NRAC; Atomic Weapons Tests Safety Committee (AWTSC). (December 1971) 'Fallout over Australia from nuclear weapons tested by France in Polynesia from June to August 1971.' Canberra, AWTSC; AWTSC. (October 1972) 'Fallout over Australia from Nuclear Weapons tested by France in Polynesia during June and July 1972.' Canberra, AWTSC; AWTSC. (May 1974) 'Fallout over Australia from nuclear weapons tested by France in Polynesia during July and August 1973.' Canberra, Australian Ionising Radiation Advisory Council, and Australian Radiation Laboratory, and Australian Department of Health; Australian Government. (October 1974) 'Fallout over Australia from nuclear tests' (report by the Australian Ionising Radiation Advisory Council [Australian Department of Health] and the Bureau of Meteorology [Australian Department of Science and Consumer Affairs] Canberra, Australia.

⁹⁸ Tilman A. Ruff. (2015) 'The humanitarian impact and implications of nuclear test explosions in the Pacific region.' *International Review of the Red Cross*. 97(899). p. 799.

⁹⁹ Frank Walker. (2014) *Maralinga: the chilling expose of our secret nuclear shame and betrayal of our troops and country*. Sydney, Hachette Press. pp. 218-230; Elizabeth Tynan. (2016) *Atomic Thunder: The Maralinga Story*. Sydney, NewSouth Publishing. p. 303; Michael Woolridge. (5 September 2001) 'ARPANSA Report on Strontium 90 Testing Program.' Media release MW82/01, Canberra, Australian Government.

¹⁰⁰ ARPANSA. (September 2001) *Australian Strontium 90 Testing Program, 1957-1978*. Sydney, ARPANSA Report.

¹⁰¹ Christopher Cordner, et al. (March 2002) *Ethical and Practical Issues Concerning Ashed Bones from The Commonwealth of Australia's Strontium 90 Program, 1957-1978*. Canberra, Australian Health Ethics Committee (AHEC). p. 10.

¹⁰² ARPANSA. (September 2001) *Australian Strontium 90 Testing Program, 1957-1978*. Sydney, ARPANSA Report. p. 10.

¹⁰³ Ruth R. Faden, et al. (October 1995) *Final Report: Advisory Committee on Human Radiation Experiments*. Washington, DC, US Government Printing Office. p. 637.

¹⁰⁴ Sue Rabbitt Roff. (1999) 'Mortality and morbidity of members of the British Nuclear Tests Veterans Association and the New Zealand Nuclear Tests Veterans Association and their families.' *Medicine, conflict and survival*. 15(Suppl. 1). pp. 291-301; Sue Rabbitt Roff. (1 July 2002) 'Project Sunshine and the Slippery Slope: The ethics of tissue sampling for strontium-90', *Medicine, Conflict and Survival*. 18(3). pp. 307-308.

were significant colonialist prejudices inherent in the assumption that Australian and Pacific test sites were 'remote', 'uninhabited' or even 'empty.' Such assumptions have long undermined the proper recognition of harm to people and the environment, and hindered adequate measures towards monitoring or remediating that harm.

The 1985 Royal Commission made significant findings of negligence when it came to the safety and protection of Aboriginal peoples within the zones of the tests.¹⁰⁵ In several cases, there was a complete failure to take Aboriginal people into account at all, and therefore monitoring or protection were not provided to those communities. This equated to a denial of the existence of Aboriginal people, for whom these lands have been home for tens of thousands of years.¹⁰⁶ When Aboriginal communities were taken into consideration, there were consistent failures by the Safety Committee to provide adequate resources to ensure the safety of those communities.¹⁰⁷ In a damning critique of the *Buffalo* test series, for example, the Commission noted, 'Overall, the attempts to ensure Aboriginal safety during the *Buffalo* series demonstrates ignorance, incompetence and cynicism on the part of those responsible for that safety. The inescapable conclusion is that if Aborigines were not injured or killed as a result of the explosions, this was a matter of luck rather than adequate organisation, management and resources allocated to ensuring safety.'¹⁰⁸

The dispossession of traditional lands and access to traditional travel routes was found to have contributed to Aboriginal survivors 'emotional, social and material distress and deprivation.'¹⁰⁹

The Royal Commission records the 'Black Mist' phenomena that followed the *Totem I* test in 1953. Aboriginal Yankunytjatjara elder Yami Lester recalled



Figure 8: Karina Lester (right) presents the Indigenous peoples' statement to Ambassador Elayne Whyte Gomez, Chair of the 2017 negotiations of the Treaty on the Prohibition of Nuclear Weapons. Photo: ICAN Australia, https://twitter.com/ican_australia/status/875845483700289536

hearing 'a big bang...a big noise, an explosion,' and later in the day something in the air, which, 'was coming from the south, black-like smoke. I was thinking it might be a dust storm, but it was quiet, just moving, as it looks like, through the trees and above that again, you know. It was just rolling and moving quietly.'¹¹⁰

A child at the time, Yami Lester recalled how immediately after the Black Mist the people in his community, Wallatinna, around 173km from Emu Field, became sick, with severe vomiting, sore eyes, diarrhea and skin rashes, amongst other symptoms. Yami was immediately blinded in one eye and had only marginal vision in the other. By 1957 he also lost that eye to disease. He maintained that the Black Mist was responsible for his blindness.¹¹¹ The Royal Commission heard testimony from Yami Lester and

¹⁰⁵ For details on measures undertaken for the safety of Aboriginal communities in the major nuclear tests as recorded by the *Royal Commission*, see: James McClelland. (1985) *The Report of the Royal Commission into British Nuclear Tests in Australia*. Vols. I & II. Canberra, Australian Government Publishing Service. pp. 118-122, 151-173, 259-261, 299-323, 368-381.

¹⁰⁶ In the case of the *Hurricane* tests, for example, the *Royal Commission* found there was a failure 'to consider the distinctive lifestyles of Aboriginal people. As no record was made of any contamination of the mainland it is impossible to determine whether Aborigines were exposed to any significant short or long-term hazards.' See: James McClelland. (1985) *The Report of the Royal Commission into British Nuclear Tests in Australia*. Vols. I & II. Canberra, Australian Government Publishing Service. p. 122.

¹⁰⁷ For example, in the *Totem 1* tests, the *Royal Commission* noted, 'the Native Patrol Officer had the impossible task of locating and warning Aborigines, some of whom lived in traditional lifestyles and were scattered over more than 100 000 square kilometres.' James McClelland. (1985) *The Report of the Royal Commission into British Nuclear Tests in Australia*. Vols. I & II. Canberra, Australian Government Publishing Service. p. 173.

¹⁰⁸ James McClelland. (1985) *The Report of the Royal Commission into British Nuclear Tests in Australia*. Vols. I & II. Canberra, Australian Government Publishing Service. p. 323.

¹⁰⁹ James McClelland. (1985) *The Report of the Royal Commission into British Nuclear Tests in Australia*. Vols. I & II. Canberra, Australian Government Publishing Service. p. 573.

¹¹⁰ James McClelland. (1985) *The Report of the Royal Commission into British Nuclear Tests in Australia*. Vols. I & II. Canberra, Australian Government Publishing Service. pp. 174-175.

¹¹¹ James McClelland. (1985) *The Report of the Royal Commission into British Nuclear Tests in Australia*. Vols. I & II. Canberra, Australian Government Publishing Service. pp. 190-194.

other survivors of the Wallatina community and nearby homesteads, all of whom recalled the Black Mist.¹¹² Further evidence of earlier reports and oral history recorded the phenomena also, though it was denied by the UK and Australian authorities, including the head of the AWTSC, before the Royal Commission.¹¹³ Throughout his life, Yami Lester remained an outspoken advocate for Aboriginal (Anangu) survivors of the nuclear testing and an advocate for a world free from nuclear weapons.¹¹⁴ His daughters, Rose and Karina Lester (See Figure 8), continue the work to raise awareness of the intergenerational harm of nuclear testing.¹¹⁵

Downwind communities affected by the tests have received too little attention when examining the impacts of the tests. Aunty Sue Coleman-Haseldine, a Kokatha-Mula woman, was a small child when the nuclear tests took place in South Australia (See Figure 1). As she addressed the Third Conference on the Humanitarian Impact of Nuclear Weapons in Vienna in 2014, she spoke of the connection of people to country, 'There are lots of different Aboriginal groups in Australia. For all of us our land is the basis of our culture. It is our supermarket for our food, our pharmacy for our medicine, our school and our church... These tests contaminated a huge area and everything in it but people hundreds of kilometres away were also impacted.'¹¹⁶ She later recalled, 'We weren't on ground zero, but the dust didn't stay in one place. The winds brought the poison to us and many others.'¹¹⁷

The inadequate resources assigned to locating, informing, warning and protecting Aboriginal community members in South Australia came under intense scrutiny in the Royal Commission. Only one patrol officer was allocated to the 'impossible task,' expected to cover over 100,000 square kilometres.¹¹⁸ The Commission examined reports of a serious incident where a small family group, the Milpuddies, were found in the highly contaminated test area in May 1957, in the months following the *Buffalo* series.¹¹⁹ Criticisms were recorded of the treatment of the family group, especially as the woman in the group was pregnant at the time and lost her child and subsequent children also.¹²⁰ Concerns about the official secrecy, lack of reporting and poor response to the incident were all raised in the Commission. The incident particularly highlighted the total inadequacy of the measures taken to inform, warn and look out for Aboriginal people. Aboriginal people would travel extensive ancient traditional routes, but also the new roads created by the military for the tests, bringing them closer to the areas now contaminated by the nuclear tests. The Commission found that, 'The resources allocated for Aboriginal welfare and safety were ludicrous, amounting to nothing more than a token gesture.'¹²¹ The incident was treated as a 'political embarrassment'¹²², though the Commission noted, 'Hushing up the affair was one thing. Doing nothing about

¹¹² James McClelland. (1985) *The Report of the Royal Commission into British Nuclear Tests in Australia*. Vols. I & II. Canberra, Australian Government Publishing Service. pp. 174-177.

¹¹³ James McClelland. (1985) *The Report of the Royal Commission into British Nuclear Tests in Australia*. Vols. I & II. Canberra, Australian Government Publishing Service. pp. 177-186.

¹¹⁴ See as examples Yami Lester. (1993) *Yami: the autobiography of Yami Lester*. Alice Springs, Institute for Aboriginal Development Publications; ICAN. (2014) Black Mist: The impact of nuclear weapons on Australia. Melbourne, ICAN. <www.icanw.org/black-mist> p. 6. 6. Yami Lester passed away on 21 July 2017; tributes to his life pay homage to his work over many years. Mr. Lester's story is cited here with permission from his family.

¹¹⁵ See, for example: Rosamund Burton. (24 June 2017) 'Rose and Karina Lester: How illness has driven our anti-nuclear campaign work.' *Sydney Morning Herald*. <<https://www.smh.com.au/lifestyle/rose-and-karina-lester-how-illness-has-driven-our-antinuclear-campaign-work-20170619-gwu0em.html>>; Karina and Rose Lester. (10 December 2017) 'Karina and Rose Lester at the ICAN Melbourne Nobel Peace Prize celebrations.' <<https://youtu.be/zNdG6MD2pxs>>; Karina Lester. (June 2017) 'Presentation of the Indigenous Statement.' <<https://vimeo.com/221958618>>.

¹¹⁶ Sue Coleman-Haseldine. (8 December 2014) 'Speech to the Vienna Conference.' <<http://www.icanw.org/campaign-news/australia/australian-test-survivor-to-speak-in-vienna/>>.

¹¹⁷ Sue Coleman-Haseldine. (8 December 2017) 'My people are still suffering from Australia's secret nuclear testing,' *Sydney Morning Herald*. <www.smh.com.au/opinion/my-people-are-still-suffering-from-australias-secret-nuclear-testing-20171208-h01a3l.html>

¹¹⁸ James McClelland. (1985) *The Report of the Royal Commission into British Nuclear Tests in Australia*. Vols. I & II. Canberra, Australian Government Publishing Service. pp. 152-173.

¹¹⁹ James McClelland. (1985) *The Report of the Royal Commission into British Nuclear Tests in Australia*. Vols. I & II. Canberra, Australian Government Publishing Service. pp. 319-324.

¹²⁰ James McClelland. (1985) *The Report of the Royal Commission into British Nuclear Tests in Australia*. Vols. I & II. Canberra, Australian Government Publishing Service. p. 321; Frank Walker. (2014) *Maralinga: the chilling expose of our secret nuclear shame and betrayal of our troops and country*. Sydney, Hachette Press. P. 153; Elizabeth Tynan. (2016) *Atomic Thunder: The Maralinga Story*. Sydney, NewSouth Publishing. p. 191-194.

¹²¹ James McClelland. (1985) *The Report of the Royal Commission into British Nuclear Tests in Australia*. Vols. I & II. Canberra, Australian Government Publishing Service. p. 322.

¹²² James McClelland. (1985) *The Report of the Royal Commission into British Nuclear Tests in Australia*. Vols. I & II. Canberra, Australian Government Publishing Service. p. 321.



Figure 9: A British Nuclear Tests Veterans Association memorial in the Peace Garden at the Church of St. Thomas, Birmingham, UK. Photo: Elliott Brown, <https://www.flickr.com/photos/ell-r-brown/3626095637>

it was quite another.¹²³ Significant questions remain about human rights abuses arising from the response of the authorities to this incident, and overall in the treatment of Aboriginal Australians during the British nuclear tests.

The 2017 Treaty on the Prohibition of Nuclear Weapons directs attention to the disproportionate impact of nuclear-weapon activities on Indigenous people. This is evident in the particular experience of Aboriginal communities affected by nuclear weapons testing, uranium mining and nuclear waste dumping proposals.

Uranium mining in Australia compounds many of the problems imposed on Aboriginal communities by the nuclear industry. These communities often bear a disproportionate burden of harm from uranium mining. As noted by Senior Traditional Owner of the Mirarr People of the Northern Territory, the land on which the Ranger uranium mine has operated since 1978, ‘Mining and the millions of dollars in royalties have not improved our quality of life. ... None of the promises last but the problems always do.’¹²⁴

A 1997 Parliamentary inquiry found that, ‘the history of uranium mining in Australia and its impact on Aboriginal people is deplorable.’¹²⁵ In March 2017, a statement by organisations representing Indigenous interests in ten countries, was presented to the United Nations negotiations for the Treaty on the Prohibition of Nuclear Weapons in New York. The statement, which included several key Australian organisations, noted, ‘The mining of uranium – the essential first step in the production of every nuclear bomb – has also taken a terrible toll on Indigenous communities in many parts of the world. Tailings and other nuclear wastes that remain toxic into eternity have been dumped on our lands and in the ocean against our will.’¹²⁶

The psychological, social, cultural and political impacts on people affected by nuclear weapon tests and associated activities lead to increased anxiety, and a sense of political and often social marginalisation. Official secrecy and suppression of information has stymied proper monitoring, assistance to victims and remediation measures.

The stigmatization of victims¹²⁷ often feeds frustration at inadequate health care solutions, and fears of intergenerational harm, as expressed in the Indigenous statement presented to the TPNW negotiating conference in June 2017, ‘Our land, our sea, our communities, and our physical bodies carry this legacy with us now, and for unknown generations to come... We have lived with the anguish of not knowing what impact the unleashed radiation might one day have on our children and grandchildren.’¹²⁸

Environmental Impact

The Monte Bello islands off the coast of Western Australia are now encompassed in a Conservation Park and are part of a larger marine reserve system. It is a precious marine and coastal environment. Within the 58,000 hectares of oceans surrounding 250 islands and islets, there is a complex system of coral reefs, lagoons and beaches, which

¹²³ James McClelland. (1985) *The Report of the Royal Commission into British Nuclear Tests in Australia*. Vols. I & II. Canberra, Australian Government Publishing Service. p. 322.

¹²⁴ Yvonne Margarula, quoted in: Gundjeihmi Aboriginal Corporation (GAC). (May 2005) Submission to House of Representatives Standing Committee on Industry and Resources Inquiry into Developing Australia’s Non-Fossil Fuel Energy Industry. pp. 2-4.

¹²⁵ Senate Select Committee Inquiry into Uranium Mining and Milling. (15 May 1997) ‘Chapter 6: Indigenous Concerns,’ Report tabled in *Australian Parliament* <www.aph.gov.au/Parliamentary_Business/Committees/Senate/Former_Committees/uranium/report/d07>.

¹²⁶ Australian Nuclear Free Alliance, et al. (2017) ‘Indigenous Statement to the UN Nuclear Weapons Ban Treaty Negotiations.’ <<http://www.icanw.org/wp-content/uploads/2017/05/Indigenous-Statement-June-2017.pdf>>.

¹²⁷ Robert Jacobs. (2014) ‘The Radiation That Makes People Invisible: A Global Hibakusha Perspective.’ *The Asia-Pacific Journal*. 12(31). pp. 1-11.

¹²⁸ Australian Nuclear Free Alliance, et al. (2017) ‘Indigenous Statement to the UN Nuclear Weapons Ban Treaty Negotiations.’ <<http://www.icanw.org/wp-content/uploads/2017/05/Indigenous-Statement-June-2017.pdf>>.



Figure 10: Faded and numbered waste pit signs such as this one can be found throughout the Maralinga test area, denoting a burial site and usually containing radioactive debris, often only meters deep. Photo: Mick Broderick.

hold ‘at least 150 species of hard coral, more than 450 species of fish, more than 630 species of molluscs and 170 known species of sea stars, urchins and other echinoderms.’¹²⁹ Multiple species of scientifically and ecologically important mangroves offer ‘valuable nursery areas for juvenile fish and crustaceans and are stopover areas for rare and protected migratory wading birds,’ according to the WA Department of Environment and Conservation.¹³⁰ Dugong, whale, dolphin and turtle species are also recorded within the region. However, radiological contamination from the British nuclear tests still leads to advice for visitors to restrict their visits to the affected islands to one hour only per day and warnings to ‘not disturb the soil in these areas and do not handle or remove

any relics associated with the tests as they may still be radioactive.’¹³¹

The precious desert environment subjected to the British nuclear testing also hosts a unique and complex biodiversity. A seven-year long study conducted on the Maralinga Tjarutja Lands reported in 2008 on the biodiversity of the area. The survey recorded over four thousand mammals from around 27 native mammal species – including nine newly recorded species – remaining across the Maralinga Tjarutja Lands. The survey noted however at least 17 previously known mammal species are confirmed extinct, with the authors remarking that among other factors like feral animal interference,

¹²⁹ Government of Western Australia. (2009) ‘Montebello Islands Marine Park.’ <https://parks.dpaw.wa.gov.au/sites/default/files/downloads/parks/2009177_montebello_islands_mp_brochure.pdf>.

¹³⁰ Government of Western Australia. (2009) ‘Montebello Islands Marine Park.’ <https://parks.dpaw.wa.gov.au/sites/default/files/downloads/parks/2009177_montebello_islands_mp_brochure.pdf>.

¹³¹ Government of Western Australia. (2009) ‘Montebello Islands Marine Park.’ <https://parks.dpaw.wa.gov.au/sites/default/files/downloads/parks/2009177_montebello_islands_mp_brochure.pdf>.

‘Extinctions in some areas were the result of nuclear testing at Maralinga in the 1950’s.’¹³²

The survey also recorded nearly 15,000 birds from around 133 species, and over 4,000 reptiles from 94 species recorded across areas of woodlands, mallee, shrublands and grasslands. Of the 6,398 plants recorded, there were 916 flowering plants, fern and conifer species from 59 families. Eight of these had not previously been recorded in South Australia, and ‘another 173 species represent new plant records for the Maralinga Tjarutja Lands.’ The survey significantly added to the knowledge of the region’s animal and plant life.¹³³

The Royal Commission recommended that Maralinga should be ‘cleaned up’ with an aim to ‘allow Aborigines access to the test sites without restriction.’¹³⁴ Recommending compensation from the Commonwealth government, the Commission summarised the conditions and restrictions placed on Aboriginal people through forced relocation and the settlements.¹³⁵ As the Commission noted, ‘Aborigines are experts in the everyday reality of their own situation. This reality includes identifiable basic needs...Aboriginal people are able to identify, order and articulate their needs.’¹³⁶ But the onus of the clean-up and on-going monitoring remains firmly with the Commonwealth.

The 1984 Maralinga Lands Act began the long and complex process of returning control of the lands used by the British. The Maralinga Rehabilitation Technical Advisory Committee (MARTAC) 2002 report details the work of the rehabilitation and return,¹³⁷ and a more recent technical report from ARPANSA¹³⁸ updates the on-going dose assessments on the Maralinga lands.¹³⁹

Victim Assistance and Environmental Remediation Obligations in the TPNW and Other International Norms

The Treaty on the Prohibition of Nuclear Weapons (TPNW), adopted at the UN in 2017, frames nuclear weapons as an affront to humanity and acknowledges the humanitarian and environmental harm of use and testing, including the disproportionate impact on women and girls and Indigenous peoples. The International Campaign to Abolish Nuclear Weapons (ICAN), established first in Australia, received the 2017 Nobel Peace Prize for its advocacy to achieve the treaty. However the Australian government boycotted the negotiations on the TPNW in 2017. Australia has refused to sign or ratify the Treaty, officially claiming a reliance on the extended nuclear deterrence from US nuclear force.

In addition to banning nuclear weapons, the TPNW obliges states that join it to address the harm inflicted on people and the environment from nuclear weapons use and testing. Article 6(1) requires affected states parties to assist victims ‘in accordance with applicable international humanitarian and human rights law’, adequately providing ‘age-and gender-sensitive assistance, without discrimination, including medical care, rehabilitation and psychological support’ to survivors and to ‘provide for their social and economic inclusion.’ Article 6(2) requires affected states parties to take ‘necessary and appropriate measures towards the environmental remediation of areas’ contaminated by nuclear weapons use or testing.

In the 2018 Pacific Islands Forum Communiqué, leaders of Pacific states ‘reaffirmed their commitment to addressing the outstanding security threats from nuclear legacy issues, including radioactive contaminants’ and

¹³² J. N. Foulkes & D. S. Thompson. (2008) ‘A Biological Survey of the Maralinga Tjarutja Lands, South Australia, 2001 – 2007.’ South Australia, Department for Environment and Heritage. p. 107.

¹³³ J. N. Foulkes & D. S. Thompson. (2008) ‘A Biological Survey of the Maralinga Tjarutja Lands, South Australia, 2001 – 2007.’ South Australia, Department for Environment and Heritage. v-vi.

¹³⁴ James McClelland. (1985) *The Report of the Royal Commission into British Nuclear Tests in Australia*. Vols. I & II. Canberra, Australian Government Publishing Service. P. 568.

¹³⁵ James McClelland. (1985) *The Report of the Royal Commission into British Nuclear Tests in Australia*. Vols. I & II. Canberra, Australian Government Publishing Service. pp. 564-581.

¹³⁶ James McClelland. (1985) *The Report of the Royal Commission into British Nuclear Tests in Australia*. Vols. I & II. Canberra, Australian Government Publishing Service. p. 573.

¹³⁷ Maralinga Rehabilitation Technical Advisory Committee (MARTAC). (2002) ‘Rehabilitation of former nuclear test sites at Emu and Maralinga 2003.’ Canberra, Department of Education, Science and Training.

¹³⁸ The Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) has oversight of contemporary radiation safety matters, a government agency with the primary authority on radiation protection and nuclear safety in Australia. ARPANSA was established under the Australian Radiation Protection and Nuclear Safety Act 1998. See: Australian Government. (21 October 2016) ‘Australian Radiation Protection and Nuclear Safety Act 1998, No. 133, 1998, Compilation No. 12’, *Commonwealth of Australia*.

¹³⁹ Richard O’Brien, et al. (2011) ‘Maralinga and Oak Valley Dose Assessment – 2011.’ Technical Advice Series 158. Canberra, ARPANSA. pp.1-47.

called ‘on all responsible parties to rectify the ongoing impacts of contaminants in our Ocean to sustain our future generations.’ Pacific leaders ‘directed the Forum Secretariat, in coordination with ... [regional institutions], to further advance national and regional efforts towards a just and final resolution, including through Forum international engagement and advocacy.’ The Communiqué ‘encouraged individual member countries to progress efforts’ toward signature and ratification of the TPNW.¹⁴⁰

The TPNW also encourages the international community to retell the stories of those who have suffered the humanitarian, human rights and environmental impact of nuclear weapons use and testing. The TPNW’s preamble emphasizes ‘the importance of peace and disarmament education ... and of raising awareness of the risks and consequences of nuclear weapons for current and future generations.’ The Treaty particularly recognizes the contributions of ‘the *hibakusha*’ (victims of nuclear weapons) as voices of ‘public conscience.’ It expresses a commitment ‘the dissemination of the principles and norms’ of the TPNW, which in Article 12 obligates states to universalizing the Treaty.

Joining the TPNW entitles affected states to international cooperation and assistance so that they can meet their obligations to help victims and remediate the environment. To ensure that an undue burden is not placed on affected states, Article 7 obliges states parties in a position to do so to provide ‘technical, material and financial assistance to States Parties affected by nuclear-weapons use or testing’ (Article 7(3)). Given the range of types of assistance, all states parties should be able to assist in some way. Such assistance, according to Article 7(5), can be provided through the UN system, ‘international, regional or national’ institutions, bilateral assistance, NGOs or the Red Cross and Red Crescent Movement.

Article 7(6) explicitly requires states parties that have ‘used or tested nuclear weapons or any other nuclear explosive devices’ to contribute to ‘adequate assistance to affected States Parties, for the purpose of victim assistance and environmental remediation.’

The TPNW builds upon other crucial legal instruments on nuclear weapons. Australia is a party to the Treaty of Rarotonga, which established the South Pacific Nuclear Free Zone. The Treaty’s preamble expresses a determination to ‘ensure...that the bounty and beauty of the land and sea in their region shall remain the heritage of their peoples and their descendants in perpetuity to be enjoyed by all in peace’ and ‘to keep the region free of environmental pollution by radioactive wastes and other radioactive matter.’ Australia is also party to and strong advocate for the 1996 Comprehensive Test Ban Treaty (CTBT), which established a global ban on nuclear weapons testing. Australia hosts several CTBTO radionuclide monitoring stations. The CTBT will not enter into force until all states with nuclear technological capacity sign and ratify it. Nevertheless, it has established a global norm against nuclear weapons testing, strengthened by the TPNW.

Also relevant to the situation in Australia is the Convention on Certain Conventional Weapons Protocol V on Explosive Remnants of War (ERW Protocol), which obligates states parties to clear, remove or destroy unexploded ordnance, provide risk education and assist victims (Article 8). Australia is a party to the ERW Protocol.

Finally, residents of Australia are, of course, protected by international human rights norms, including the right to health, the right to a safe, clean, healthy and sustainable environment and the rights of Indigenous peoples. The relevance of such rights to those affected by nuclear testing has been highlighted by the UN Special Rapporteur’s 2012 report on the Marshall Islands¹⁴¹ and the recurring UN General Assembly resolutions on addressing the human and environmental harms to the Semipalatinsk region of Kazakhstan (e.g. A/RES/72/213).

Australia’s Ongoing Complicity with Nuclear Weapons

In the first decades of the Cold War, an Australian nuclear weapon program was under serious consideration.¹⁴² Key political figures in government or associated with the

¹⁴⁰ Pacific Islands Forum. (6 September 2018) ‘Forty-Ninth Pacific Islands Forum: Communiqué.’ <https://foreignminister.gov.au/releases/Pages/2018/mp_mr_180906a.aspx>.

¹⁴¹ Calin Georgescu. (2012) *Report of the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes*, Calin Georgescu. A/HRC/21/48/Add.1. Geneva, United Nations Human Rights Council. <<https://documents-dds-ny.un.org/doc/UNDOC/GEN/G12/163/76/PDF/G1216376.pdf?OpenElement>>.

¹⁴² Lachlan Clohesy & Phillip Deery. (2015) ‘The Prime Minister and the Bomb: John Gorton, W.C. Wentworth and the Quest for an Atomic Australia.’ *Australian Journal of Politics and History*. 61(2). pp. 217-232; Wayne Reynolds. (1997) ‘Menzies and the Proposal for Atomic Weapons.’ In: *Menzies in War and Peace*. Frank Cain (ed.). Canberra: Allen & Unwin. pp. 116-137; Wayne Reynolds. (2000) *Australia’s Bid for the Atomic Bomb*, Carlton, Melbourne University

testing programs advocated for procurement (particularly between 1956-63) or an indigenous capability (in the years between 1964-72).¹⁴³ Fears of a reliance on allies for ongoing security in the midst of what appeared to be an intractable and escalating Cold War drove these considerations. Both horizontal and vertical proliferation fears also played a part. France and China had joined the 'nuclear club' in 1960 and 1964, increasing the number of nuclear weapon states to five. After the signing of the 1963 Partial Test Ban Treaty, negotiations had begun in earnest towards the Nuclear Non-Proliferation Treaty (NPT), which threatened any ability for the development of an indigenous capacity.¹⁴⁴ The Gorton government gave serious consideration to an 'Australian Bomb' between 1968-1970 when programs such as Atoms for Peace and the construction of a natural uranium reactor was firmly on the national agenda and masked the ambition for a weapon capability.¹⁴⁵ Despite its initial reluctance,¹⁴⁶ however, Australia signed the NPT in 1970, and ratified in 1973 as one of the earliest acts of the Whitlam government.¹⁴⁷

In 1951, Australia, New Zealand and the United States signed the ANZUS Treaty. ANZUS was conceived in response to a realignment of post-WWII security relationships and in the context of a then heavily colonised Pacific. The Treaty claims an obligation to 'act to meet the common danger in accordance with its constitutional processes' in the event of 'an armed attack in the Pacific Area on any of the Parties'.¹⁴⁸ In addition, successive

Australian governments have claimed an extended nuclear deterrence (END) arrangement with the United States. Throughout its history, the Treaty has only ever been invoked once – in the wake of the 9/11 attacks on the United States when Australian Prime Minister John Howard announced, 'The Government has decided, in consultation with the United States, that Article IV of the ANZUS Treaty applies to the terrorist attacks on the United States'.¹⁴⁹

ANZUS does not mention nuclear weapons, nor does it define the obligation to 'act.' In addition, there exists no explicit open agreement between the US and Australia on such arrangements within or outside of ANZUS.¹⁵⁰ Such ambiguity has been at the centre of debates around Australian claims to extended nuclear deterrence from the United States. Researchers Monique Cormier and Anna Hood found that while modern interpretations may consider END flowing from ANZUS obligations,¹⁵¹ this may be breach of other legal obligations. In particular, Australia is party to the South Pacific Nuclear Free Zone Treaty and has NPT obligations to pursue nuclear disarmament 'in good faith' (Article 6).¹⁵² Cormier and Hood argue note that 'Australia could declare that it was abandoning its policy of relying on US nuclear protection without breaching the treaty'.¹⁵³

Press; Mick Broderick. (2014) 'Proliferation Down Under: Turning Australia's Atoms for Peace into Weapons for War.' *Asian Journal of Peacebuilding* Vol. 2 No. 1. pp. 1-15; Jim Walsh. (Fall 1997) 'Surprise Down Under: The secret history of Australia's nuclear ambitions.' *Nonproliferation Review*. 5(1). pp. 1-20; Jacques E.C. Hymans. (Spring 2000) 'Isotopes and Identity: Australia and the nuclear weapons option, 1949-1999.' *Nonproliferation Review*. 7(1). pp. 1-23;

¹⁴³ Mick Broderick. (2014) 'Proliferation Down Under: Turning Australia's Atoms for Peace into Weapons for War.' *Asian Journal of Peacebuilding*. 2(1). p. 3; Jim Walsh. (Fall 1997) 'Surprise Down Under: The secret history of Australia's nuclear ambitions.' *Nonproliferation Review*. 5(1). pp. 1-20.

¹⁴⁴ Wayne Reynolds & David Lee (Eds.) (2013) *Australia and the Nuclear Non-Proliferation Treaty 1945-1974*. Canberra, Australian Department of Foreign Affairs and Trade. p. xxiv.

¹⁴⁵ Mick Broderick. (2014) 'Proliferation Down Under: Turning Australia's Atoms for Peace into Weapons for War.' *Asian Journal of Peacebuilding*. 2(1). p. 9.

¹⁴⁶ Wayne Reynolds & David Lee (Eds.) (2013) *Australia and the Nuclear Non-Proliferation Treaty 1945-1974*. Canberra, Australian Department of Foreign Affairs and Trade. pp. xxxviii – xlv.

¹⁴⁷ Wayne Reynolds & David Lee (Eds.) (2013) *Australia and the Nuclear Non-Proliferation Treaty 1945-1974*. Canberra, Australian Department of Foreign Affairs and Trade. p. xlix.

¹⁴⁸ Australasian Legal Information Institute (AustLII). (1997). 'ANZUS Security Treaty between Australia, New Zealand and the United States of America [ANZUS](entry into force: 1952)' Article IV. <www.austlii.edu.au/au/other/dfat/treaties/1952/2.html>.

¹⁴⁹ John Howard, 'Application of the ANZUS Treaty to Terrorist Attacks on the United States' media release from the Australian Prime Minister, 14 September, 2001.

<http://parlinfo.aph.gov.au/parlInfo/download/media/pressrel/YFY46/upload_binary/yfy462.pdf;fileType=application%2Fpdf#search=%22media/pressrel/YFY46%22>.

¹⁵⁰ Aotearoa New Zealand declared its territory a nuclear-free zone in 1984.¹⁵⁰ In response and in the face of sustained and vocal opposition to US nuclear ship and submarine visits, the US severed their obligations to New Zealand through the ANZUS Treaty.

¹⁵¹ Australasian Legal Information Institute (AustLII). (1997). 'ANZUS Security Treaty between Australia, New Zealand and the United States of America [ANZUS](entry into force: 1952)' <www.austlii.edu.au/au/other/dfat/treaties/1952/2.html>.

¹⁵² Monique Cormier & Anna Hood. (2017). 'Australia's Reliance on US Extended Nuclear Deterrence and International Law.' *Journal of International Law and International Relations*. 13 (2). pp. 46-47.

¹⁵³ Monique Cormier & Anna Hood. (2017). 'Australia's Reliance on US Extended Nuclear Deterrence and International Law.' *Journal of International Law and International Relations*. 13 (2). p25



Figure 11: The late Bill Williams, co-founder of the International Campaign to Abolish Nuclear Weapons (ICAN). Photo: Adam Dempsey/ICAN Australia.

While official Defence White Papers published since 1994 by the Australian government have made claim to END,¹⁵⁴ these claims are contested due to a notable ambiguity from the US government. There are no formal, transparent agreements open to public scrutiny in relation to the extension of US nuclear force to Australia. Debates around the origins, scope, reciprocal costs, and the credibility of END policies in Australia continue.

In recent years claims to END have provided a context for the Australian governments' reticence towards the TPNW. The Department of Foreign Affairs and Trade (DFAT)

claimed in May 2018 that, 'Australia relies on both the nuclear and conventional capabilities of the United States for its security.'¹⁵⁵ The Australian government claims, 'it would be impossible for Australia to restrict cooperation with the United States to non-nuclear missions, as required by the ban treaty, without significant repercussions for the Alliance, the nature of ongoing US commitment and Australia's national security.'¹⁵⁶ Acceptance of this rationale arguably impedes Australian government engagement with UN-based resolutions, conferences and other multilateral initiatives around advancing nuclear disarmament.¹⁵⁷ However, research by the International Human Rights

¹⁵⁴ Dimity Hawkins. (2015) 'The Stark Reality: nuclear weapons and the changing nature of deterrence in Australian politics.' Unpublished Honours Thesis. Melbourne, *Swinburne University*.

¹⁵⁵ Marise Payne. (31 May 2018) 'Reply to a question on notice from Senator Wong: Question on Notice No. 11, Portfolio question number 11.' 2018-19 Senate estimates, Foreign Affairs, Defence and Trade Legislation Committee Hearings. *Australian Hansard*. <https://www.aph.gov.au/Parliamentary_Business/Senate_Estimates/fadt>.

¹⁵⁶ Marise Payne. (31 May 2018) 'Reply to a question on notice from Senator Wong: Question on Notice No. 11, Portfolio question number 11.' 2018-19 Senate estimates, Foreign Affairs, Defence and Trade Legislation Committee Hearings. *Australian Hansard*. <https://www.aph.gov.au/Parliamentary_Business/Senate_Estimates/fadt>.

¹⁵⁷ Tim Wright. (March 2014) 'Undermining Disarmament: the Australian way.' *ICAN Australia Briefing Paper*. <www.icanw.org/wp-content/uploads/2014/03/UnderminingDisarmament-March2014.pdf>.



Figure 12: Australian activists from the International Campaign to Abolish Nuclear Weapons (ICAN) present a copy of the 2017 Treaty on the Prohibition of Nuclear Weapons to Australian Parliament in Canberra, following a 900km bike ride across the country. Photo: Martin Ollman.

Clinic of Harvard Law School has demonstrated that accession by US allies to the TPNW need not preclude or hinder existing non-nuclear defense cooperation.¹⁵⁸

Australian Capacities for Addressing Harm from Nuclear Weapons

Australia's nuclear veterans, from the troops in Japan through to those exposed during the British nuclear weapon tests and minor trials have been vocal and active in seeking recognition of the harm caused in their line of duty. Systematic failures have marked official policy responses in the past. For an aging and ever decreasing cohort of first-generation victims, recent inclusion of a broader definition of 'nuclear test participant' for veteran health care goes some small way to redress on-going problems. Though not compensation, the obligation to care for victims – such as with increased access to healthcare - must be a priority for Australia. In addition, increasing evidence of intergenerational impacts will need to be monitored more closely as second and third

generation survivors demonstrate signs of harm. The intergenerational health impacts of nuclear weapons pose unique challenges due to the 'geographical and temporal scope of harm.'¹⁵⁹

Civil society organisations in Australia have had a long and sustained influence on nuclear issues. From the earliest days of nuclear testing, there were protest movements around nuclear weapons testing and development, evident through the activism of churches, unions, student movements, environment, social justice and Aboriginal rights organisations. Nuclear veteran associations have consistently spoken out about the impacts on their members, advocating for recognition, health monitoring and compensation.¹⁶⁰ National organisations such as Friends of the Earth and the Australian Conservation Foundation have maintained campaigns on nuclear free issues – from nuclear disarmament, to nuclear waste dumping and uranium mining – for decades. The Australian Red Cross was instrumental in the pivotal 2011 Red Cross resolution calling for a 'legally-binding

¹⁵⁸ Bonnie Docherty. (7 June 2018) 'New Clinic Reports Call on NATO Members, Sweden to Join Nuclear Weapon Ban Treaty.' *Human Rights@Harvard Law*. <<http://hrp.law.harvard.edu/staff/clinic-calls-on-nato-members-sweden-to-join-nuclear-weapon-ban-treaty/>>.

¹⁵⁹ Bonnie Docherty. (10 April 2018) *Environmental Remediation Under the Treaty on the Prohibition of Nuclear Weapons*. Cambridge, International Human Rights Clinic, Harvard Law School. p. 4.

¹⁶⁰ See, for example: Nuclear Veterans Association <<http://anva.org.au>> and Atomic Vets <www.atomicvets.org.au>

instrument' to prohibit nuclear weapons.¹⁶¹ There are also many smaller local or state based environmental and social justice organisations, often in coalition with other groups and affected communities, which take up local issues.¹⁶² The Australian Nuclear Free Alliance (ANFA) began in 1997 providing a forum for 'Aboriginal people and relevant civil society groups concerned about existing or proposed nuclear developments in Australia, particularly on Aboriginal homelands.'¹⁶³

The Australian affiliate of the International Physicians for the Prevention of Nuclear War (IPPNW), Medical Association for Prevention of War (MAPW), has led national advocacy on nuclear disarmament since the 1980s and was pivotal in the formation of the International Campaign to Abolish Nuclear Weapons (ICAN).

ICAN was first established in Melbourne, Australia, opening an office in 2006 ahead of the international launch of the campaign in 2007.¹⁶⁴ ICAN has worked consistently to build an extensive network of partner organizations across the world,¹⁶⁵ but also particularly in the Pacific region, building on the long running Nuclear Free and Independent Pacific (NFIP) movement. Civil society activists from Australia, Fiji, the Marshall Islands, French Polynesia and Aotearoa New Zealand addressed the humanitarian conferences in the lead up to the Treaty negotiations, as well as the final negotiations in 2017. Central to the work of the Australian ICAN has been 'to

include and provide a platform for the courageous voices of survivors of nuclear weapons use and testing.'¹⁶⁶ ICAN was awarded the 2017 Nobel Peace Prize for its advocacy on the TPNW.

Art has played a significant role in raising Australians' awareness of nuclear issues. The bombings of Hiroshima and Nagasaki captured Australian artists for generations – from significant visual artists such as Albert Tucker (who as a war artist visited Hiroshima¹⁶⁷) to poster artists in the 1980s such as Pam Debenham.¹⁶⁸ Musicians and artists have continued to explore the Australian nuclear story too.¹⁶⁹ Artworks depicting uranium mining,¹⁷⁰ strontium-90,¹⁷¹ the nuclear tests,¹⁷² and other nuclear age issues can be found in state and national galleries. In 2016 the launch of the exhibition *Black Mist Burnt Country*¹⁷³ brought together artworks from contemporary and older artists to tour Australia. Initiatives such as the *Nuclear Futures* project¹⁷⁴ generated works and collaborated broadly across Australia to retell the stories. These community projects play an important role in Australia's cultural education, and offer ways to commemorate, memorialise and pay tribute to the victims and survivors of the nuclear harm in Australia.

Civil society organisations, survivor groups and governments across Australia will need to collaborate and consult to consider forms of 'effective remedy' for victims of nuclear weapons testing. There is significant work to be

¹⁶¹ The Australian Red Cross. (1914-current) < <https://www.redcross.org.au/get-involved/take-action/take-action-on-an-issue/what-is-international-humanitarian-law/nuclear-weapons/australian-red-cross-and-nuclear-weapons>>; International Committee of the Red Cross. (2011) 'Working towards the elimination of nuclear weapons' Council of Delegates 2011: Resolution 1 <<https://www.icrc.org/eng/resources/documents/resolution/council-delegates-resolution-1-2011.htm>>

¹⁶² See for example the No Dump Alliance <www.nodumpalliance.org.au>. For a historical example, read about the the Kupa Piti Kungka Tjuta Women's Group of South Australia (1998-2004): Nina Brown and Samantha Sowerwine. (2004) 'Irati Wanti: Senior Aboriginal Women Fight a Nuclear Waste Dump,' *Indigenous Law Bulletin* 6:11. <<http://www.austlii.edu.au/au/journals/ILB/2004/23.html>>

¹⁶³ Australian Nuclear Free Alliance (ANFA). (2018) 'About Us.' <<https://www.anfa.org.au/about/>>

¹⁶⁴ Tilman Ruff & Dimity Hawkins. (9 October 2017) 'How Melbourne activists launched a campaign for nuclear disarmament and won a Nobel prize.' *The Conversation*. <theconversation.com/how-melbourne-activists-launched-a-campaign-for-nuclear-disarmament-and-won-a-nobel-prize-85386>.

¹⁶⁵ See the Australian and Pacific partner organisations in ICAN here: <www.icanw.org/campaign/partner-organizations/#australia>.

¹⁶⁶ Tilman Ruff & Dimity Hawkins. (9 October 2017) 'How Melbourne activists launched a campaign for nuclear disarmament and won a Nobel prize.' *The Conversation*. <theconversation.com/how-melbourne-activists-launched-a-campaign-for-nuclear-disarmament-and-won-a-nobel-prize-85386>.

¹⁶⁷ Albert Tucker. (1947) 'Hiroshima, 40 years.' Watercolour painting in the collection of the Australian War Memorial <<https://www.awm.gov.au/index.php/collection/C188224>>.

¹⁶⁸ Pam Debenham. (1985) 'Hiroshima, 40 years.' Poster in the collection of the Australian War Memorial <<https://www.awm.gov.au/collection/C261677>>.

¹⁶⁹ Mick Broderick. (2016) 'Atomic Pop.' In J.D. Mittmann (Ed.). *Black Mist Burnt Country*. Upwey Vic.: Burrinja. pp. 66-77.

¹⁷⁰ Max Ragless. (August 1945) 'The uranium mine: Mt Painter.' Artwork in the collection of the Australian War Memorial <<https://www.awm.gov.au/collection/C177243>>

¹⁷¹ Noel Counihan. (1959) 'Strontium 90' linocut. Held in the National Gallery of Victoria. <<https://www.ngv.vic.gov.au/explore/collection/work/22539/>>

¹⁷² Yhonnie Scarce. (2015) 'Thunder Raining Poison' Glass artwork in Defying Empire exhibition, National Gallery of Australia. <<https://nga.gov.au/defyingempire/artists.cfm?artistirn=42884>>

¹⁷³ Black Mist, Burnt Country. (2016) Traveling multimedia exhibition, Australia. <blackmistburntcountry.com.au>.

¹⁷⁴ Nuclear Futures Project. (2014-2016) A three-year art project which supported 'artists working with atomic survivor communities, to bear witness to the legacies of the atomic age through creative arts.' <<http://nuclearfutures.org/about/>>.

done in reversing the foreign and defence policies in Australia on extended nuclear deterrence. Such a claim to reliance on the nuclear weapons capacity of the United States provides a significant policy block to effective action on nuclear disarmament. As veterans and first-generation civilian survivor numbers are dwindling, there is an urgency to acknowledge and apologize for the harms they suffered. Academic and author Elizabeth Tynan summarises, ‘The secrecy put in place at the atomic test sites, shored up by the imposition of information controls such as D-notices that deliberately fostered media self-censorship, enabled experiments of unprecedented risk to be conducted without public consent and their aftermath to be left unaddressed for years.’¹⁷⁵

There is a need for a revision of past investigations so that a more thorough understanding of the impact of the nuclear tests can be reached and victim assistance and environmental remediation directed to the areas most affected.

Recommended Action

Given the ongoing humanitarian, human rights and environmental concerns resulting from the British nuclear tests in Australia and at Kiritimati and Malden Islands, as well as American tests in the Marshall Islands, Kiritimati and Malden Islands and Johnston Atoll, and the French nuclear tests at Moruroa and Fangataufa Atolls, Australia should:

- 1) *Sign and **RATIFY** the Treaty on the Prohibition of Nuclear Weapons and other relevant instruments:*
 - a. Australia should sign and ratify the Treaty on the Prohibition of Nuclear Weapons (TPNW);
 - b. Civil society, faith institutions and parliamentarians in the UK, USA and France should pressure their governments to bring their nuclear disarmament policies into closer alignment with the norms established by the TPNW;
 - c. Regional institutions like the Pacific Island Forum should promote regional accession to the TPNW, such as through the development of model ratification legislation;
 - d. Australia should continue to work toward entry into force of the Comprehensive Test Ban Treaty (CTBT).
- 2) *Assess and **RESPOND** to the multigenerational humanitarian needs of survivors, especially those from the Australian nuclear test grounds:*
 - a. Australia should comprehensively assess, monitor and respond to the multigenerational humanitarian needs of survivors of nuclear weapon use and testing, without discrimination;
 - b. Victim assistance should include but not be limited to: healthcare provision, psycho-social support, socio-economic inclusion, support for victim’s advocacy associations, risk education;
 - c. Assistance should especially be targeted to underserved communities, particularly Indigenous communities impacted by nuclear testing, uranium mining and other nuclear projects;
 - d. Government agencies, multilateral organisations, the Red Cross and Red Crescent Movement, religious organisations, civil society and academic institutions should provide international cooperation and assistance to help affected states, particularly those within the Pacific region, to provide victim assistance;
 - e. Regional institutions such as the Pacific Island Forum should promote regional approaches to assisting victims of nuclear testing;
 - f. All governments – including Australia and the UK which participated in nuclear weapons testing – should acknowledge their special responsibility to support victim assistance in nuclear-affected countries.
- 3) *Survey and **REMEDiate** contaminated environments:*
 - a. Government agencies, multilateral organisations, civil society and academic institutions should provide international cooperation and assistance to help countries affected by nuclear weapons use and testing to survey and remediate contaminated environments;
 - b. Regional institutions such as the Pacific Island Forum and Pacific Regional Environment Program should promote regional approaches to assessing and remediating environments affected by nuclear testing;
 - c. The governments that participated in the nuclear weapons use and testing, including Australia, should acknowledge their special responsibility to support environmental remediation.
 - d. The governments of Australia, the UK and New Zealand – which participated in the tests – should

¹⁷⁵ Elizabeth Tynan. (2016) *Atomic Thunder: The Maralinga Story*. Sydney, NewSouth Publishing. p. 310

acknowledge their especial responsibility to support environmental remediation in Australia.

4) **RESPECT**, *protect and fulfil the human rights of nuclear test survivors:*

- a. Australia should implement 'effective remedy' of the harm to the human rights of victims of the nuclear tests, through measures including, but not limited to, investigation, opening of archives, provision of information, acknowledgement, apology, memorialization, commemoration, paying tribute to victims, assistance to victims, guarantee of non-repetition and reparation.¹⁷⁶ Special attention should be paid to the relevance of the rights of Indigenous peoples, including indigenous practices of remedy. Care should be taken to ensure non-discrimination in access to victim assistance.
- b. States should question Australia on their measure to guarantee the human rights of nuclear weapon test victims during the Universal Periodic Reviews in the United Nations Human Rights Council;
- c. Government agencies, multilateral organizations, the Red Cross and Red Crescent Movement, academic institutions, religious organizations and civil society should provide international cooperation and assistance to help guarantee the human rights of nuclear test survivors. This should include support for the human rights advocacy of survivor and test veteran associations, as well as nuclear disarmament networks like ICAN;
- d. Regional institutions such as the Pacific Island Forum should promote regional approaches to guaranteeing the rights of the victims of nuclear testing;
- e. The governments that participated in nuclear weapons use and testing, including Australia, should acknowledge their special responsibility to remedy the human rights harm caused by nuclear weapons.

5) **RETELL** *the stories of the humanitarian and environmental impact of the tests:*

- a. Australia should open independent official inquiries to investigate the humanitarian, human rights and environmental harm caused by the

nuclear weapons use and testing. They should declassify and make publicly available archives and official documentation related to the testing programs and monitoring programs;

- b. Australia should support mechanisms of radiation risk education, particularly in affected communities;
- c. Academia, journalists, civil society and survivors' associations should record and disseminate the testimony of victims of nuclear weapons use and testing. They should facilitate the participation of survivors in global nuclear disarmament policymaking;
- d. Government agencies, multilateral organisations, the Red Cross and Red Crescent Movement, academic institutions, news media, religious organisations and civil society should provide international cooperation and assistance for disarmament education and radiation risk education, particularly to amplify survivors' voices;
- e. Regional institutions such as the Pacific Islands Forum should promote regional approaches to disarmament education and radiation risk education;
- f. Community art and education projects should be funded to help promote the retelling of survivor stories, disarmament and radiation risk education;
- g. The governments that participated in nuclear weapons use and testing, including Australia, should acknowledge their special responsibility to amplify the voices of survivors of nuclear weapons use and testing.

Further Reading

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¹⁷⁶ For a summary of international norms on 'effective remedy', see: UN General Assembly. (2005) 'Basic Principles and Guidelines on the Right to a Remedy and Reparation for Victims of Gross Violations of International Human Rights Law and Serious Violations of International Humanitarian Law.' A/RES/60/147. <<http://www.ohchr.org/EN/ProfessionalInterest/Pages/RemedyAndReparation.aspx>>.

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Points of Contact

International Campaign to Abolish Nuclear Weapons (ICAN). Web: <http://www.icanw.org/>; Email: info@icanw.org; Phone: +41 22 788 20 63; Twitter: @nuclearban

ICAN Australia. Web: <http://www.icanw.org/au>; Twitter: @ican_australia

Friends of the Earth (FoE) Australia. Web: <https://nuclear.foe.org.au>; Twitter: @FoEAustralia and @NuclearFreeAus

Australian Conservation Foundation. Web: http://www.acf.org.au/nuclear_free; Twitter: @AusConservation

Medical Association for the Prevention of War (MAPW). Web: <http://www.mapw.org.au>; Twitter: @MAPW_Australia

Australian Nuclear Free Alliance (ANFA). Web: <http://www.anfa.org.au>; Email: anfacomment@gmail.com

Beyond Nuclear Initiative (BNI). Web: <http://www.beyondnuclearinitiative.com>; Twitter: @BeyondNuclearOz

Gundjeihmi Aboriginal Corporation (GAC). Web: <http://www.mirarr.net>; Email: gundjeihmi@mirarr.net; Twitter: @MirrarCountry

Nuclear Veterans Association. Web: <http://anva.org.au>

Atomic Vets. Web: <http://www.atomicvets.org.au>

Maralinga Tjarutja Community. Web: <http://maralingatjarutja.com>

Yalata Community. Web: <http://www.yalata.org>

Pacific Conference of Churches. Web: <https://pacificconferenceofchurches.org/>; Phone: +679 3311277

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Annex 1: Nuclear Test Explosions in Australia

Figures from ARPANSA. (n.d.) 'British nuclear weapons testing in Australia.' <www.arpansa.gov.au/understanding-radiation/sources-radiation/more-radiation-sources/british-nuclear-weapons-testing>. Note: the yield figures are recorded with some discrepancy in other sources, such as the 2003 *Report of Veterans Entitlements* or the figures given in the 1985 Royal Commission report. Additional details from: William Robert Johnston. (2006) 'Database of nuclear tests, United Kingdom.' <<http://www.johnstonsarchive.net/nuclear/tests/UK-ntests1.html>>.

Shot	Location	Date	Type of Nuclear Test	Estimated Yield (Kilotons)
Hurricane	Monte Bello	3 October 1952	Atmospheric, water surface, barge	25
Totem 1	Emu Field	15 October 1953	Atmospheric, tower	9.1
Totem 2	Emu Field	27 October 1953	Atmospheric, tower	7.1
Mosaic 1	Monte Bello	16 May 1956	Atmospheric, tower	16
Mosaic 2	Monte Bello	19 June 1956	Atmospheric, tower	98
Buffalo R1/ One Tree	Maralinga	27 September 1956	Atmospheric, tower	12.9
Buffalo 2/ Marcoo	Maralinga	4 October 1956	Atmospheric, surface	1.4
Buffalo 3/Kite	Maralinga	11 October 1956	Atmospheric, airdrop	2.9
Buffalo 4/ Breakaway	Maralinga	22 October 1956	Atmospheric, tower	10.8
Antler 1/Tadje	Maralinga	14 September 1957	Atmospheric, tower	0.93
Antler 2/Biak	Maralinga	25 September 1957	Atmospheric, tower	5.7
Antler 3/ Taranaki	Maralinga	9 October 1957	Atmospheric, balloon	26.5

Annex 2: Australian Nuclear and Uranium Sites

Australian Nuclear and Uranium Sites map, version 2017, australianmap.net

