Report 184

*Nuclear Cooperation UK*

Joint Standing Committee on Treaties
© Commonwealth of Australia

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Executive summary

The Australian Government has an export policy for Australian nuclear materials that permits Australian nuclear materials to be used only for peaceful purposes, that ensures safe and secure storage of Australian nuclear materials, and imposes an accounting framework to ensure that Australian nuclear materials are always subject to Australian standards.

The United Kingdom (UK) will leave the European Union (EU) on 29 March 2019. Subject to final agreement between the UK and EU, a transition period during which the UK will be subject to EU laws may apply up to 31 December 2020.

According to the Australian Government, a new nuclear cooperation agreement with the UK is necessary to enable the uninterrupted transfer of Australian uranium to the UK and to maintain smooth commercial operations for Australian mining companies.

That agreement is the Agreement between the Government of Australia and the Government of the United Kingdom of Great Britain and Northern Ireland on Cooperation in the Peaceful Uses of Nuclear Energy (the proposed Agreement).

The proposed Agreement will ensure that Australian nuclear safety standards continue to apply to Australian nuclear materials in the UK post Brexit.

The UK and Australia have an extensive history of nuclear cooperation, and the UK has a reputation for supporting non-proliferation of nuclear weapons. The UK also has an established and expanding civilian nuclear industry.

The Committee believes that the Australia-UK Nuclear Cooperation Agreement is in Australia’s interest and recommends that binding treaty action be taken.
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<td>Australian Safety and Non-Proliferation Office</td>
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<td>Euratom</td>
<td>European Atomic Energy Community</td>
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<tr>
<td>IAEA</td>
<td>International Atomic Energy Agency</td>
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<tr>
<td>MCA</td>
<td>Minerals Council of Australia</td>
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<tr>
<td>MWh</td>
<td>megawatts an hour</td>
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<td>NIA</td>
<td>National Interest Analysis</td>
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<td>ONR</td>
<td>Office of Nuclear Regulation</td>
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Members

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Terms of Reference

The Resolution of Appointment of the Joint Standing Committee on Treaties allows it to inquire into and report on:

- matters arising from treaties and related National Interest Analyses and proposed treaty actions and related Explanatory Statements presented or deemed to be presented to the Parliament;
- any question relating to a treaty or other international instrument, whether or not negotiated to completion, referred to the committee by:
  - either House of the Parliament, or
  - a Minister; and
  - such other matters as may be referred to the committee by the Minister for Foreign Affairs and on such conditions as the Minister may prescribe.
List of Recommendations

Recommendation 1

2.61 The Committee supports the Agreement between the Government of Australia and the Government of the United Kingdom of Great Britain and Northern Ireland on Cooperation in the Peaceful Uses of Nuclear Energy and recommends that binding treaty action be taken.
1. Introduction

1.1 This report contains the Joint Standing Committee on Treaties’ review of the following treaty action:


1.2 The Committee’s resolution of appointment empowers it to inquire into any treaty to which Australia has become a signatory, on the treaty being tabled in Parliament.

1.3 The treaties, and matters arising from them, are evaluated to ensure that ratification is in the national interest, and that unintended or negative effects on Australia will not arise.

1.4 Prior to tabling, major treaty actions are subject to a National Interest Analysis (NIA), prepared by Government. This document considers arguments for and against the treaty, outlines the treaty obligations and any regulatory or financial implications, and reports the results of consultations undertaken with State and Territory Governments, Federal and State and Territory agencies, and with industry or non-government organisations.

1.5 A Regulation Impact Statement (RIS) may accompany the NIA. The RIS provides an account of the regulatory impact of the treaty action where adoption of the treaty will involve a change in the regulatory environment for Australian business. The treaty action examined in this report did not require a RIS.

1.6 The Committee takes account of these documents in its examination of the treaty text, in addition to other evidence taken during the inquiry program.
1.7 A copy of the treaty considered in this report and the associated documentation may be obtained from the Committee Secretariat or accessed through the Committee’s website at:


**Conduct of the Committee’s review**

1.8 The treaty action reviewed in this report was advertised on the Committee’s website from the date of tabling. Submissions for the treaty action were requested by 6 October 2018. Three submissions were received for the inquiry.

1.9 The Committee held a public hearing into the treaty action in Canberra on 15 October 2018. The transcript of evidence from the public hearing may be obtained from the Committee Secretariat or accessed through the Committee’s website as listed above.

1.10 A list of submissions received for the inquiry is at Appendix A. A list of witnesses who appeared at the public hearing is at Appendix B.
2. Australia-UK Nuclear Cooperation Agreement

Agreement between the Government of Australia and the Government of the United Kingdom of Great Britain and Northern Ireland on Cooperation in the Peaceful Uses of Nuclear Energy

Background

2.1 The Agreement between the Government of Australia and the Government of the United Kingdom of Great Britain and Northern Ireland on Cooperation in the Peaceful Uses of Nuclear Energy (the proposed Agreement) covers nuclear cooperation between Australia and the United Kingdom (UK).¹

2.2 The Agreement is necessary because the UK’s exit from the EU will result in the exit of the UK from the European Atomic Energy Community (Euratom).²


² Euratom is the body responsible for the peaceful use of nuclear materials in the EU.
2.3 According to the Minerals Council of Australia (MCA), the UK operates 15 civilian nuclear power plants, which provide 20 per cent of the electrical needs of the UK.³

2.4 In addition, the UK is heavily investing in new generating capacity, with three new nuclear power plants under development.⁴

2.5 The UK holds almost a third of the Australian nuclear material in the European Union (EU).⁵

**Brexit and Euratom**

2.6 The UK will leave the EU on 29 March 2019. Subject to final agreement between the UK and EU, a transition period during which the UK will be subject to EU laws may apply up to 31 December 2020.⁶

2.7 In other words, the *Agreement between the Government of Australia and the European Atomic Energy Community for Cooperation in the Peaceful uses of Nuclear Energy* (2011) will cease to apply to Australian nuclear materials in the UK once it formally withdraws from the EU and Euratom.⁷

2.8 Australia and the UK are also party to an older nuclear cooperation agreement, which predates the UK’s entry into Euratom. This is the *Agreement between the Government of Australia and the Government of the United Kingdom of Great Britain and Northern Ireland concerning Nuclear Transfers between Australia and the United Kingdom*, which came into force in 1979 (the 1979 Australia–UK Agreement).⁸

2.9 According to Article III of the proposed Agreement, some nuclear material, equipment and technology in the UK is still covered by the 1979 Australia–UK Agreement.⁹

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³ Minerals Council of Australia (MCA), *Submission 1*, p. 2.
⁴ MCA, *Submission 1*, p. 2.
⁵ NIA, para 10.
⁶ NIA, para 5.
⁷ NIA, para 3.
⁸ NIA, para 3.
2.10 The 1979 Australia–UK Agreement will also terminate on entry into force of the proposed Agreement.\textsuperscript{10}

2.11 The proposed Agreement will supplant both the Euratom Agreement and the 1979 Australia–UK Agreement.

2.12 According to the National Interest Analysis (NIA):

To enable the uninterrupted transfer of Australian uranium to the UK and to maintain smooth commercial operations for Australian mining companies, it is imperative to facilitate continued cooperation with the UK under the proposed Agreement.\textsuperscript{11}

2.13 In addition to maintaining strict safeguards and security arrangements concerning Australian nuclear material in the UK, the Australian Government considers that the proposed Agreement would provide clear economic benefits to Australia.\textsuperscript{12}

2.14 According to Dr John Kalish, Acting Director General of the Australian Safety and Non-Proliferation Office (ASNO), this is the first of three new bilateral treaties Australia is negotiating with the UK to ensure that there are no legal gaps resulting from Brexit. Treaties relating to trade in wine and the mutual recognition of conformity assessments are expected to be tabled in the coming months.\textsuperscript{13}

**Nuclear safety and security post Brexit**

2.15 During the public hearing on 15 October 2018, Committee members expressed concern that the UK’s exit from Euratom may result in some diminution of the UK’s ability to guarantee the safety and security of Australian nuclear material.

2.16 In relation to the security of Australian nuclear materials, Dr Kalish advised that the UK:

...[has] a relatively mature physical protection regime in place...\textsuperscript{14}

\textsuperscript{10} NIA, para 3.

\textsuperscript{11} NIA, para 11.

\textsuperscript{12} NIA, para 11.

\textsuperscript{13} Dr John Kalish, Acting Director General, Australian Safeguards and Non-Proliferation Office (ASNO), Department of Foreign Affairs and Trade (DFAT), *Committee Hansard*, Canberra, 15 October 2018, p. 1.

\textsuperscript{14} Dr Kalish, ASNO, *Committee Hansard*, Canberra, 15 October 2018, p. 4.
2.17 Nuclear security in the UK is the responsibility of the Office of Nuclear Regulation (ONR), established in 2014. This organisation replaced previous arrangements dating back to 1956.\(^{15}\)

2.18 In relation to nuclear safeguards, the ONR is working with the UK Department of Business, Energy and Industrial Strategy and Euratom to develop a UK State System of Accountability and Control of Nuclear Materials. According to the ONR, it has some ongoing capacity in this area, and in addition is in the process of recruiting and training new staff. The ONR reports that:

The UK exit from the Euratom treaty has had limited impact on the delivery of our current safeguards role…\(^{16}\)

2.19 Dr Kalish confirmed that the ONR has hired new staff and is working to be ‘up to speed’ in relation to nuclear safeguards.\(^{17}\)

2.20 To cement these arrangements, the UK has established a domestic nuclear safeguards regime under the *Nuclear Safeguards Act 2018* (UK).\(^{18}\)

**International Atomic Energy Agency safeguards**

2.21 The UK is currently covered by the UK–Euratom–International Atomic Energy Agency (IAEA) Safeguards Agreement and Additional Protocol. These instruments will cease to apply to the UK when it withdraws from Euratom.\(^{19}\)

2.22 In anticipation of this event, the UK has negotiated and signed a UK–IAEA Safeguards Agreement and Additional Protocol, called the *Agreement between the United Kingdom of Great Britain and Northern Ireland and the International Atomic Energy Agency for the Application of Safeguards in the United Kingdom of Great Britain and Northern Ireland in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons*. The UK–IAEA Safeguards...
Agreement and Additional Protocol are required to be in place before Australia can ratify the proposed Agreement.\textsuperscript{20}

**Australian nuclear materials policy**

2.23 The Australian Government has an export policy for Australian nuclear materials that limits supply of Australian nuclear materials to countries with which Australia has a nuclear cooperation agreement, and which have a Safeguards Agreement and Additional Protocol in place with the IAEA.\textsuperscript{21}

2.24 According to the NIA, all of Australia’s nuclear cooperation agreements provide for stringent safeguards and security arrangements designed to ensure Australian nuclear materials are used exclusively for peaceful purposes. Australia’s strict conditions apply to a significant proportion of nuclear materials in peaceful use worldwide, and so contribute to raising overall standards for the peaceful use of nuclear materials.\textsuperscript{22}

2.25 The proposed Agreement is modelled closely on Australia’s other bilateral nuclear cooperation agreements with nuclear weapons states. It largely mirrors the obligations contained in the Australia–Euratom Agreement and contains modernised versions of the provisions in the 1979 Australia–UK Agreement.\textsuperscript{23}

**The proposed Agreement**

2.26 Australia’s bilateral nuclear cooperation agreements are designed to provide assurance that Australian nuclear material is used solely for peaceful purposes and is not diverted to nuclear weapons or other military uses.\textsuperscript{24}

2.27 The definition of ‘military purpose’ is not limited to use in the manufacture of nuclear weapons. It also includes military nuclear propulsion, munitions including depleted uranium, military nuclear rocket engines, or military nuclear reactors. It does not include the provision of power to a military base drawn from a civilian network or the production of radioisotopes that may be used in military hospitals.\textsuperscript{25}

\textsuperscript{20} The proposed Agreement, Preamble.

\textsuperscript{21} NIA, para 6.

\textsuperscript{22} NIA, para 7.

\textsuperscript{23} NIA, para 8.

\textsuperscript{24} NIA, para 12.

\textsuperscript{25} The proposed Agreement, Article I.
2.28 The proposed Agreement includes the following elements:

- an assurance that Australian nuclear material will be used for exclusively peaceful purposes and will not be used for military purposes;
- an assurance that Australian nuclear material will be subject to a Safeguards Agreement and Additional Protocol;
- the provision for the arrangement of fall back safeguards if for any reason the IAEA safeguards no longer apply;
- an assurance that physical protection of Australian nuclear material will meet accepted international standards, including during use, transport and storage;
- a requirement for prior consent to be sought before Australian nuclear material is transferred from the UK to a third Party;
- a requirement for an administrative arrangement to be established between the competent authorities in both countries to meet the obligations of the proposed Agreement; and
- a right to suspend or cancel the transfer of nuclear materials, and the right of return for nuclear materials to the supplier Party, in the event of non-compliance.\textsuperscript{26}

2.29 Article II of the proposed Agreement defines the scope of cooperation as including:

- the supply of items subject to the proposed Agreement;
- research;
- nuclear safety and radiation protection;
- safeguards and nuclear security;
- management of spent fuel and radioactive waste;
- nuclear forensics; and
- commercial cooperation between the legal entities.\textsuperscript{27}

2.30 Article III obliges the Parties to apply the provisions of the proposed Agreement to all relevant items transferred between the Parties, including items transferred through third party countries.\textsuperscript{28}

\textsuperscript{26} NIA, para 14.

\textsuperscript{27} The proposed Agreement, Article II.

\textsuperscript{28} NIA, para 13.
2.31 Article III also applies to ‘derived nuclear material’ in direct proportion to the amount of nuclear material subject to the proposed Agreement involved in its generation.29

2.32 Derived nuclear material is defined in Article III as all forms of nuclear material prepared by chemical or physical process or by isotopic separation from nuclear material subject to the proposed Agreement. The definition also includes all generations of nuclear material produced by neutron irradiation from the original nuclear material.30

2.33 The derived material falls within the scope of the proposed Agreement in the same proportion as the quantity of nuclear material used in its preparation.31

2.34 In addition, Article III applies to non-nuclear material such as components, technology or equipment with a direct connection to the production, processing or use of the nuclear material.32

2.35 Article XI requires the prior written consent of the Parties before reprocessing nuclear material subject to the proposed Agreement. This is an improvement over the Australia–Euratom Agreement, which does not require written consent before reprocessing can occur.33

2.36 Written consent will be required for any reprocessing of nuclear fuel that takes place in the UK after the proposed Agreement enters into force.34

2.37 Article XI also requires written consent from the supplying Party before uranium subject to the proposed Agreement can be enriched to 20 per cent or more of isotope uranium-23535 by the supplied Party. Uranium-235 enriched to 20 per cent is known as highly enriched uranium, and can be used in weapons.36

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29 NIA, para 16.
30 The proposed Agreement, Article III.
31 The proposed Agreement, Article III.
32 NIA, para 16.
33 NIA, para 17.
34 NIA, para 17.
35 For the purposes of nuclear fuel, uranium comes in two types: uranium-235 and uranium-238. The numbers refer to the atomic weight of the element. Uranium-235 is less stable than uranium-238 and so breaks down more quickly. A higher concentration of uranium-235 in a sample of uranium will result in a quicker reaction.
36 NIA, para 18.
Third party transfers

2.38 Australia’s nuclear cooperation agreements require that measures are put in place to allow Australia to account for and control the movement of Australian nuclear materials throughout this process.\(^{37}\)

2.39 According to the MCA:

> The UK is heavily invested in the nuclear industry. The country has full fuel cycle facilities including major reprocessing plants.\(^{38}\)

2.40 Much of Australia’s uranium exports to the UK are processed as nuclear fuel for other countries.\(^{39}\)

2.41 The manufacture of nuclear fuel is a complex process that can involve different stages of manufacture occurring in different countries.\(^{40}\)

2.42 In relation to the proposed Agreement, to ensure ongoing accounting and control of Australian nuclear material, transfers from the UK ‘…can only be made to third parties that have a nuclear cooperation agreement in place with Australia.’\(^{41}\)

2.43 At present, the countries with which Australia has nuclear cooperation agreements are:

- the Republic of Korea;
- Canada;
- Philippines;
- Japan;
- Switzerland;
- Egypt;
- Mexico;
- New Zealand;
- the United States (also covering supply to Taiwan);
- Euratom states (all members of the EU);
- Argentina;
- China;

\(^{37}\) Dr Kalish, ASNO, Committee Hansard, Canberra, 15 October 2018, p. 1.

\(^{38}\) MCA, Submission 1, p. 2.

\(^{39}\) MCA, Submission 1, p. 2.

\(^{40}\) Dr Kalish, ASNO, Committee Hansard, Canberra, 15 October 2018, p. 6.

\(^{41}\) Dr Kalish, ASNO, Committee Hansard, Canberra, 15 October 2018, p. 2.
• Russia;
• United Arab Emirates;
• Ukraine; and
• India.\(^{42}\)

2.44 Under Article I of the proposed Agreement the UK can only transfer Australian nuclear materials to these countries, and only after prior consent from Australia to do so.\(^{43}\)

2.45 In other words, Australian nuclear material transferred from the UK can only go to countries that have already agreed to apply Australian nuclear safety and security standards to those materials.

2.46 In addition to the production of nuclear fuel for export to third parties, the UK also imports used fuel from third parties for reprocessing.

2.47 Article XI of the proposed Agreement permits the UK to reprocess spent nuclear fuel containing Australian nuclear material from the countries listed above, but only with written consent from Australia.\(^{44}\)

**Australian nuclear materials industry**

2.48 According to the MCA:

> Australia has the reserves and the capability to take advantage of both the expected growth in demand for uranium and the expected increase in uranium prices. Australia has about one third of the world’s economically recoverable resources of uranium.\(^{45}\)

2.49 In terms of primary energy exports, uranium is Australia’s third largest export.\(^{46}\)

2.50 In 2016–17, tonnes of uranium oxide concentrate, valued at A$596 million, were exported. This is expected to grow to 7,240 tonnes, worth A$693 million, by 2019–20.\(^{47}\)

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\(^{43}\) The proposed Agreement, Article I.

\(^{44}\) The proposed Agreement, Article XI.

\(^{45}\) MCA, *Submission 1*, p. 4.

\(^{46}\) MCA, *Submission 1*, p. 4.
2.51 A submission from Mr Barry Murphy addressed the advantages of nuclear energy as a potential replacement in Australia for greenhouse gas emitting energy sources.\textsuperscript{48}

2.52 According to Mr Murphy’s modelling, nuclear energy could be significantly cheaper than other non-greenhouse gas emitting energy sources for electricity generation.\textsuperscript{49}

2.53 Mr Murphy’s modelling suggests that, should nuclear electricity generation replace coal-based electricity generation in Australia, the average cost of delivering energy in Australia would be A$242.48 MWh\textsuperscript{50} compared to A$557.75 MWh for entirely renewable electricity generation.\textsuperscript{51}

**Implementation**

2.54 The legislative framework already in place in relation to nuclear transfers is sufficient to provide for the terms of the proposed Agreement. The proposed Agreement will have to be added by Regulation to the list of ‘prescribed agreements’ under the *Nuclear Non-Proliferation (Safeguards) Act 1987*.\textsuperscript{52}

**Conclusion**

2.55 The UK is leaving the EU and so needs to refashion its administrative arrangements across a range of sectors. As part of this process, the UK needs to negotiate new agreements, including the Australia–UK Nuclear Cooperation Agreement.

2.56 The current arrangements relating to Australian nuclear materials will continue to apply.

2.57 The proposed Agreement will ensure that Australian nuclear safety standards continue to apply to Australian nuclear materials in the UK post Brexit.

\textsuperscript{47} MCA, *Submission 1*, p. 4.

\textsuperscript{48} Mr Barry Murphy, *Submission 2*, p. 3.

\textsuperscript{49} Mr Murphy, *Submission 2*, p. 3.

\textsuperscript{50} MWh means megawatts an hour, a measure of electricity use over time. One MWh is roughly equivalent to the amount of power used by 300 households in an hour.

\textsuperscript{51} Mr Murphy, *Submission 2*, p. 3.

\textsuperscript{52} NIA, para 23.
2.58 The Committee notes that at the time of writing, the UK was still in the process of establishing a UK State System of Accountability and Control of Nuclear Materials, but that work is well in hand.

2.59 The UK and Australia have an extensive history of nuclear cooperation, and the UK has a reputation for supporting non-proliferation of nuclear weapons. The UK also has an established and expanding civilian nuclear industry.

2.60 The Committee believes that the Australia–UK Nuclear Cooperation Agreement is in Australia’s interest and recommends that binding treaty action be taken.

Recommendation 1

2.61 The Committee supports the Agreement between the Government of Australia and the Government of the United Kingdom of Great Britain and Northern Ireland on Cooperation in the Peaceful Uses of Nuclear Energy and recommends that binding treaty action be taken.

Mr Russell Broadbent MP
Chair
26 November 2018
A. Submissions

1. Minerals Council of Australia
2. Mr Barry Murphy
3. Department of Foreign Affairs and Trade
B. Witnesses

Monday, 15 October 2018

Canberra

Department of Foreign Affairs and Trade

Department of Industry, Innovation and Science

Australian Nuclear Science and Technology Organisation
Dissenting Report

Australian Greens

The Australian Greens note that the Agreement between the Government of Australia and the Government of the United Kingdom of Great Britain and Northern Ireland on Cooperation in the Peaceful Uses of Nuclear Energy (the proposed Agreement) is to replace arrangements between the UK and Australia under the Agreement between the Government of Australia and the European Atomic Energy Community for Cooperation in the Peaceful uses of Nuclear Energy (2011) in the event that the United Kingdom exits the European Union in March 2019.


Additionally concerns have been raised about the United Kingdom’s ability to guarantee the safety and security of Australian nuclear material. The Office of Nuclear Regulation is working with United Kingdom Department of Business, Energy and Industrial Strategy and Euratom to develop a system of accountability but this process has not yet been finalised.

The Australian Greens want an end to nuclear weapons, nuclear power, and the cessation of uranium mining and export. We will not support a treaty that seeks only to maintain the status quo without re-evaluating Australia’s uranium and nuclear industries.

The Australian Greens further note that Australia has yet to finalise its own nuclear waste storage plans.
In the absence of these concerns being addressed the Australian Greens will not support this Treaty.

Senator Hanson-Young