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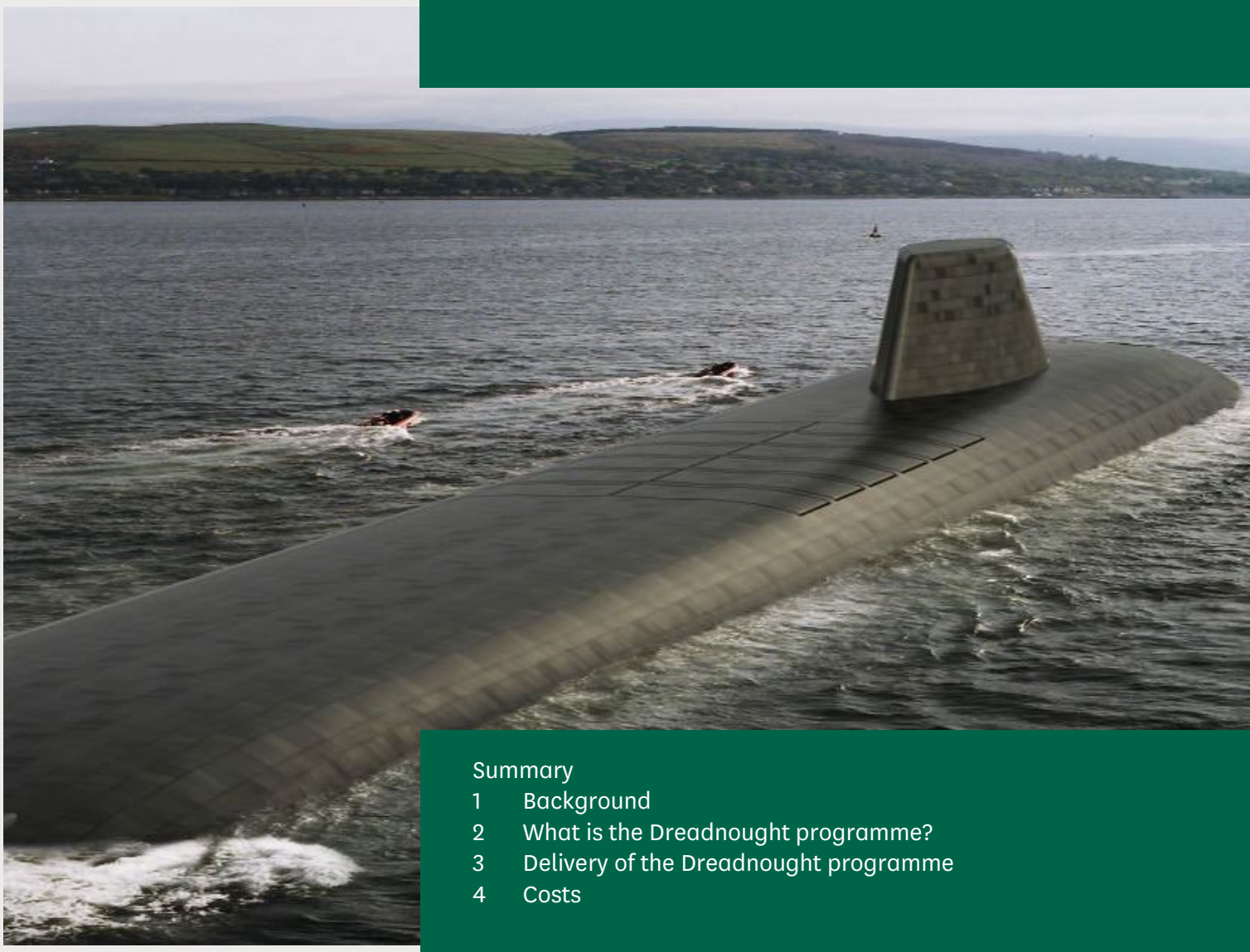
By Claire Mills

Replacing the UK's strategic nuclear deterrent: Progress of the Dreadnought class



Summary

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Summary

This briefing paper examines the Dreadnought programme as it advances. It does not examine the Government's overall nuclear policies, the synergies between the civil and military nuclear sectors, broader programmes within the defence nuclear enterprise that support the deterrent, or the UK's position on disarmament. Nor does it set out in detail the arguments for and against nuclear weapons.

The decision to replace the nuclear deterrent

In a vote in July 2016 the House of Commons approved the decision to maintain the UK's nuclear deterrent beyond the early 2030s. After almost a decade of work on the project, that vote subsequently enabled the programme to move forward into its manufacturing phase, which will see the construction of four new Dreadnought class ballistic missile submarines (SSBN) for entry into service from the early 2030s onwards.

What is the Dreadnought programme?

Although commonly referred to as the renewal or replacement of Trident, the Dreadnought programme is about the design, development and manufacture of four new Dreadnought class ballistic missile submarines (SSBN) that will maintain the UK's nuclear posture of Continuous at Sea Deterrence (CASD).

Under changes introduced in the 2015 Strategic Defence and Security Review (SDSR), the first Dreadnought SSBN is now expected to enter service in the early 2030s and will have a service life of at least 30 years.

Replacement of the Trident II D5 missile itself is not part of the programme. The UK is, however, participating in the US' current service-life extension programme for the Trident II D5 missile, which will extend the life of the missile potentially to the early 2060s.

Replacement of the nuclear warhead is also not part of the Dreadnought programme. After having deferred a decision on replacement in the 2010 SDSDR, in February 2020 the Government confirmed that a replacement programme is underway. Transition to the new warhead, which will be compatible with the Trident missile system, is expected from the late 2030s onwards.

Delivery of the Programme

Recognising that the Dreadnought programme is one of the largest Government investment programmes going forward, the 2015 SDSR made several changes to the structure of the project, specifically with reference to governance and oversight of delivery.

A new Submarine Delivery Agency has been established (as an executive agency of the Ministry of Defence) which will manage the procurement and in-service support of all current and future Royal Navy nuclear submarines, including Dreadnought.

In tandem, the MOD and its two key industrial partners on the Dreadnought programme, BAE Systems and Rolls Royce, have formed a new commercial alliance to jointly deliver the programme.

In 2023, further changes were made to the funding arrangements for the nuclear deterrent. All nuclear programmes and expenditure across the MOD have now been brought under one heading: the Defence Nuclear Enterprise (DNE), and ringfenced within the departmental budget, reflecting the increasing interdependence between the nuclear deterrent and the Royal Navy's other conventional nuclear-powered submarine programmes, including the new AUKUS-SSN being developed in conjunction with the US and Australia.

Where is the programme at?

In May 2022 the MOD awarded contracts for the initial stages of Delivery Phase 3. This phase is expected to last several years and will eventually see the first boat of class, HMS Dreadnought, enter sea trials. Construction of the third boat, HMS Warspite, began in February 2023.

According to the MOD, as of January 2024, the programme remains on schedule, despite previous delays caused by the Covid-19 pandemic.

The MOD's Annual Report to Parliament for 2023, providing more up-to-date progress on the programme, had not been published by the Conservative government before Parliament was dissolved for the general election in May 2024. While the previous government committed to publish an annual update on the progress of the Dreadnought programme, and other related issues, there is no obligation on the new Labour government to do so.

Jobs and Industry

BAE Systems and Rolls Royce are the main industrial partners (prime contractors) in this project.

The MOD estimates that 42,000 jobs across the UK are supported by the Dreadnought programme, either directly or indirectly.

Although the MOD has contracted directly with BAE Systems and Rolls Royce for production, an estimated 2,500 suppliers across the UK are working on the Dreadnought programme. BAE Systems estimates that its part of the programme alone will support a £7.5 billion supply chain across 1,500 British companies.

It is unclear how much of the value of the overall programme rests with overseas suppliers. BAE Systems has contracted for some of the specialised high strength steel required for the submarines from a French supplier, which has raised questions as to whether more can be done to promote the British steel industry within MOD programmes. In 2021 the MOD acquired the company Sheffield Forgemasters which, among other things, manufactures specialised steel and components for UK defence.

Cost of Dreadnought

The cost of the Dreadnought programme has been estimated at £31 billion, including inflation over the life of the programme. A £10 billion contingency has also been set aside. As of March 2023, £14.7 billion had been spent on the concept, assessment, and early delivery phases of the project and £2 billion (20%) of the contingency fund had been accessed so far.

In the early years of the programme investment was brought forward to keep the programme on track, reduce risk and achieve cost efficiencies. This was not extra funding for the programme, but money that was re-profiled.

In line with convention, the Dreadnought programme will be funded from the MOD's core equipment budget. Since 2023 defence nuclear spend has been ringfenced within the MOD budget. Nuclear equipment programmes are forecast to cost £117.8 billion over the next ten years (2023-2033), of which £109.8 billion has been budgeted for, leaving a £7.9 billion deficit. The Dreadnought programme forms part of that spend.

The annual in-service costs of the deterrent, which prior to 2023 had been estimated at approximately 6% of the defence budget (£3 billion in 2023/24, based on planned expenditure) are now included in overall DNE spend.

1 Background

This briefing paper examines the Dreadnought programme as it advances. It does not examine the Government's overall nuclear policies, the synergies between the civil and military nuclear sectors, broader programmes within the nuclear enterprise, or the UK's position on disarmament. Nor does it set out in detail the arguments for and against nuclear weapons.

Box 1: Suggested reading on broader nuclear issues

- House of Commons Library, Nuclear weapons at a glance: United Kingdom
- House of Commons Library, Replacing the UK's nuclear deterrent: The Warhead Programme
- House of Commons Library, Replacing the UK's 'Trident' Nuclear Deterrent, July 2016
- HM Government, The UK's Nuclear Deterrent (PDF)
- Ministry of Defence, Delivering the UK's nuclear deterrent as a national endeavour, CP1058, March 2024
- Public Accounts Committee, MOD equipment plan 2023-2033 (PDF), HC451, Session 2023-24, March 2024
- National Audit Office, The equipment plan 2023-2033 (PDF), HC315, December 2023
- Public Accounts Committee, Lessons from major projects and programmes, HC694, Session 2019-21
- Public Accounts Committee, Defence nuclear infrastructure, HC86, Session 2019-21
- National Audit Office, Managing infrastructure projects on nuclear-regulated sites, HC19, Session 2019-20
- HM Treasury, Government response to the Public Accounts Committee, CP176, October 2019
- Public Accounts Committee, Submarine defueling and dismantling, HC2041, Session 2017-19

- National Audit Office, Investigation into submarine defueling and dismantling, HC2102, Session 2017-19
- House of Lords International Relations Committee, Rising nuclear risk, disarmament and the Nuclear Non-Proliferation Treaty, HL 338, Session 2017-2019
- HM Treasury, Government response to the Public Accounts Committee, Cm 9740, Session 2017-19, December 2018
- Public Accounts Committee, Ministry of Defence Nuclear Programme, HC1028, Session 2017-19, September 2018
- National Audit Office, The Defence Nuclear Enterprise: a landscape review, HC1003, Session 2017-19, May 2018
- Public Accounts Committee, Hinkley Point C, HC393, Session 2017-19

1.1 Origins of the replacement programme

Explainer: Composition of the UK's nuclear deterrent

The UK is the only nuclear weapon state that operates a single deterrent capability: the submarine-launched Trident system, which is based at HM Naval Base Clyde. It has three main elements:

- Four Vanguard-class submarines (SSBN), maintaining continuous at sea deterrence (CASD).

- Trident II D5 missile, deployed aboard the SSBN. Held in a communal pool with the US

- Mk4A "Holbrook" nuclear warhead deployed on the Trident II D5.

The Labour Government's 2006 White Paper The Future of the United Kingdom's Nuclear Deterrent (PDF), concluded that the international security environment did not justify complete nuclear disarmament and that, in terms of both cost and capability, retaining the submarine-based Trident system would provide the most effective nuclear deterrent for the UK.

The decision was therefore taken to maintain the UK's existing nuclear capability by replacing the Vanguard class submarines (SSBN) and participating in the current US service-life extension programme for the Trident II D5 missile.

A debate and vote in the House of Commons on the general principle of whether the UK should retain a strategic nuclear deterrent, beyond the life of the current system, was held on 14 March 2007. That motion passed on division by 409 to 161 votes.

Work began immediately on the concept phase of what was initially termed the Successor programme, with the project passing its Initial Gate (PDF) in April 2011. A five-year assessment phase followed which largely focused on the design of the successor platform. Several contracts were awarded to the main industrial partners on the project (BAE Systems, Rolls Royce and Babcock) in order to deliver on each of the stages of the assessment phase. Approximately £4.8 billion was assigned to the initial phases of the programme.

In a vote in July 2016 the House of Commons once again approved the decision to maintain the UK's nuclear deterrent beyond the early 2030s.[1] After almost a decade of work on the project, that vote subsequently enabled the programme to move forward into its manufacturing phase, which would see the construction of four new Dreadnought class ballistic missile submarines (SSBN) over a 15-20 year period. The first submarine will enter service in the early 2030s.

Successive governments have expressed the belief that the programme to replace the UK's nuclear deterrent is compatible with the UK's obligations under the Nuclear Non-Proliferation Treaty (NPT), arguing that the treaty contains no prohibition on updating existing weapons systems and gives no explicit timeframe for nuclear disarmament.

[1] Division 46, 18 July 2016. Parliament had also voted in support of the Government's plans in response to SNP-led Opposition Day debates in January 2015 and November 2015.

2 What is the Dreadnought programme?

Interesting Facts

At 153.6 metres long and with a displacement of 17,200 tonnes, the Dreadnought class will be the largest submarine ever built for the Royal Navy.

Each boat will contain 26.4 miles of pipework and more than 20,000 cables stretching 215 miles.

It has 130 crew members, including 3 chefs and 1 doctor.

Although commonly referred to as the renewal or replacement of Trident, the Dreadnought programme[2] is about the design, development, and manufacture of four new Dreadnought class ballistic missile submarines (SSBN) that will replace the current Vanguard class SSBN and maintain the UK's posture of Continuous at Sea Deterrence (CASD).[3] A new pressurised water reactor (PWR3) nuclear propulsion system will sustain the Dreadnought SSBN throughout its life.[4]

A Common Missile Compartment (CMC) for the SSBN, which will house the current Trident strategic weapons system, is being developed in conjunction with the United States.[5]

Under changes introduced in the 2015 SDSR, the first submarine is now expected to enter service in the early 2030s and will have a service life of at least 30 years.[6] This was the third time the in-service life of the current Vanguard class SSBN had been extended[7] and will now result in an overall lifespan of the Vanguard class of approximately 37-38 years.[8] The MOD has refused to be drawn on specific dates for entry into service stating that "detailed planning assumptions for Service Entry are classified".[9]

2 Previously referred to as the 'Successor' programme. The Ministry of Defence announced the name of the new class of SSBN on 21 October 2016 (HCWS206, Successor submarines).

3 The UK has maintained a posture of CASD (Operation Relentless) since April 1969. There had initially been considerable debate over whether it would be possible to procure three boats, and still maintain CASD. The intention had been to make a decision on the size of the fleet at Main Gate. However, in April 2015 the government committed to the procurement of a 4-boat fleet.

4 Royal Navy, Dreadnought class (accessed 28 July 2024)

5 The US is replacing its current SSBN fleet with a new Columbia class SSBN, which is due to enter service within a similar timeframe to the UK's Dreadnought programme (early 2030s). Design for the Dreadnought's common missile compartment (CMC) is being delivered under the 1963 Polaris Sales Agreement (PSA), as amended (HL Deb 11 February 2013, c92WA). Each SSBN will have three missile compartments, each with four missile tubes, for a potential total of 12 missiles per submarine.

6 Ministry of Defence, Dreadnought submarine programme factsheet

7 The first time was in the 2006 White Paper when the service life of the submarine was extended from 25 to 30 years. The second was in the 2010 SDSR when the in-service date of the first submarine was earmarked for 2028.

8 HMS Vanguard entered service in December 1994; while the last in class, HMS Vengeance, entered service in February 2001.

9 PQ24643, Trident Submarines, 1 February 2016

The four SSBN will be named HMS Dreadnought, HMS Valiant, HMS Warspite and HMS King George VI.[10]

Trident II D5 missile and warhead

Replacement of the Trident II D5 missile itself is not part of the programme. The UK is, however, participating in the US' current service-life extension programme for the Trident II D5 missile, which will extend the life of the Trident missile to the early 2060s.[11]

The UK's current nuclear warhead is expected to retire in the early 2040s. The transition to a new nuclear warhead would therefore be required from the late 2030s. Planning expectations suggested it would take approximately 17 years to design, develop, certify and manufacture a new nuclear warhead.[12]

Since 2006 the MOD has been undertaking work on replacement options. In its 2018 Update to Parliament, the MOD confirmed that investment at the AWE continues under the Nuclear Warhead Capability Sustainment Programme, including projects to reduce technical, cost and schedule risks to any warhead replacement programme. The UK has also been undertaking work with the United States, through the UK-US Joint Technology Demonstrator project examining warhead safety, security and advanced manufacturing technologies.

In February 2020 the Government confirmed that a replacement warhead programme (referred to as the A21/Mk7/ Astraea) was underway[13] after US officials inadvertently revealed that work on its new W93/Mk7 warhead was being conducted in parallel with a British programme.[14]

10 HMS King George VI will be the first ever naval vessel to bear that Royal title.

11 PQ35764, Trident, 4 May 2016. In 2020, work began in the US on a second life-extension project (Trident D5 LE2) that will keep the Trident missile in service until at least 2084, to match the life of the US' new Columbia class SSBN (US Government Accountability Office, Weapon systems annual assessment (PDF), June 2022, p.179)

12 HM Government, The future of the United Kingdom's nuclear deterrent (PDF), CM6994, December 2006, executive summary. The long lead time is largely based around the length of time required to certify a new nuclear warhead, in the absence of live nuclear testing. The UK signed the Comprehensive Test Ban Treaty in 1996 and ratified it in 1998. Although the treaty has yet to enter into force the UK is committed to its principles.

13 HCWS125, Nuclear Deterrent, 25 February 2020

14 The replacement warhead programme is examined in greater detail in Library Briefing, Replacing the UK's nuclear deterrent: The warhead programme

3 Delivery of the Dreadnought programme

The Dreadnought programme has been described as "the largest UK submarine project in a generation and will be one of the most complex undertaken by British industry".[15]

3.1 Governance

Recognising that the Dreadnought programme is one of the largest Government investment programmes, the 2015 SDSR made several changes to the structure of the project, specifically with reference to governance and oversight of delivery.

> "The Defence Nuclear Enterprise is the partnership of organisations that operate, maintain, renew and sustain the UK's nuclear deterrent and submarine forces".
>
> Ministry of Defence, March 2024

New organisational and managerial arrangements for the UK's entire defence nuclear enterprise (DNE), and for delivering the Dreadnought programme specifically, were subsequently outlined in SDSR15. A new team within the MOD (the Defence Nuclear Organisation), headed by a commercial specialist, was established to oversee all aspects of the defence nuclear enterprise; while a new delivery body was established to deliver the procurement and in-service support of all the Royal Navy's nuclear submarines, including Dreadnought.

Initial speculation among the media and other commentators suggested that the Treasury had been looking to bring the new delivery body under its own remit.[16] The justification for doing so was reportedly the historical failure of the MOD to manage large and complex projects, with subsequent equipment being delivered several years late and vastly over budget.[17]

In a Parliamentary debate on 24 November 2015, however, then Minister for Defence Procurement, Philip Dunne, refuted suggestions that the Treasury would assume oversight of the programme:

> On the governance of implementing a delivery organisation to make sure we deliver the Successor programme on time and to budget over the years to come, I can confirm that this will remain subject to oversight by the MOD [...]

15 Ministry of Defence, 2016 Update to Parliament, December 2016

16 See for example: "George Osborne issues Treasury ultimatum over Trident", The Daily Telegraph, 12 November 2015

17 The most comparable programme is the Astute class submarine which, in March 2021 was approximately £1.4 billion over budget and several years late (National Audit office, Major Projects Report 2015 (PDF), HC488-II, October 2015 and National Audit Office, Improving the performance of major equipment projects (PDF), HC298, 24 June 2021)

> As the Prime Minister and the Secretary of State have made clear, this will be reporting through the MOD structures to the Secretary of State, and of course the Treasury will take its interest in the delivery of major programmes as it does in all our category A programmes, of which this will obviously be the largest.[18]

The Submarine Delivery Agency

The new Submarine Delivery Agency (SDA) was initially established within the MOD's Defence Equipment and Support (DE&S) organisation on 3 April 2017. The long-term intention was for this new body to achieve Executive Agency status, and sit alongside DE&S. The SDA subsequently achieved Executive Agency status on 1 April 2018.[19]

Along with the DNO, the Royal Navy and AWE, the SDA forms the core of the defence nuclear enterprise. The SDA manages the procurement, in-service support and decommissioning of all current and future nuclear submarines, including Dreadnought.[20] It has the authority and freedom to recruit and retain the individuals to manage the submarine enterprise. The SDA currently employs around 1,450 people, both civilian and military.[21]

The Chief Executive Officer of the SDA is supported in programme delivery by the Director Submarines Acquisition (DSMA) and the Director Submarines Support (DSMS):

- DSMA is responsible for the delivery and future in-service support of Dreadnought, Astute and the Maritime Underwater Future Capability. They also lead the relationship with BAE Systems.

- DSMS is responsible for in-service submarines, including the current SSBN delivering continuous at sea deterrence. They also lead the relationship with Babcock for the Maritime Support Delivery Framework and submarine support and Rolls Royce for nuclear propulsion.[22]

A commercial alliance

In tandem with the creation of a new delivery body, in April 2018 the MOD also established a new commercial alliance with its two key industrial partners on the Dreadnought programme: BAE Systems and Rolls Royce.[23] The intention of

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18 HC Deb 24 November 2015, c1254

19 Submarine Delivery Agency, Framework Document (PDF)

20 Including the in-service fleet of Trafalgar, Astute and Vanguard class submarines and the ongoing Astute and Dreadnought procurement programmes. The Maritime Underwater Future Concept (MUFC) project and the SSN-AUKUS submarine programme will also fall under the remit of the SDA (Ministry of Defence, Press release, 10 August 2022)

21 Ministry of Defence, Submarine Delivery Agency Corporate Plan 2019- 2022, November 2019

22 As above

23 A Heads of Agreement was signed by the Secretary of State for Defence and the CEOs of BAE Systems and Rolls Royce in November 2016 outlining the intent to establish an Alliance to deliver the Dreadnought programme. This approach was also adopted in relation to the Queen Elizabeth II

a joint management team approach is to improve collective performance on the programme, provide greater assurance of progress, with supporting risk and reward arrangements.[24]

The alliance is governed by the Alliance Leadership Board, chaired by an independent civilian appointee.

Renationalisation of AWE

In November 2020 the Government announced that the Atomic Weapons Establishment (AWE) would be "renationalised" and become an arms-length body wholly owned by the MOD. This is examined in greater detail in Library briefing, Replacing the nuclear deterrent: the long-awaited warhead decision.

In 2021 the MOD also acquired Sheffield Forgemasters which, among other things, manufactures specialised steel for UK defence programmes.[25]

Delivering the nuclear deterrent as a 'national endeavour'

In March 2024, the Conservative government published a new Defence Nuclear Command Paper which sets out the long-term approach to investing in, and maintaining, the nuclear deterrent as part of a broader strategy to support the UK's defence nuclear industry. It reflects the move toward viewing the defence nuclear enterprise (DNE) as a coherent whole and builds on the decision in 2023 to bring all defence nuclear programmes and expenditure into a single DNE heading in the estimates and to ringfence it with the MOD's departmental budget (see Costs below).

To deliver on the "mission" set out in the command paper, the MOD confirmed that various changes had been made to try and streamline and make the governance of the DNE more robust. In addition to operating a ringfenced budget for DNE, the leadership of the DNE, now headed by the Chief of Defence Nuclear (a civilian) and the First Sea Lord of the Royal Navy, has been strengthened in order to enhance "coherence, senior focus and accountability". Going forward, the core elements of the DNE (Defence Nuclear Organisation, the Royal Navy, AWE and the Submarine Delivery Agency) will also work more closely together.[26]

aircraft carrier project with the creation of the Aircraft Carrier Alliance, which was a partnership between the MOD and BAE Systems, Thales UK and Babcock.

24 The National Audit Office examined the new commercial alliance as part of its 2018 report The Defence Nuclear Enterprise: A landscape review (PDF), HC1003, 22 May 2018

25 Ministry of Defence, Press release, 28 July 2021

26 Ministry of Defence, Delivering the UK's nuclear deterrent as a national endeavour, CP1058, March 2024, p.10

3.2 Where is the Dreadnought programme at?

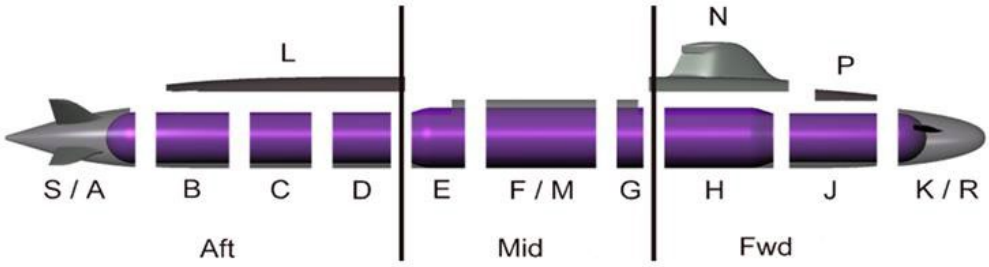
Contracts for Delivery Phase 3 were awarded in May 2022.

Construction on the third boat began in February 2023.

The build phase for the entire class of SSBN will take approximately 20 years.

In addition to changes in governance, SDSR15 also announced that "due to the scale and complexity", new commercial arrangements would be established between Government and industry that will see the programme subject to several stages of investment, with multiple control points, instead of the traditional single "Main gate" approach.[27] Adopting such an approach will aim to allow the MOD to control funding within the programme and achieve its delivery targets.

The submarines will be built in 16 units, grouped into three "mega units" (Aft, Mid and Forward) to shorten the overall build timeframe:



Ministry of Defence, Annual report to Parliament 2016

There is no indication, however, of how many stages of investment there will be overall, or when they might be implemented. In answer to a Parliamentary Question in February 2018 the MOD stated:

> The number of investment stages throughout the 20 year acquisition programme will be defined as the build progresses.
>
> The phases of Dreadnought construction comprise: major steelwork being formed into units; installing and outfitting of systems and plant; integration and testing of systems; and sea trials culminating in acceptance into service.[28]

Delivery Phase 1 – September 2016

Following the vote in the House of Commons in July 2016, the programme moved from its assessment phase, into "risk reduction and demonstration", or what was termed Delivery Phase 1. That phase officially began on 9 September 2016; and construction of the first submarine formally began on 5

[27] The procurement of defence equipment in the UK is largely conducted in accordance with the generic CADMID cycle, which comprises six phases in a project and two main investment decision points, or 'gates': Concept and feasibility phase followed by Initial Gate; an assessment phase followed by Main Gate; demonstration; manufacture; in-service and disposal. This new staged approach was also adopted in the QEII aircraft carrier programme.

[28] PQ126895, Trident submarines, 13 February 2018

October 2016 with the cutting of the steel for the first submarine.[29] With the Dreadnought class entering the build phase, the UK is now manufacturing two classes of submarine simultaneously for the first time since the 1990s.[30]

Delivery Phase 2 – May 2018

In May 2018 the MOD signed contracts for the second phase of the build programme, Delivery Phase 2, which was initially expected to be a three-year period of work.

Due to uncertainty caused by the Covid-19 pandemic and "the short to medium term uncertainty in industrial partners and supply chains", however, Delivery Phase 2 was extended for a further year, until March 2022.[31]

DP2 continued the design and build of the first Dreadnought submarine and commenced the build of the second,[32] including furthering the design and manufacture of the nuclear propulsion power plant.[33]

In its annual report to Parliament in December 2021 the MOD estimated that the current work rate on the Dreadnought programme is "close to pre-Covid output".[34]

Delivery Phase 3 – May 2022

In May 2022 the MOD announced the award of initial contracts for Delivery Phase 3 (DP3) worth £2 billion.[35] Total investment in DP3 is expected to total £10 billion.[36] It has been described as "the most significant stage so far in terms of criticality, value and complexity",[37] and will see the first SSBN, HMS Dreadnought, eventually enter sea trials. Lessons learned from this phase will also be applied to the construction and testing of the remaining boats of the Dreadnought class at this time.[38]

In February 2023, construction began on the third submarine of the class, HMS Warspite.[39] Work on boat four, HMS King George VI, has not yet started.[40]

In addition to DP3 prime contracts, a £160 million contract has also been awarded to Raytheon UK for Dreadnought crew training to take place at HMS

29 HCWS206, Successor submarines, 21 October 2016
30 The other being the Astute class SSN. MOD, Submarine Delivery Agency Corporate Plan 2018/19
31 Ministry of Defence, Annual Report to Parliament 2020
32 Construction work on HMS Valiant officially started in September 2019.
33 Ministry of Defence, Press release, 14 May 2018
34 Ministry of Defence, Annual Report to Parliament 2021
35 Ministry of Defence, Press release, 9 May 2022
36 Ministry of Defence, Annual report and accounts 2023-24 (PDF), July 2024, p.22
37 BAE Systems, Press release, 9 May 2022
38 BAE Systems, Press release, 9 May 2022
39 Ministry of Defence, Press release, 9 February 2023
40 Dreadnought Alliance, Press release, 19 October 2023

Naval Base Clyde.[41] A £66 million contract has also been placed with Babcock for in-service support for the Dreadnought SSBN.[42]

Is the programme on time?

Despite the impact of Covid-19, and previous "challenges in some parts of the supply chain" that were reported in 2021,[43] the MOD said in early 2024 that the Dreadnought programme "remains within overall budget and on track for the first of class, HMS Dreadnought, to enter service in the early 2030s".[44]

However, as David Cullen of the Nuclear Information Service has argued "the MoD's insistence on using the "early 2030s" formulation meant it was impossible to tell the exact impact of the delay".[45]

To keep the programme on track in the longer term, contingency funding was made available in the earlier years to reduce risk and achieve efficiencies. The decision in 2023 to bring all defence nuclear programmes and expenditure into a single DNE budget heading and ringfence it with the MOD's departmental budget was also taken because it gives "the department greater flexibility to move funding between years" and supports the MOD's ability "to deliver programmes related to the nuclear deterrent on schedule" (see Costs below).[46]

In its 2019 Annual Report the Government's Infrastructure and Projects Authority (IPA) changed its confidence assessment of the Dreadnought programme from Amber/Red[47] to Amber. This is a categorisation which the programme has kept in the IPA's latest 2022-2023 annual report (PDF). This means the IPA considers that successful delivery of the project is feasible, but that significant issues remain.

Indeed, in January 2021 the US Government Accountability Office (GAO) published a report on the progress of the US Columbia class SSBN programme (PDF), in which it expressed concerns over the ability to deliver the Common Missile Compartment (CMC) on time after significant delays to the project.[48] The GAO report concluded that:

41 Ministry of Defence, Press release, 9 May 2022
42 Ministry of Defence, Press release, 28 November 2023
43 Ministry of Defence, Annual Report to Parliament 2021
44 HC Deb 19 February 2024, Trident Renewal, c454
45 The Guardian, "Trident nuclear submarine replacement delayed by another year", 4 February 2021
46 Ministry of Defence, Letter to the Chair of the Public Accounts Committee, Equipment Plan 2023-2033: Update on affordability (PDF), December 2023
47 Amber/Red indicates that successful delivery of the project is in doubt, with major risks or issues apparent in a number of key areas. Urgent action is needed to address these problems and/or assess whether resolution is feasible (IPA Annual Report on Major projects 2018-19, Annex A)
48 In 2018 substantial weld defects were identified in a number of missile tubes from one of three tube suppliers, which resulted in checks to missile tubes from all suppliers. In April 2019 the US Government Accountability Office estimated that addressing this issue would take up 15 months of the 23-month schedule margin built into the programme. However, further weld defects at a second missile tube supplier were identified in December 2019, further delaying the programme.

> the schedule for the common missile compartment has less than 1 month of margin remaining for on-time delivery. Moreover, according to Electric Boat and program briefing documents, the repair and delivery schedules for defective tubes continue to deteriorate at both suppliers, and the [US] Navy expects this will further reduce schedule margin. As a result, there is increasing risk that the common missile compartment will not be available for final outfitting and assembly in July 2024 as planned.[49]

The MOD acknowledged the CMC issue in both its 2020 and 2021 Annual Reports to Parliament. In its 2021 report the MOD confirmed that all twelve missile tubes for HMS Dreadnought had been delivered and that the Department continued to work with US counterparts to "ensure missile tube deliveries for the remaining boats in a timely manner".[50] That position was reiterated in March 2023 following the delayed publication of the 2022 Annual Report.[51]

Concerns have been raised that any overall delay in bringing the Dreadnought class into service could impact on the ability to deliver continuous at sea deterrence (CASD). The Vanguard class SSBN has already had its service life extended by over a decade. The need to extend it even further would be costly and put availability of the deterrent in doubt.[52]

Relationship with the AUKUS-SSN programme

AUKUS is a defence and security partnership between Australia, the United Kingdom and the United States, announced in September 2021. A major part of the agreement (pillar 1) is to support Australia in acquiring its first conventionally armed, nuclear-powered submarine fleet (SSN-AUKUS).

The UK and Australia will both operate the SSN-AUKUS as their conventionally armed attack submarine (in the UK it will be the successor to the current Astute class SSN). The submarines will be based on the UK's next-generation submarine design and will be built in the UK and Australia. Work on the construction of the first SSN will start in the UK in the early 2030s, with a view to the submarines entering service toward the end of the 2030s (UK) and the early 2040s (Australia). Some components for the Australian SSN, including all the nuclear propulsion reactors, will be manufactured in the UK.

The manufacture of the Dreadnought SSBN is expected to continue well into the 2030s and therefore some overlap in construction between Dreadnought and the AUKUS-SSN will occur in the early years of the AUKUS programme. The Ministry of Defence has acknowledged that delivery of the SSN-AUKUS

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49 US Government Accountability Office, Columbia class submarine (PDF), GAO-21-257, January 2021

50 Ministry of Defence, Annual Report to Parliament 2021

51 Ministry of Defence, Annual Report to Parliament 2022

52 This concern was raised numerous times in the Commons debate on CASD on 10 April 2019. Toby Fenwick also examines the risks to CASD in his September 2018 publication, (Dis)Continuous Deterrence, BASIC, September 2018

within the timeframe envisaged will require an increase in the capacity and capability of all three nations' submarine industrial infrastructure.[53]

Increased investment is being made the UK's defence nuclear enterprise in order to support submarine delivery. At the spring budget in 2023 the government announced significant new funding (£3 billion) to underpin the SSN-AUKUS programme, and the wider Defence Nuclear Enterprise (DNE), over the next two years. None of that funding was expected to be allocated to the Dreadnought programme, which the government said was subject to an "already well established" funding mechanism.[54] However, within the overarching defence nuclear enterprise there will be increasing interdependence between the two programmes, in particular with respect to nuclear propulsion.

3.3 Jobs and Industry

BAE Systems and Rolls Royce are the Tier One industrial partners in this project.

As with previous SSBN, the submarine will be built by BAE Systems in Barrow-in-Furness and the propulsion system will be built by Rolls Royce at Raynesway, Derby.

The MOD estimates that 42,000 jobs across the UK are supported by the Dreadnought programme, either directly or indirectly.[55] 13,500 of those jobs are in the Northwest of England.[56]

Value of the supply chain in the UK

Although the MOD has contracted directly with BAE Systems and Rolls Royce for production, an estimated 2,500 suppliers across the UK are working on the Dreadnought programme.[57] BAE Systems estimates that its part of the programme will support a £7.5 billion supply chain across 1,500 British companies.[58]

As the MOD has noted:

53 Ministry of Defence, The AUKUS nuclear-powered submarine pathway (PDF), March 2023

54 PQ165231, Trident submarines: finance, 17 March 2023. This was also reiterated in a debate in the House of Lords on 16 March 2023, c1442

55 Ministry of Defence, Press release, 25 March 2024

56 Ministry of Defence, Press release, 9 February 2023

57 HM Government, The UK's nuclear deterrent: What you need to know (accessed 28 July 2024). More broadly, the MOD has estimated that a supply chain of 3,000 companies in the UK supports the defence nuclear enterprise as a whole (Ministry of Defence, Delivering the UK's nuclear deterrent as a national endeavour, CP1058, March 2024, p.4)

58 BAE Systems, Press release, 9 May 2022

> The nuclear deterrent represents a significant national undertaking, which is drawing on cutting edge capabilities, innovation, design and engineering skills available in the UK, and is providing employment opportunities and development prospects for a substantial number of apprentices, trainees and graduates in a wide range of technical and other disciplines.[59]

Ensuring a skilled workforce

Ensuring that a skilled workforce is available was identified as a risk by the National Audit Office in May 2018. In its report on the Defence Nuclear Enterprise, the NAO recognised:

> Having insufficient skilled staff remains a risk across the Department, and mitigating this risk is one of the Navy's top three priorities. The Enterprise depends on civilian and military staff within the Department and industry to design, build and safely operate nuclear submarines, systems, weapons and the supporting estate. These people have a wide range of skills and expertise, including those skills specific to the Enterprise. Since 2014-15, the Defence Nuclear Safety Regulator has identified that sustaining sufficient civilian and military nuclear staff remains one of the Enterprise's top strategic issues.[60]

The MOD has since been undertaking work across both the defence and civil nuclear sectors to identify the skills required by the entire Defence Nuclear Enterprise. A Nuclear Skills Taskforce was established in August 2023, bringing together government, industry and academia, to identify opportunities and develop a strategy for building nuclear skills in the UK.[61]

A skills action plan (PDF) was subsequently published in May 2024 with the aim of increasing the nuclear sector's available workforce by 50% (an estimated 40,000 additional jobs, including 5,000 defence apprenticeships) by 2030.[62]

Value of the overseas supply chain

It is unclear how much of the value of the overall programme will be spent overseas.

BAE Systems has contracted for some of the specialised high strength steel required for the submarines from a French supplier. The use of foreign steel in the construction of the Dreadnought class has raised many questions over the last few years whether more can be done to promote the British steel industry

59 Ministry of Defence, 2016 Update to Parliament

60 National Audit Office, The Defence Nuclear Enterprise: A Landscape Review, HC1003, Session 2017-19, p.42

61 Ministry of Defence and Department for Energy Security and Net Zero, Press release, 1 August 2023

62 Nuclear AMRC, Press release, 16 May 2024 and Ministry of Defence, Delivering the UK's nuclear deterrent as a national endeavour, CP1058, March 2024, p.16

within MOD programmes.[63] In answer to a Parliamentary Question in October 2016 the then Minister for Defence Procurement, Harriet Baldwin, stated:

> The management of the steel procurement process for the Successor Programme is the responsibility of the Prime Contractor, BAE Systems. The Ministry of Defence's involvement with suppliers was limited to conducting a technical assessment during the tendering process to ensure bids met specifications.
>
> The tendering process was progressed and concluded by the Prime Contractor, no viable UK bid was received for this part of the Successor submarine manufacture. Other stages of construction will include grades of steel manufactured by British suppliers and I encourage them to take the opportunity to bid.[64]

As outlined above, the Common Missile Compartment for the submarine is also a collaborative programme with the United States. American company General Dynamics is the prime contractor for the CMC and is working in co-operation with BAE Systems to ensure that the design accommodates UK requirements for the Dreadnought class. In October 2016 Babcock International was awarded a contract by General Dynamics to manufacture 22 tactical missile tubes as part of the overall CMC project. That work is taking place in Rosyth, securing approximately 150 jobs. Whether this work on the CMC forms part of BAE Systems' UK supply chain spend, is unclear.

63 In August 2021, for example, the MOD acquired the specialised steel producer, Sheffield Forgemasters, in order to ensure security of supply for critical UK programmes, including the MOD's nuclear submarine programmes. The future of the UK steel industry was raised again in a debate in the House of Commons in January 2024.

64 PQ48618, Trident submarines: iron and steel, 18 October 2016

4 Costs

4.1 Overall acquisition cost of Dreadnought

The estimated cost of the design and manufacture of a class of four SSBN is £31 billion, including inflation over the 35-year life of the programme.

A £10 billion contingency has also been set aside.

The 2015 SDSR confirmed that the costs of design and manufacture of a class of four submarines will be £31 billion, an increase of £6 billion on estimates set down in the programme's Initial Gate report in 2011 (at outturn prices). This cost estimate includes all capital costs associated with acquisition including feasibility studies, design, assessment, demonstration and manufacture (including the US-UK Common Missile Compartment project).[65] It also accounts for expected defence inflation over the 35-year life of the programme[66] and initial investment in new facilities at BAE Systems in Barrow, which in 2013 the MOD suggested would focus on "modification of existing infrastructure to accommodate the differences between the Vanguard and Successor designs".[67]

A contingency of £10 billion has also been set aside. This contingency represents approximately 35% of the submarine cost to completion and according to the MOD "is a prudent estimate based on past experience of large, complex projects, such as the 2012 Olympics".[68] However there is no guarantee whether all this money will be spent. If it were then it would provide an upper-end acquisition estimate of £41 billion.

In 2015, the MOD stated that "the revised cost and schedule reflect the greater understanding we now have about the detailed design of the submarines and their manufacture".[69]

The years of peak expenditure are expected to be principally 2018 through to the mid/late 2030s, as the programme is in full production.

65 HC Deb 4 June 2009, c627W

66 Defence inflation is often one of the largest sources of additional costs on a procurement programme.

67 New facilities are being constructed at Barrow which will allow a modular build approach for the Dreadnought submarines, which are larger than the Astute or Vanguard class. In May 2022 BAE Systems said that more than £1 billion had been invested in advanced technology and upgraded infrastructure at Barrow shipyard and that a further £450 million would be invested over the life of the programme. The NAO has examined the construction programme in its report Managing infrastructure projects on nuclear-regulated sites

68 PQ24652, Trident Submarines: Finance, 2 February 2016

69 HM Government, National Security Strategy and Strategic Defence and Security Review 2015, Cm9161, November 2015, p.34

The following are not part of the capital costs of the Dreadnought programme, but fall within wider spending on the defence nuclear enterprise:

- Investment in HM Naval Base Clyde[70]
- Trident II D5 Service-life Extension programme[71]
- Infrastructure projects related to the Atomic Weapons Establishment (AWE)[72]
- Core Production Capability facilities at Rolls Royce[73]
- Replacement warhead programme[74]
- The costs associated with extending the life of the current Vanguard class SSBN.[75]
- Nuclear and naval base infrastructure projects announced following additional investment in the defence nuclear enterprise at the Spring budget in March 2023, and in March 2024 as part of the 'Delivering the UK's nuclear deterrent as a national endeavour' command paper, including investment in Derby, Devonport and Barrow.[76] In March 2023 the MOD said that the additional funding allocated to the defence nuclear enterprise in the 2023 spring budget was not expected to be specifically allocated to the Dreadnought programme whose funding mechanism was "already well established".[77]

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70 The announcement on 31 August 2015 of £500 million of investment for HM Naval Base Clyde, over a ten-year period, was part of the MOD's ongoing programme of work to establish a submarine centre of excellence at HM Naval Base Clyde once the entire Royal Navy submarine fleet is based there from 2020. In February 2017 a further £1.3 billion was announced for upgrades at HM Naval Base Clyde, including the waterfront, engineering support, accommodation and physical security. PQ112914 of 21 November 2017 confirmed the separate funding arrangements.

71 The total cost of the Trident service life extension programme has been estimated at £821.5 million (PQ191140, Trident missiles, 29 June 2023)

72 The projects being undertaken through the Nuclear Warhead Capability Sustainment Programme (NWCSP) at AWE were covered within the annual in-service costs of the deterrent, which is now part of overall DNE spend (see below). The MENSA project is examined by the NAO in its report, Managing infrastructure projects on nuclear-regulated sites, HC19, Session 2019-20

73 The MOD is funding the construction of facilities for the manufacture and testing of new nuclear reactors cores to be used across the nuclear fleet. The revised project cost has been estimated at £1.8 billion (see PQ49565, Nuclear powered vessels: Shipbuilding, 16 September 2022 and National Audit Office, Managing infrastructure projects on nuclear-regulated sites, HC19, January 2020 for further analysis of the project).

74 PQ165426, Trident submarines: finance, 17 March 2023. The warhead programme is examined in greater detail in Library briefing, Replacing the UK's nuclear deterrent: The warhead programme

75 See for example, Ministry of Defence, Press release, 1 March 2024 and "Vanguard, Dreadnought and Holbrook: the UK's nuclear upgrade triad", Global Defence Technology, April 2024

76 Ministry of Defence, Press release, 25 March 2024; Prime Minister's Office, Press release, 24 March 2024 and Ministry of Defence, Delivering the UK's nuclear deterrent as a national endeavour, CP1058, March 2024, p.8 and p.18; Babcock International, Press release, 10 November 2023

77 PQ165231, Trident submarines: finance, 17 March 2023. This was also reiterated in a debate in the House of Lords on 16 March 2023, c1442

In 2023/24, spending on the DNE totalled £9.4 billion.[78] Spending plans set out in the MOD Main Estimate indicate that this is set to increase to £10.8 billion in 2024/25, although these plans may be revised at the Supplementary Estimates towards the end of the financial year.[79]

Spending on nuclear programmes across of the whole Defence Equipment Plan over the next ten years (2023-2033) is forecast at £117.8 billion, of which £109.8 billion has been budgeted for, leaving a £7.9 billion deficit.[80] The Public Accounts Committee has expressed concern that managing the resulting deficit "requires significant work and is a huge challenge" that will be "difficult to deliver".[81]

4.2 In-service costs and the move to a single DNE budget

Prior to 2023, the annual in-service costs of the Dreadnought SSBN, once it enters service, were expected to continue at approximately 6% of the defence budget (approximately £3 billion for 2023-24).[82] Calculating overall in-service costs for the Dreadnought class, however, is difficult as assumptions need to be made about the size of the British economy and projected levels of defence spending over the next 50-60 years (by the time the submarine enters service in the early 2030s and through a 30-year lifespan). As such this paper does not attempt to do so.[83]

Amalgamating costs into broader nuclear spend

During the 2023/24 financial year the government took the decision to bring all nuclear-related programmes and expenditure, including in-service running costs of the deterrent, under one heading: the Defence Nuclear Enterprise (DNE), and to ringfence it within the MOD budget.[84] DNE spend now appears as a single line in the departmental estimates.

In doing so, the MOD said it would provide greater flexibility to move funding between the years of the programme to decrease risk and take advantage of opportunities to purchase long-lead items at an overall lower cost.

78 Ministry of Defence, Annual report and accounts 2023-2024 (PDF), HC65, July 2024, Annex C

79 HM Treasury, Main Supply Estimates 2024 to 2025, July 2024, p149

80 Ministry of Defence, The defence equipment plan 2023: Supplementary Data Tables, February 2024

81 Public Accounts Committee, MOD Equipment Plan 2023-2033 (PDF), HC451, 8 March 2024.

82 HL328, Trident submarines, 6 June 2016 and Ministry of Defence, Annual report and accounts 2023-2024 (PDF), HC65, July 2024,

83 A more detailed explanation of the difficulties in determining in-service costs over a 30 year period is available in Library briefing paper, The cost of the UK's strategic nuclear deterrent. It is also one of the reasons why so many differing cost estimates for the nuclear deterrent exist.

84 Ministry of Defence, Letter to the Chair of the Public Accounts Committee, Equipment Plan 2023-2033: Update on affordability, 4 December 2023 and National Audit Office, The equipment plan 2023-2033 (PDF), HC315, December 2023

Ringfencing the nuclear budget would also allow the Department to "insulate" the rest of the defence equipment plan from any changes in the profile of nuclear spending.[85]

Amalgamating expenditure in this way does make it difficult, however, to determine the individual costs of the various elements of the nuclear deterrent, and specifically the annual in-service costs. In answer to a parliamentary question in June 2023 as to whether the in-service costs of Dreadnought could be expected to remain at 6%, the MOD confirmed:

> The six percent figure was calculated for the Defence White Paper "The Future of the United Kingdom's Nuclear Deterrent" in December 2006.
>
> Due to restructuring of both the Submarine Enterprise and the Defence Nuclear Enterprise, an equivalent comparison is not available.[86]

In further parliamentary questions the MOD has referred to the "interdependence" of the programmes to support, maintain and renew the nuclear deterrent and that expected costs would relate to "the combined nuclear enterprise".[87]

The funding of the nuclear deterrent is discussed in greater detail in Library research briefing: The costs of the UK's strategic nuclear deterrent.

4.3 Alternative cost estimates

Studies by the Nuclear Information Service (PDF) in 2020 and the Campaign for Nuclear Disarmament have suggested that the MOD's cost analysis for the replacement programme is vastly under-estimated and that the true cost is in the region of £172 billion or £205 billion respectively. However, these cost estimates also consider in-service costs over the 30-year life of the deterrent, and additional factors such as infrastructure investment, the Trident SLEP programme, warhead replacement and decommissioning, among other things.

85 Ministry of Defence, Letter to the Chair of the Public Accounts Committee, Equipment Plan 2023-2033: Update on affordability, 4 December 2023

86 PQ190891, Nuclear submarines, 27 June 2023

87 HC Deb 20 November 2023, Trident nuclear programme, c9. See also PQ187155, Trident submarines: procurement, 12 June 2023

4.4 What has been spent on Dreadnought so far?

As of 31 March 2023, £14.7 billion has been spent on the concept, assessment and early delivery phases of the programme.

Money has been re-profiled into the earlier years of the programme to reduce risks and achieve cost savings. The MOD has also brought all defence nuclear related spending under a single budget line for the defence nuclear enterprise.

As of March 2023, 20% of the contingency fund had been accessed.

In its 2022 Update to Parliament the MOD confirmed that the programme remained within overall budget and, as of 31 March 2022, £12.5 billion had been spent so far on the concept, assessment and early delivery phases of the project.

At the time of writing, the 2023 update to Parliament setting out revised costs is yet to be published. In answer to a parliamentary question in January 2024 the MOD said that, as of 31 March 2023, £14.7 billion had been spent on the concept, assessment, and early phases of the programme so far.[88]

Concept and Assessment Phase

Approximately £4.8 billion was allocated to the concept and assessment phases of the programme (£905 million and £3.9 billion respectively). Several long-lead items, including the steel for the first submarine and items relating to the propulsion system, were contracted for under this phase of spending.[89] In its 2016 Update to Parliament the MOD confirmed that payments for some of the long-lead items procured during the assessment phase would continue through to 2023. As a result, some of that concept and assessment phase funding has been accounted for in later years.

Manufacturing phase contracts

Contracts for the manufacturing phase of the programme were first awarded in September 2016. There has been a rolling programme of contract awards since, with the latest, for Delivery Phase 3, announced in May 2022 (see above).

Based on available figures, MOD spend over this period is as follows:

- £1.2 billion in 2017/18.[90]
- £1.5 billion in 2018/19.[91]
- £1.6 billion in 2019/20.[92]
- £1.9 billion in 2020/21.[93]

88 PQ10942, Trident submarines: procurement, 29 January 2024
89 A full list of long lead items is discussed in Library briefing paper CBP7353, Replacing the UK's 'Trident' Nuclear Deterrent, p.52-53
90 Ministry of Defence, The United Kingdom's Future Nuclear Deterrent, 2018 Update to Parliament
91 As above
92 Ministry of Defence, Annual Report to Parliament 2020
93 Ministry of Defence, Annual Report to Parliament 2021

- £2.2 billion in 2021/22.[94]

According to data compiled for the IPA annual report on major government projects, spending on Dreadnought in 2022/23 was £2.5 billion.[95]

Access to the contingency fund

Between 2018 and 2020 the MOD made several announcements of money being brought forward into the earlier years of the programme, actions that it argued would drive out cost and risk and keep the project on track.[96]

Re-profiling also included access to the Dreadnought contingency fund, which is provided for in the Treasury Reserve. In December 2020 the MOD confirmed that £1 billion of the fund had been made available to the Department up to that point,[97] while the 2020 Spending Review made provision for a further £1.3 billion of contingency funds to be made available through to 2024-25, should it be required.[98]

As of March 2023, the MOD had accessed £2 billion of the contingency fund (20% of its total).[99]

In a report on the MOD's equipment plan in April 2022, the Public Accounts Committee expressed concern over the stability of the plan and the ability of the Department to control costs in its largest programmes, including Dreadnought. It suggested, with concern, that the MOD views the contingency fund "as a blank cheque, freeing it from the need to control costs".[100]

4.5 Who will pay for it?

There has been a longstanding debate over the budgetary responsibility for the nuclear deterrent.[101] In line with convention, the Dreadnought programme will be funded from the MOD's core equipment budget.

94 Ministry of Defence, Annual Report to Parliament 2022

95 Ministry of Defence, MOD Government Major Projects Portfolio Data, 2023 (accessed 31 July 2024)

96 This is discussed extensively in the Secretary of State's evidence to the Defence Committee on 21 February 2018 (Defence Committee, Oral evidence: departmental priorities, HC814, 21 February 2018. Q.78); HM Treasury, Autumn Statement 2018; HM Treasury, Spending Round 2019, Table 2.7: Ministry of Defence and PQ290758, Armed Forces: Finance, 1 October 2019 and HM Treasury, Spending Review 2020

97 Defence Committee, Oral evidence: MOD Annual Report and Accounts, 2019-2020, HC1051, 8 December 2020, Q.23

98 HM Treasury, Spending Review 2020, Table 6.11

99 PQ168002, Trident submarines, 22 March 2023

100 Public Accounts Committee, Ministry of Defence Equipment Plan 2021-2031 (PDF), HC1164, April 2022, p.5

101 The history of this debate is set out in Library briefing paper, CBP8166, The costs of the UK's strategic nuclear deterrent

The allocation of additional funding for the MOD in the Autumn 2018 budget statement and the 2019 Spending Round, in part to fund the early years of the Dreadnought programme, once again ignited the argument about which Department should be funding the nuclear deterrent.

In a similar vein to the disagreements which arose following the 2007 Comprehensive Spending Review, the allocation of additional funds was viewed by many as an indication of the Treasury's role, and responsibility, in part-funding the capital costs of the programme. In a debate on the budget on 13 November 2018 Lord West, the former First Sea Lord, commented:

> If the two tranches of money from the Treasury into the Dreadnought programme are an indicator that there is an acceptance that the capital cost of the new deterrent submarines should be funded outside the defence budget, I welcome it. That will make a dramatic difference to the MoD programme. This of course was the plan until changed by George Osborne in 2010. Can the Minister tell us whether it is now the plan again? I hope that it is.[102]

In March 2020 the then Chairman of the Defence Select Committee, Tobias Ellwood, also expressed his support for taking deterrent funding out of the defence budget.[103]

These arguments were also raised within the context of the 2021 Integrated Review. In answer to a question from Lord West in early February 2021, the MOD confirmed:

> There have been no discussions on removing the capital costs of the Dreadnought submarine build programme from the defence budget. The Dreadnought programme is rightly funded as part of the Ministry of Defence's budget, as it has always been.[104]

A ringfenced budget

As outlined above, in 2023 the decision was taken to ringfence nuclear spending within the MOD budget as a way of introducing greater flexibility into the funding arrangements for the nuclear deterrent and to insulate the rest of the defence equipment plan from any changes in nuclear spending.

The Dreadnought programme forms part of wider spending on the defence nuclear enterprise.

In July 2024 the new Labour government said that it will "consider the efficiency and effectiveness of the nuclear programme" as part of its new strategic defence review, which is due to report in the first half of 2025.[105]

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102 HL Deb 13 November 2018, c1819

103 Public Accounts Committee, Oral evidence, Defence Nuclear Infrastructure, HC86, 11 March 2020, Q.107

104 PQHL12682, Nuclear submarines, 10 February 2021

105 Ministry of Defence, Press release, 9 July 2024 and Strategic Defence Review 2024-2025: Terms of reference

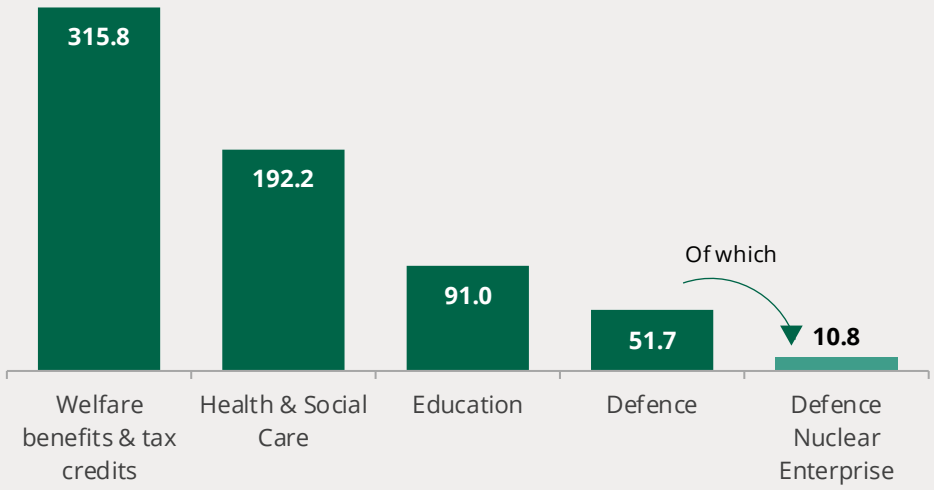
4.6 Comparison to other Government spending

Assuming the entirety of the £10 billion contingency fund is spent, at a cost of potentially £41 billion, the Dreadnought programme is one of the most expensive Government projects underway. It is a project that has around twice the budget of Crossrail, and three times the budget of the London Olympics in 2012.[106]

With respect to other areas of public spending, expenditure on the nuclear deterrent is often compared to spending on the welfare bill or the NHS.

Government expenditure comparisons

Selected areas of planned spending in 2023/24 (£ billions)



Note: Expenditure on welfare benefits and tax credits is a forecast.

Source: Department for Work and Pensions, Benefit expenditure and caseload tables – Spring Budget 2024, UK welfare table; HM Treasury, Spring Budget 2024, Tables 2.1 and 2.2; HM Treasury, Main Supply Estimates 2024 to 2025, July 2024, p149

In 2024/25, total spending on the Defence Nuclear Enterprise, including the Dreadnought programme, is expected to amount to £10.8 billion (see section 4.1). This equates to around 3% of forecast expenditure on welfare benefits and tax credits, or 6% of planned spending by the Department of Health and Social Care.

[106] Michael Fallon speech to a reception of the Keep Our Future Afloat Campaign, House of Commons, 21 October 2015

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