Sustaining the UK's Independent Nuclear Deterrent

1.1 As set out in the 2015 Strategic Defence and Security Review (SDSR), the defence and protection of the UK and its vital interests is the most important duty of Government and the UK's independent nuclear deterrent will remain essential to our security for as long as the global security situation demands. The decision that Parliament will be asked to make is not about short term threats. It is about the threats that future generations may face and the need to give future governments the ability to defend and protect the UK and its vital interests.

The threat

1.2 The 2015 SDSR set out the Government's assessment of the range of threats to UK security. The UK is increasingly likely to have to deal with unexpected developments: we cannot relax our guard or rule out further shifts in the global security situation which would put us, or our NATO allies, under grave threat. Other states continue to have nuclear arsenals and there is a continuing risk of further proliferation of nuclear weapons. There is a risk that states might use their own nuclear capability to threaten us directly, try to constrain our decision making in a crisis, or sponsor nuclear terrorism.

1.3 At the NATO summit in Lisbon in 2010, we committed to work with our Allies to build a partnership with Russia. But since then, Russia has become more aggressive, authoritarian and nationalist, increasingly defining itself in opposition to the West. Russia has increased its nuclear exercises and rhetoric, with threats to base nuclear forces in Kaliningrad and Crimea. Its military activity around the territory of our Allies, and close to UK airspace and territorial waters, is designed to test our responses. Russia's behaviour will continue to be hard to predict, and, though highly unlikely, we cannot rule out the possibility that it may feel tempted to act aggressively against NATO Allies.

1.4 North Korea is a country of great concern. It has stated a clear intent to develop and deploy nuclear weapons, and continues to work towards that goal, in flagrant violation of a series of UN Security Council Resolutions. In 2016, North Korea conducted a fourth nuclear test, a space launch that used ballistic missile technology, and several ballistic missile launches. It is attempting to develop a submarine launch capability for nuclear weapons, and claims to be testing components for a future inter-continental ballistic missile capability.

Our deterrence policy

1.5 The UK's independent nuclear deterrent is designed to deter the most extreme threats to our national security and way of life, helping to guarantee our security and that of our Allies. It provides a continuous deterrent every day to deter our adversaries and reassure allies. It is independent and only the Prime Minister can authorise the launch of nuclear weapons, which ensures that political control is maintained at all times. We would only use our nuclear weapons in extreme circumstances of self-defence, including the defence of our NATO Allies. While our resolve and capability to do so if necessary is beyond doubt, we remain deliberately ambiguous about precisely when, how, and at what scale we would contemplate their use, in order not to simplify the calculations of any potential aggressor.

1.6 The UK will not use, or threaten to use, nuclear weapons against any Non-Nuclear Weapons State party to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT). This assurance does not apply to any state in material breach of those non-proliferation obligations. While there is currently no direct threat to the UK, or its vital interests, from states developing weapons of mass destruction, such as chemical and biological capabilities, we reserve the right to review this assurance if the future threat, development or proliferation of these weapons make it necessary.

Working with NATO, the US and France

1.7 Nuclear deterrence is an important part of NATO's overall strategy. Since 1962, the UK has declared our nuclear capability to the defence of the Alliance, thereby contributing to the ultimate guarantee of collective Euro-Atlantic security. The UK helps to ensure that NATO has the necessary capabilities to impose costs on an adversary that would be unacceptable and far outweigh the benefits that an adversary could hope to achieve. By maintaining our independent nuclear deterrent, alongside the US and France, we provide NATO with three separate centres of decision-making. This complicates the calculations of potential adversaries and prevents them from believing they could threaten the UK, or our allies, with impunity.

1.8 We work closely with the US and France on nuclear matters. UK and US nuclear defence cooperation is underpinned by the recently renewed 1958 Mutual Defence Agreement and the 1963 Polaris Sales Agreement. This allows the UK to reduce costs by procuring Trident missiles and other components from the US while maintaining full operational independence. We collaborate with France under the 2010 Teutates Treaty to develop the technologies associated with the safe and effective maintenance of our respective nuclear stockpiles.

The UK's disarmament policy

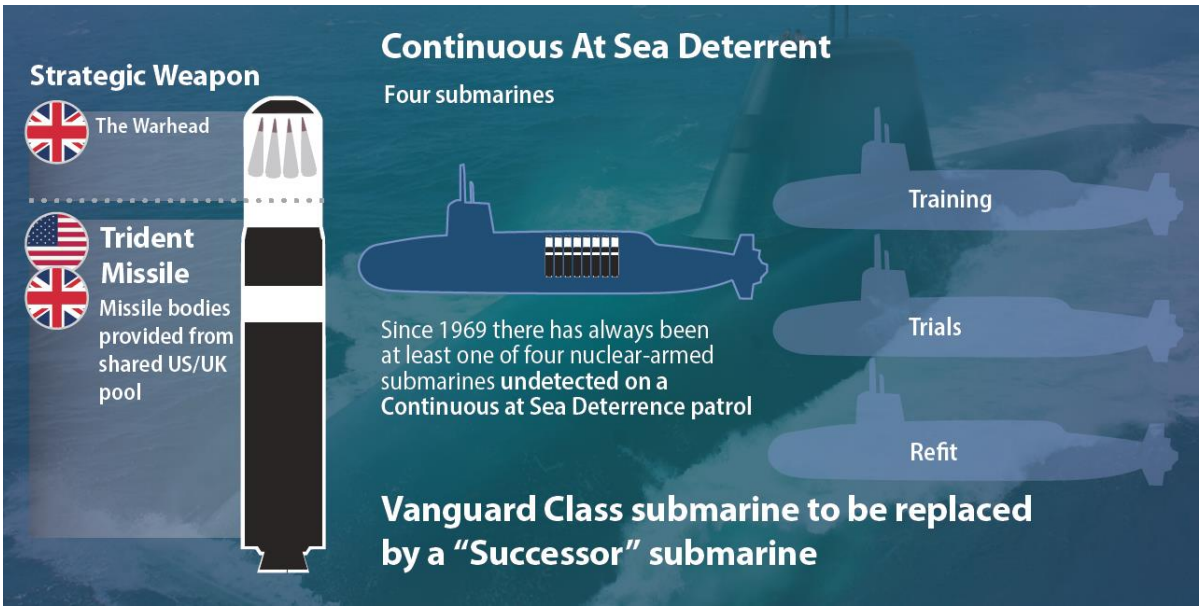
1.9 As a responsible Nuclear Weapons State, we are committed to the long-term goal of a world without nuclear weapons and we recognise our obligations under all three of the pillars of the NPT. We will work with our international partners to tackle proliferation and to make progress on multilateral disarmament. However, today's security conditions do not allow us to disarm without jeopardising the security of the UK and our Allies. The only way to create the global security conditions necessary for achieving nuclear disarmament is by working multilaterally.

1.10 We will continue to build trust and confidence between Nuclear and Non-Nuclear Weapon States, and to take tangible steps towards a safer and more stable world, where countries with nuclear weapons feel able to relinquish them. The UK plays a leading role on disarmament verification with the US and Norway. We will continue to press for key steps towards multilateral disarmament, including the entry into force of the Comprehensive Nuclear Test Ban Treaty, and successful negotiations on a Fissile Material Cut-Off Treaty in the Conference on Disarmament.

1.11 We have reduced our own nuclear forces by over half from their Cold War peak in the late 1970s. Of the recognised Nuclear Weapons States, we possess approximately 1% of the total global stockpile of nuclear weapons. Our submarines on patrol are at several days' notice to fire and, since 1994; we do not target our missiles at any state. Our submarines will continue to carry 40 nuclear warheads and no more than eight operational missiles. We will retain no more than 120 operationally available warheads and, by the mid-2020s, we will reduce the overall nuclear weapon stockpile to no more than 180 warheads, meeting the commitments set out in the 2010 SDSR. We are committed to maintaining the minimum amount of destructive power needed to deter any aggressor.

Continuous at Sea Deterrence (CASD)

2.1 A credible deterrent must be able to counter the unexpected at all times. The UK maintains a Continuous At Sea Deterrence (CASD) so a ballistic missile submarine is always on covert patrol. In July 2013, the Government published the Trident Alternatives Review, a neutral, fact-based study led by the Cabinet Office into alternative deterrent systems and postures. The Review concluded that no alternative system is as capable, resilient or cost effective as a Trident-based deterrent.



2.2 Delivering CASD requires four submarines to ensure that at least one is always on patrol, taking account of the cycle of deployment, training, and routine and unplanned maintenance. A second submarine must sail and start its covert patrol before the first submarine returns and thereby reveals its location. While the Review suggested it is possible some limited savings could be achieved over the operational lifetime of the fleet, reducing from four to three submarines would not save a quarter of the cost. There are large fixed costs – such as infrastructure, training and maintenance – which have to be accounted for whether we build three or four submarines.

2.3 A fleet of four submarines provides the essential resilience to ensure that two submarines are available when required. Any fewer would break the operational cycle that delivers CASD. This principle has previously been reviewed and validated. It was studied in the 1970s before the Vanguard submarines were built, and an in-depth classified study took place to inform the 2006 White Paper. It was again reassessed for the 2013 Trident Alternatives Review. Many have speculated about emerging technologies and how they may affect the UK's deterrent. None, including cyber, have been found to threaten our capability. The MOD dedicates considerable resources to monitor the position and will apply any mitigations, should they be required in future.

The submarine

2.4 A fleet of Vanguard Class submarines carry the UK's nuclear deterrent, however, with the submarines due to leave service in the 2030s, we now need to build four new 'Successor' submarines. The Successor submarine programme is one of the largest UK projects in a generation and is one of the most complex undertaken by British industry. Due to the length of time it takes to build a submarine, we need to make decisions now to ensure that the Successor submarines are ready to replace the current fleet in the 2030s.

2.5 The latest estimate is that manufacturing the four Successor submarines is likely to cost a total of £31 billion (including inflation over the lifetime of the programme), with the first submarine entering service in the early 2030s. We will also set a contingency of £10 billion; a prudent estimate based on past experience of large complex projects. The revised cost and schedule reflect the greater understanding we now have about the detailed design of the submarines and their manufacture.

The warhead

2.6 The UK uses the Trident Mk4 warhead as part of the Trident Strategic Weapons System – there is no work currently underway to develop a new warhead. A replacement warhead is not required until at least the late 2030s, possibly later. As set out in the 2015 SDSR, work continues to determine the optimum life of the existing nuclear warhead stockpile and the range of replacement options. £85 million has been invested in studies to help inform this work. Given lead times, a decision on replacing the warhead may be required in this Parliament or early in the next. The Government will inform Parliament of its intended approach in due course.

2.7 As with any other system to maintain the current warhead, there is a need from time to time to update components that are becoming obsolete. In January 2006, the MOD approved the procurement of the Mk4A Arming, Fuzing and Firing system, replacing a similar non-nuclear component in the warhead. It does not increase the destructive power of the warhead. MOD is investing significantly in the Atomic Weapons Establishment to maintain the facilities and skills necessary to assure the safety and security of the current stockpile, and to sustain the ability to develop a replacement warhead when we need to do so.

The missile

2.8 There are no plans to replace the current Trident D5 missile. The UK is, however, working with US partners in a programme to extend their lifespan to the 2060s at an estimated cost of around £250 million.

Renewing the Deterrent

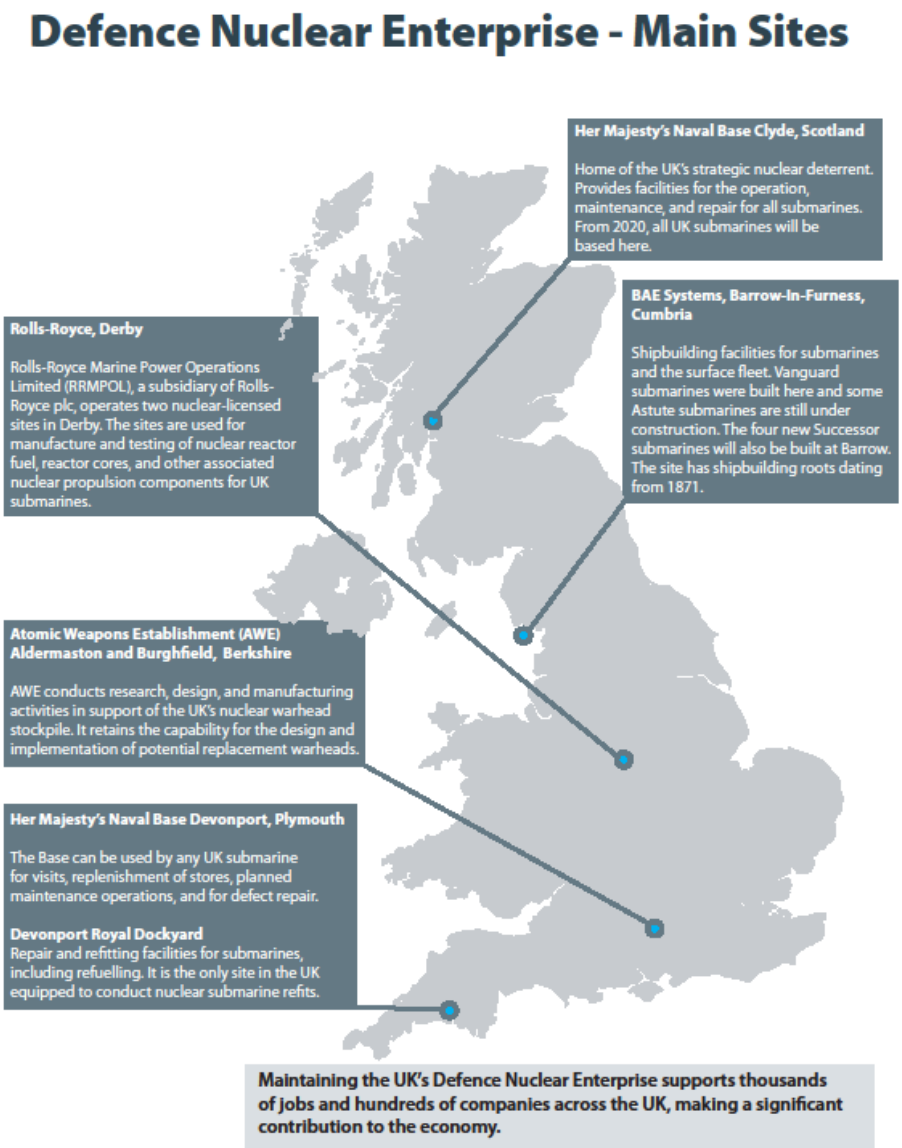
The Successor submarine programme

3.1 In March 2007, Parliament voted to maintain the strategic nuclear deterrent beyond the life of the existing system, supporting the Government's plan to renew the UK's independent nuclear deterrent. The 2015 SDSR reaffirmed the Government's commitment to maintaining the deterrent to deliver CASD and to replace the nuclear-armed Vanguard Class with a new class of four submarines, currently known as Successor.

3.2 The Successor submarine programme is currently in a five-year Assessment Phase during which the design is being refined, preparations made for the build programme, and the essential long lead items ordered. In March 2016, the Assessment Phase approved limit was set at £3.9 billion. Throughout the Assessment Phase, the MOD has worked with its main industrial partners – BAE Systems, Rolls-Royce and Babcock. The Successor submarine programme is a long term investment that will take some 20 years to complete. It is for this reason that the MOD has moved away from a traditional single 'Main Gate' decision point, which is not appropriate for a programme of this scale and complexity, to a staged investment approach with multiple control points. This will enable us to better regulate and control programme funding and delivery. The next financial approval point, planned for later this year, will be to start main production of the first Successor submarine.

The defence nuclear enterprise – a national endeavour

3.3 The defence nuclear enterprise consists of the people, equipment and infrastructure required to deliver the UK nuclear deterrent and nuclear-powered submarines. The 2015 SDSR concluded that we needed a step change in the performance of the defence nuclear enterprise in order to deliver the Successor submarine programme to time and budget, which entails some organisational and contractual changes. This included establishing within the MOD a new Director-General Nuclear post, and supporting organisation, The DG Nuclear will act as the single sponsor for all aspects of the defence nuclear enterprise, from procurement to disposal, with responsibility for submarines, nuclear warheads, skills, related infrastructure and day-to-day nuclear policy. In parallel, the MOD is also looking at setting up a new delivery body with the authority and freedom to recruit and retain the best people to manage the submarine enterprise. This will strengthen arrangements for the procurement and in-service support of nuclear submarines. Working with industrial partners, the MOD is making progress on improving performance, including through sustained investment in skills and infrastructure.



Sustaining jobs and skills

3.4 Maintaining the UK's defence nuclear enterprise is a national endeavour. Supporting over 30,000 jobs across the UK, it makes a significant contribution to the UK economy. The Successor submarine programme represents a major national investment programme – these jobs ensure that the UK retains and develops its world leading skills through a wide range of companies. The effect of that investment will extend well beyond the major companies leading the programme – BAE Systems, Rolls-Royce and Babcock International – and into a large and diverse supply network of companies.

3.5 Hundreds of Small and Medium-sized Enterprises (SMEs) across the UK are working directly in the submarine enterprise and many more will be potentially doing so indirectly. This indicates that the nuclear deterrent represents a significant national undertaking, drawing on cutting edge capabilities, innovation, design and engineering skills available in the UK, and providing employment opportunities and development prospects for a substantial number of apprentices, trainees and graduates in a wide range of technical and other disciplines.

3.6 The total number of MOD, BAE Systems, Rolls-Royce and Babcock International employees directly working on the programme is now in the region of 2,600 with more than half working as engineers and designers. The ability of these key suppliers to deliver their programmes depends heavily on an extensive network of sub-contractors who are indirectly working in support of the Successor programme. The demand for skilled workers continues to grow throughout the supply chain as the programme moves towards full production, and we expect the programme to sustain thousands of jobs at Barrow into the 2030s.

3.7 Building and sustaining these key skills for the future is a national priority.