

Labour's Defence Policy Review

Written Submission by Oxford Research Group

Part Two: The UK's Nuclear Future

April 2016

Executive Summary

- Oxford Research Group (ORG) submits the following additional evidence to Labour's Defence Policy Review in regard to the costs, risks and options surrounding the renewal of the UK's nuclear weapons programme. Its first section aims to set out the available evidence on the real costs of the Successor programme and associated capabilities. The second section aims to set out how current and alternative proposals to renew or reorient British nuclear capability square with the UK's legal obligations to disarmament, non-proliferation and creation of a nuclear weapons free world (NFWF).

1. The real costs of the UK being a nuclear weapon state

- The true costs of the Successor programme to build a new generation of nuclear-armed and -powered ballistic missile submarines remain very difficult to quantify accurately in terms of **development, build, operation, protection and decommissioning costs**. It is clear that the government has had to increase its own (probably conservative) estimates of submarine build costs to £31 billion, with an additional £10 billion contingency. In-service operating costs are roughly estimated to add another £142 billion over 32 years. These represent only some of the build and operation cost estimates, however.
- **Future drivers of the actual cost** (and, to some extent, timeframe) of building and deploying Successor include: developments in the associated US ballistic missile submarine replacement and warhead programmes; the increasing complexity of the design in response to new submarine detection technologies and strategic developments; competition for skilled workers with the expanding civilian nuclear industry; the government's flawed ability to manage contracts with monopoly suppliers; and the possibility of Scottish independence.
- An often overlooked associated cost of the UK remaining a nuclear weapons state (NWS) is the need to secure **the long-term viability of a nuclear-powered submarine construction industry**, to build both Successor and the envisaged Maritime Underwater Future Capability (MUFC). Maintaining a constantly engaged skilled workforce means that the £9.6 billion cost of the Astute-class attack submarines should also be considered when estimating the cost of the UK remaining a NWS with Trident.
- Another associated cost is that of maintaining conventional armed forces to fill the **'deterrence spectrum'** of capabilities necessary to underpin the credibility of Britain as a nuclear power. Without nuclear weapons, it would likely be far easier to determine which of these expensive and largely offensive capabilities could be scaled back.

2. Options: Keep, Scrap or Downgrade Trident?

- Modernising and replacing its nuclear arsenal, as per current government (and Labour Party) policy, runs counter to the **UK's dual responsibilities** under the Nuclear Non-Proliferation Treaty (NPT): to eliminate its nuclear weapons and support the creation of a nuclear weapons free world (NFWF). There are a range of possible measures the UK could now take to realise these obligations. The most direct approach would be to opt for unilateral nuclear disarmament.
- The UK also made a commitment at the 2010 NPT Review Conference to **reduce the salience of nuclear weapons** in its national security policy. Rethinking the UK's role in the world in line with sustainable approaches to security would expedite a rethinking of the UK's **minimum deterrence** requirements, so that nuclear and other offensive forms of power are replaced by conventional and defensive capabilities.
- If disarmament is deemed to be politically unacceptable at present, other options are open which could contribute to a less salient arrangement. These include the possibility of re-configuring the UK's nuclear weapons system so that it is **recessed** or at **reduced readiness** rather than continually operational. Seven options are considered here:
 - 1. A 'Trident lite' programme that adheres to current understandings of 'minimum deterrence'
 - 2. A 'reduced readiness' downsized Trident replacement programme that scales back 'minimum deterrence' requirements
 - 3. A flexible, dual-use 'hybrid' submarine programme for conventional and nuclear missions that also ends CASD and scales down 'minimum deterrence' requirements
 - 4. A nuclear-armed cruise missile capability on current/new attack submarines
 - 5. F-35 Joint Strike Fighters armed with B-61-12 bombs
 - 6. A non-deployed strategic force
 - 7. Sharing nuclear weapons with France
- The UK should also consider changes to the other policies governing nuclear weapons, including moving to a **no first use** policy. This may require greater independence from the US and NATO-tasking, however.
- Regarding **multilateral nuclear disarmament efforts**, it is important to consider how the UK may act responsibly in terms of its international actions, conventional and nuclear military capabilities and posture, to enable nuclear possessors to move towards disarmament and to reduce incentives for others to seek non-conventional deterrents.
- In the case of building a NFWF, as well as national nuclear disarmament, **relevant UK policies requiring review** include its arms sales and nuclear energy exports to countries and regions of concern, as well as its military capabilities and use of power projection. Further conventional militarisation of NATO-Russia borders is unlikely to encourage Russia to commit to nuclear disarmament or de-escalation. The regime-change precedents of Iraq and Libya hardly encourage North Korea or Iran to disarm.

Introduction

It is becoming almost commonplace for members of the UK's defence establishment to acknowledge the fact that if the UK were not a nuclear weapons state (NWS) today it is unlikely that it would seek to become one¹. The political legacy of the Cold War, including the relationships and institutional cultures and structures it produced, significantly shaped today's nuclear status quo. If we accept that if the Trident nuclear weapons system didn't exist it would not be created, we should consider what, if any, nuclear arrangement is suitable for the UK today. This second part of ORG's submission to Labour's Defence Policy Review addresses this question over two sections.

The first considers the nuclear question by investigating the costs and risks of the UK remaining a NWS in relation to the current debate over whether the UK should procure a new generation of nuclear-powered submarines capable of launching nuclear-armed ballistic missiles (SSBNs), known as Successor². This is a particularly pertinent question to consider here given that the next government (presumably after 2020) is set to inherit, assuming current plans go ahead, a particularly costly and massive set of civil and military nuclear construction projects.

The second assesses alternative options to the government's current replacement plans in terms of their potential to reduce the salience of nuclear weapons in the UK's security policies as part of a move toward disarmament.

1. What are the real costs of the UK being a nuclear weapon state?

A review of contemporary public opinion by the British American Security Information Council (BASIC) in 2013 found that the British population 'remains deeply divided on nuclear weapons and choices around Trident replacement'. According to this report, 'polls suggest that opinion has moved towards relinquishing nuclear weapons after Trident when given a simple yes/no choice' and that opposition increases when people are made aware of the cost of replacing Trident³. Moreover, whilst some surveys show that a majority of voters (54%) would prefer Britain to abandon its nuclear weapons and not replace them, other surveys show that a larger majority (81%) favour an international plan 'for totally eliminating nuclear weapons according to a timeline'. For example, a 2007 study by the Simons Foundation found that the UK 'boasts a high level of support for elimination of nuclear arms and nuclear testing all over the world'⁴.

Elsewhere, former Defence Secretary Sir Malcolm Rifkind, reflecting on the nuclear policies of the main three parties in relation to public opinion, argues that the two questions that matter are 'what the public think of the policies themselves' and 'how the adoption of a specific

¹ See e.g. Tanya Ogilvie-White (2011), *On Nuclear Deterrence: The Correspondence of Sir Michael Quinlan*, www.iiss.org. Former MoD Permanent Secretary Sir Kevin Tebbit has stated that whilst UK elites have treated the bomb as the 'the ultimate backbone' he also believes that the UK has 'always been a reluctant nuclear power' see: Peter Hennessy (2011), *Cabinets and the Bomb*, The Inaugural Michael Quinlan Lecture.

² Vanguard class submarines are also SSBNs - submarine ship ballistic nuclear.

³ Nick Ritchie and Paul Ingram (2013), *Trident in UK Politics and Public Opinion*, http://www.basicint.org/sites/default/files/tridentpoliticspublicopinion_basicjul2013.pdf

⁴ See for references: Tim Street (2015), *Thinking Beyond the Bomb*, <https://sustainablesecurity.org>

policy might affect the public's perception of their party'⁵. In summary, Rifkind draws several conclusions from the polling data⁶. Firstly, the public is far more favourable to replacement than generally understood and the issue of Trident's cost is key. Furthermore, the issue of replacement is more salient and sensitive an electoral issue for Labour and the Liberal Democrats, with Conservative voters being more supportive of nuclear weapons than the average voter⁷.

Given the divided nature of the parliamentary Labour party on this issue and the relatively low political salience of nuclear weapons for the public—at the same time as there being significant support for disarmament—during a period of austerity the cost issue is therefore one of the most visible aspects of this debate. Changes in the understanding of the costs and risks of nuclear weapons by opinion-formers, the public and decision-makers, will therefore likely have an important impact on how the debate unfolds over the next few years. However, estimating the cost of Trident replacement today remains particularly difficult given the various factors involved, including how they interact and should be weighted⁸. Even the government has found it difficult—publicly at least—to provide a figure, with the MoD responding to an FOI request from Reuters earlier this year by stating that it 'does not hold a cost forecast for the whole capability'⁹.

Key questions for those interested in exploring alternatives to full nuclear rearmament (i.e. building four SSBNs) concern: i) what exactly needs to be costed ii) whether and at what point these costs might become unacceptable to those who are either pro-nuclear or undecided so that alternative options, including disarmament, become attractive. For example, mainstream debates over the costs for replacing the UK's nuclear weapons focus on two figures:

- 1) Acquisition costs, including:
 - i) Submarines;
 - ii) Warheads;
 - iii) Infrastructure.

- 2) In-service costs between 2028 and 2060. These have been estimated by the Ministry of Defence (MoD) to be 6% of the defence budget and include:

⁵ Malcolm Rifkind (2014), *A Conservative approach to the forthcoming debate on Trident*, <http://www.basicint.org/publications/sir-malcolm-rifkind/2014/conservative-approach-forthcoming-debate-trident>

⁶ You Gov (2013), *Trident: to keep, scrap or downgrade*, <https://yougov.co.uk/news/2013/07/15/trident-keep-scrap-or-downgrade/>

⁷ According to the 2013 YouGov poll, the results (%) for each of the three main parties were as follows: i) The United Kingdom should order four new submarines to maintain its nuclear weapons system: CON- 49 LAB- 25 LD- 12 ii) The United Kingdom should try to find a cheaper system for keeping nuclear weapon: CON- 35 LAB- 34 LD- 47 iii) The United Kingdom should give up nuclear weapons altogether CON- 8 LAB- 26 LD- 33.

⁸ For example, the BASIC *Trident Commission* (2014) stated that whilst its authors were 'aware of a number of headline figure estimates for the costs of renewing the Trident system over the lifetime of the project' they believed that 'the numbers involved are difficult to attach meaning to because most take no account of the time at which such spending is projected and the discount factors involved'.

⁹ Elizabeth Piper (2016), *Exclusive- What cost a nuclear deterrent? Britain doesn't know yet*, <http://uk.reuters.com>

- i) Personnel and other running costs for the SSBN fleet
- ii) Running costs for the Atomic Weapons Establishment (AWE)¹⁰.

Various studies of these two costs have been conducted over recent years¹¹. The 2015 Strategic Defence and Security Review (SDSR) outlined an increase for submarine acquisition costs alone of £6 billion (from a prior 2011 estimate of £25 billion) to £31 billion with a further contingency of £10 billion¹². With regard to in-service costs, Conservative MP Crispin Blunt has highlighted the rapidly escalating and ‘crippling’ cost of replacing Trident—which he claims is set to reach over £142 billion over an envisaged in-service life of 32 years—for the rest of the defence budget. Adding this to the government’s new estimate for submarine acquisition costs gives the figure of £173-£183 billion¹³.

However, as a 2009 Greenpeace report *In The Firing Line* pointed out, there are several examples of ‘discrepancies’ in the cost estimates for Trident replacement, including:

- i) Additional procurement costs of £10.5-£15.5 billion based on evidence showing that ‘generational system replacements double in cost’;
- ii) The estimated £900m cost of conventional military forces directly assigned to support the nuclear force that should be included in Trident running costs;
- iii) The £250m costs of extending the life of the current Trident missiles;
- iv) The estimated £3bn cost of buying next-generation missiles when the Trident missiles are ultimately withdrawn from service midway through the life of the replacement submarines.

In total this provides a total of £14.65 to £19.65 billion additional costs. Greenpeace added this to previous, lower, estimates for Successor acquisition and in-service costs to reach a figure of £97 billion for replacing Trident. Any updated costing for Trident replacement should therefore consider how best to include these and other figures such as warhead development, for which—to date—at least £85 million has been spent on technology studies¹⁴.

In addition to these missing costs the Greenpeace report also highlighted a range of other unclear costs, including for:

- i) New facilities at AWE;

¹⁰ MoD (2016), *Nuclear deterrent factsheet*, www.gov.uk

¹¹ See e.g. Nick Ritchie (2016), *Feeding the Monster: Escalating Capital Costs for the Trident Successor Programme*, www.basicint.org, which outlines a range of different costs and spending, including for the Concept and Assessment phases of replacement.

¹² HM Government (2015), *National Security Strategy and Strategic Defence and Security Review*. Ritchie’s (2016) *Feeding the Monster* report noted that some of the increased cost for the project was ‘now to be met through a new Treasury Fund that will effectively subsidise the Successor programme – the Joint Security Fund unveiled in the July 2015 Summer Budget with further details announced in the November Spending Review and Autumn Statement. This figure may rise substantially in the near future’.

¹³ Crispin Blunt (2015), *Figures show crippling costs of renewing Trident*, www.blunt4reigate.com

¹⁴ Caroline Lucas (2015), *Trident: Written question- 19392*, www.parliament.uk

- ii) Further in-service costs e.g. Astute¹⁵ (hunter-killer submarine) construction costs, US-UK cooperation, decommissioning SSBNs and dismantling warheads, running costs for the Faslane submarine base and Coulport nuclear weapons store¹⁶.

Whilst Greenpeace did not provide estimates for these additional costs, it is important to highlight them (and note that other relevant, yet hidden, items likely exist) as they help us begin to consider a third possible way of costing the UK's nuclear weapons system, which concerns the much wider expense involved in the UK being, and remaining, a NWS. Before discussing this question it is first worth considering some of the known factors which will, in future, potentially increase the cost of Successor and the replacement programme more widely.

1.1 Future cost drivers for Successor

As Professor Keith Hartley has observed, 'future cost escalation' for Successor is 'a certainty'¹⁷. The track record of modern military procurement provides ample supporting evidence for this claim. For example, as Margaret Hodge MP, former chair of the Commons Public Accounts Committee highlighted in 2013, between 2000 and 2012 the cost of the MoD's sixty-nine largest projects 'ballooned by £11bn' with 'independent analysis in 2009' finding that 'final project costs were typically 40% higher than the ministry's initial forecasts'¹⁸. Similar cost over-runs and schedule slippages for military and naval procurement have been experienced in recent years in both France¹⁹ and the US²⁰.

Whilst we must acknowledge the difficulties in estimating a cost for Successor, it is therefore important to consider what some of the key drivers of cost escalation—particularly for submarine acquisition—might be if current plans continue through into production. This is necessary in order to contribute to an informed public debate and government accountability concerning nuclear weapons decision-making. The list below highlights some of these factors, drawing on issues discussed in the media, expert literature as well as military and government documents, including the risk register for the defence nuclear programme maintained by the Defence Nuclear Executive Board (DNEB) within the MoD²¹.

- i) Delays, complications or budget problems with the US nuclear modernisation programme**

¹⁵ Astute is an attack submarine, also known as a ship submersible nuclear or SSN.

¹⁶ Louise Edge (2009), *In The Firing Line: hidden costs of the supercarrier project and replacing Trident*, www.greenpeace.org.uk

¹⁷ Personal correspondence.

¹⁸ Margaret Hodge (2013), *Statement on Ministry of Defence: Equipment Plan 2012-2022*, www.parliament.uk

¹⁹ According to the 2010 annual report of France's national auditors, the unit cost of the seven largest French weapon systems has risen on average by 33.9% since their launch. This includes a unit cost increase of over 50% for the production of France's four SSBNs. See: www.defense-aerospace.com/articles-view/feature/5/112431/opposing-views-of-bae-settlements.html

²⁰ As for the US, a 2015 Congressional Budget Office report on the cost of the Navy's shipbuilding programs found that the Navy has, in recent years, underestimated the cost of lead ships in new classes by a weighted average of 27%. See: www.cbo.gov/publication/50926

²¹ The heavily redacted risk register is available on the Nuclear Information Service website, see: <http://nuclearinfo.org/sites/default/files/Redacted%20DNEB%20Risk%20Register.pdf>

The US is pursuing its own, hugely costly, nuclear modernisation programme, covering, as Amy Woolf notes, ‘programs to modernize and replace all U.S. nuclear delivery systems—the submarines, missiles, and bombers—while the Department of Energy plans to refurbish the nuclear warheads carried by those delivery systems’²². UK Successor will be based in part on US submarine designs so that efforts have been made to bring the two nation’s replacement programmes in line²³.

In addition, the 1958 Mutual Defence Agreement enables the UK and US’s ‘nuclear warhead communities’ to ‘collaborate on all aspects of nuclear deterrence including nuclear warhead design and manufacture,’ so that future developments in the US will likely impact on the UK’s own warhead programme²⁴. As Professor Malcolm Chalmers has therefore noted:

‘pressure on the US’s defence budget is increasing the possibility that its own SSBN-replacement programme is delayed, and with it the US’s requirement for CMC completion. Sequestration is also restricting the Pentagon’s ability to alter programme scheduling to suit UK requirements. Both in relation to the submarine and warhead programmes, US decision-makers may simply not take UK concerns into account within their own complex decision making calculus. The result could be further complications for UK planners’²⁵.

ii) Increased design complexity owing to strategic and/or technological developments

Successor has been described as the most technologically advanced and stealthy submarine ever produced by the UK. The design of the submarines will evolve according to changes in perceived military needs and threats—including cyber-attack, underwater vulnerabilities and anti-submarine warfare—e.g. from China and Russia²⁶. For example, as defence analyst Richard Sterk observes, since Astute was designed, ‘the operational scenarios in which U.K. Royal Navy submarines are expected to operate have changed significantly. Operations in the littoral are becoming far more commonplace, and commensurately there is less emphasis on deepwater anti-submarine warfare’.

Changes in strategic priorities, e.g. the US’s Asia pivot, focusing on China and the Indo-Pacific littoral, could thus impact on the design for the common missile compartment (CMC) which the UK is developing and paying for alongside the US²⁷. In addition, Nick Ritchie and other analysts have suggested that the UK may prefer to develop a capability combining

²² Amy Woolf (2013), *Nuclear Modernization in an Age of Austerity*, www.armscontrol.org

²³ Nick Ritchie (2011), *Replacing Trident- Background Briefing for Parliamentarians*, www.york.ac.uk

²⁴ Richard Norton-Taylor (2014), *Nuclear weapons deal with US renewed in secret, UK confirms*, www.theguardian.com. As the government explained in the 2015 SDSR, ‘A replacement warhead is not required until at least the late 2030s, possibly later. Given lead times, however, a decision on replacing the warhead may be required in this Parliament or early in the next’.

²⁵ Malcolm Chalmers (2013), *Towards the UK’s Nuclear Century*, <https://rusi.org>

²⁶ Julian Borger (2016), *‘Trident is old technology’: the brave new world of cyber warfare*, www.theguardian.com

²⁷ Michael A. McDevitt, M. Taylor Fravel, Lewis M. Stern (2013), *The Long Littoral Project: South China Sea, A Maritime Perspective on Indo-Pacific Security*, www.cna.org

conventional and nuclear roles, such as ‘a flexible dual-capable SSBN/SSGN’²⁸. Increased design complexity driven by strategic and/or technological developments may thus contribute to cost escalation.

iii) Competition for nuclear skills

The previous government highlighted in *Sustaining Our Nuclear Skills*—its 2015 addendum to the Nuclear Industrial Strategy—that it has ‘initiated an ambitious programme to construct up to five or even more civil nuclear plants by 2030, while at the same time carrying out a large programme of decommissioning work. Over almost the same period, the Ministry of Defence (MOD) will develop the Successor submarine class’²⁹. As Tom McKane, former Director General for Strategy and Director General for Security Policy at the MoD, explained earlier this year, the ‘massive’ challenge of building Successor has thus been ‘exacerbated’ by ‘having to recruit, in order to replace the ageing workforce, at the same time as the UK is preparing to place orders for new phase of civil nuclear power stations’. McKane points out that the civil sector is also ‘able to outbid the defense industry in the competition for scarce highly trained personnel’ so that whilst the government is seeking to develop the requisite engineering skills and apprenticeships ‘the benefits of such initiatives do not appear overnight’³⁰.

Moreover as *Sustaining Our Nuclear Skills* notes, the shortage of skilled workers for nuclear projects will ‘create competition for specialist skills, pushing up labour prices. This threatens to increase the cost of critical national projects and potentially raise the UK’s reliance on foreign expertise for civil projects. It will raise particular challenges for defence, where security considerations require UK nationals’³¹. Overall, whilst, as Professor Keith Hartley notes, the taxpayer-funded MoD could outbid the civil sector, ‘the result is either skill shortages and programme delays and/or further rising costs’³².

In response to the potential skills shortage, recent reports suggest that the MoD has taken exceptional measures to mitigate risk. For example, the Financial Times reported in July 2015 that the Royal Navy was ‘offering a one-off bonus of up to £24,000 to retain nuclear engineers, fearing it will lose skilled staff to civil power station projects such as Hinkley Point’³³. Elsewhere, Defense News disclosed last April that ‘as part of the effort to attract the skilled engineers and commercial staff it needs’ the Defence Equipment and Support group within the MoD has ‘been given approval to break civil service pay norms’³⁴.

²⁸ Nick Ritchie (2010), *Continuity / Change: Rethinking Options for Trident Replacement*, www.york.ac.uk; Chris Parry (2015), *Labour should keep its powder dry on Trident – the debate has barely begun*, www.theguardian.com; Julian Turner (2013), *Deep impact: inside the UK’s new Successor-Class nuclear submarine*, www.naval-technology.com

²⁹ HM Government (2015), *Sustaining Our Nuclear Skills*

³⁰ Tom McKane (2016), *The Challenges of Maintaining Nuclear Cultures: US and UK perspectives*, www.ifri.org

³¹ HM Government (2015), *Sustaining Our Nuclear Skills*

³² Personal correspondence

³³ John Murray Brown (2015), *Navy offers £24,000 to keep its nuclear engineers*, www.ft.com

³⁴ Andrew Chuter (2016), *UK Relaxes Salary Cap To Recruit New Nuclear Chief*, www.defensenews.com

Rolls Royce is currently undertaking reactor design work for Successor, yet Ritchie has argued that ‘the costs of developing the new PWR3 nuclear reactor are unlikely to be assigned to the Successor programme’³⁵ and thus should be considered an additional cost. On this topic, the National Audit Office’s (NAO) 2012 MoD Major Projects Report stated that, ‘the Nuclear Propulsion Critical Technology programme brings focused investment to regenerate the UK nuclear propulsion design and support capability, and ensures we have the design base essential to maintain a strategic sovereign UK nuclear capability’³⁶.

For Dr Peter Burt, this raises the question of whether ‘expertise in submarine reactor design has declined since development of the Navy’s last submarine reactor (PWR2 Core H)’ leading him to ask ‘will this pose a risk to delivery of the programme?’³⁷ A Financial Times article from last January on the Successor project sheds some light on this question noting that a ‘new nuclear propulsion system, the PWR3’ was necessary owing to regulators demanding improvements to safety. Yet whilst the new system will ‘last longer and be easier to maintain’ Rolls-Royce has, according to industry insiders, ‘struggled to find enough skilled workers.’³⁸

iv) Government management of Successor / relations with monopoly suppliers / shortages of other skilled personnel

The size of the Successor project is such that the former top MoD civil servant Jon Thompson admitted to the Public Accounts Committee last October that it is the project which ‘most keeps me awake at night’ because it is the ‘single biggest future financial risk we face’³⁹. It has been reported that Chancellor George Osborne subsequently sought to take over the mega-project, with the Treasury at the head of a new management consortium. Osborne apparently made this move to try and ensure that the Successor programme arrives on time and does not go even further over budget—unlike the UK’s new conventionally-armed Astute subs which have been plagued by design and construction flaws⁴⁰.

Such has been the concern in the defence establishment about the UK’s ability to build submarines following the Astute debacle that the MoD commissioned the RAND Corporation to produce a report on submarine design and production. This 2005 report on the *UK’s Nuclear Submarine Industrial Base* focused on ‘how best to maintain submarine design and production capabilities in this era of declining defence budgets and force structures,’ and highlighted that ‘possible problem sources include a lack of sufficient design resources and frequent management changes at the shipbuilder’⁴¹.

The UK’s submarine base relies on two monopoly suppliers- BAE Systems and Rolls Royce. As Burt has noted, the problem of a monopolistic relationship is that ‘there are real difficulties

³⁵ Nick Ritchie (2016), *Feeding the Monster: Escalating Capital Costs for the Trident Successor Programme*, www.basicint.org

³⁶ National Audit Office (2013) *The Major Projects Report 2012- Appendices and Project Summary Sheets*

³⁷ Peter Burt (2013), *Progress with the Successor submarine programme: National Audit 'Ministry of Defence Major Projects Report 2012*, www.nuclearinfo.org

³⁸ Peggy Hollinger (2016), *Nuclear submarine project looks to take lessons on board*, www.ft.com

³⁹ Andrew Chuter (2013), *Nuclear Sub Project Poses UK's Biggest Financial Challenge*, www.defensenews.com

⁴⁰ BBC (2015), *George Osborne 'wants Treasury oversight of Trident'*, www.bbc.co.uk

⁴¹ John F. Schank et al (2005), *Sustaining Design and Production Resources*, www.rand.org

in providing the right incentives for these suppliers to deliver to time and budget'. This was shown during the construction of Astute where 'the cost of procured parts' constituted 'more than 50 per cent' of the submarine's value yet specialist suppliers considered leaving the submarine market 'due to infrequent orders and poor returns'⁴².

As well as skilled nuclear workers Professor Hartley has noted that the UK's retention of its nuclear-powered submarine industrial base necessitates:

'a commitment to retaining the industry's specific skills, especially those skills which are not available from the broader market place and which have to be maintained within the specialist submarine industry. These submarine-specific skills include structural acoustic design, together with specialist welding and fabrication skills. Retaining this industry also requires the retention of specialised industrial facilities and supporting technologies'⁴³.

In addition to submarine-specific skills there is also the question of, in Tom McKane's words, the 'long-standing shortage of skilled personnel to fill certain types of Royal Navy posts which are critical to the operation of the deterrent'⁴⁴.

v) Scottish independence and relocating Trident

Trident submarines are based at the Faslane naval base in Scotland yet polls show that a majority of Scots want the UK to scrap its nuclear weapons⁴⁵. As a study by RUSI found, were there to be another referendum whereby Scotland voted for independence, it 'may not be politically feasible' for the UK to base its nuclear forces there⁴⁶. In addition, relocating Trident to another base would involve significant technical and political challenges, with the government itself noting that this 'would cost billions of pounds and take many years'⁴⁷.

1.2 The costs of the UK being a NWS with Trident

As noted above, Greenpeace's study of the costs of Trident replacement is useful in beginning to consider a third possible way of costing the UK's nuclear weapons system, which concerns the much wider cost of the UK being, and remaining, a NWS. Whilst it is not possible to provide exact estimates of this here, we can begin to outline some of the key aspects of NWS status that should be considered.

Firstly, it is reasonable to propose that without the Astute programme preceding it the UK would not be in a position to build Successor class SSBNs. If this is correct then at least some of the costs of Astute SSNs (forecast by the NAO to total over £9.6 billion for seven boats)

⁴² Peter Burt (2009), *A Replacement For Trident: Can We Afford It?*, www.nuclearinfo.org

⁴³ Keith Hartley (2012), *Defence-Industrial Issues: Employment, Skills, Technology and Regional Impacts*, www.basicint.org

⁴⁴ Tom McKane (2016), *The Challenges of Maintaining Nuclear Cultures: US and UK perspectives*, www.ifri.org

⁴⁵ What Scotland Thinks (2014), *Should Trident be scrapped or maintained?*, <http://whatscotlandthinks.org>

⁴⁶ Hugh Chalmers and Malcolm Chalmers (2014), *Relocation, Relocation, Relocation: Could the UK's Nuclear Force be Moved after Scottish Independence?*, <https://rusi.org>

⁴⁷ House of Commons Scottish Affairs Committee (2013), *The Referendum on Separation for Scotland: Terminating Trident – Days or Decades? Government Response to the Committee's Fourth Report of the Session 2012-13, 1st Special Report of Session 2012–2013*, www.publications.parliament.uk

should be included when estimating the true cost of the UK remaining a NWS with Trident⁴⁸. It is therefore necessary to briefly explore Astute's role in preventing the extinction of the UK's submarine industry.

In 2008 Rear Admiral Andrew Matthews (then MoD Director General of Submarines) noted that, 'Astute not only builds confidence with our key decision makers that we can still build submarines affordably, but it also sustains industry with our optimised build drumbeat of 22 months between each boat to get us to the future deterrent programme'. Matthews went on to note that the NAO had allowed MoD to:

'score some additional costs against Astute, not as cost growth but as long term sustainment. To sustain industry through to the future deterrent programme (sic)...Finally, Astute is vital to the future because it allows us to de-risk the next deterrent programme by maturing new technology in the later Astute hulls before they go to sea in the new first of class'⁴⁹.

From 2009 onwards the NAO's Major Projects Reports on MoD spending followed Matthew's approach stating that 'the Astute Class will also de-risk capability essential for an affordable Successor deterrent programme'⁵⁰. In 2009 Rear Admiral Simon Lister (then MoD Director General of Submarines) was reported by the Independent to have said that: 'the link between Astute and Successor is ensuring a smooth, long-range production environment'⁵¹. Moreover, Stuart Godden, director of engineering for BAE System's submarines division has stated that 'the UK's national capability in submarine building was rebuilt on Astute'⁵². These statements underscore the importance of the Astute programme to the UK's ability to remain a NWS with Trident. Astute was necessary as the UK's ability to design and manage submarine construction had significantly eroded over the ten years between the production of Vanguard SSBNs and Astute SSNs.

As noted above, in order to learn lessons from this episode, the MoD commissioned the RAND Corporation to produce a report on submarine design and production. RAND's 2005 report highlighted the impact of the cuts to government departments and civil servants, including the MoD, implemented by Prime Minister Margaret Thatcher. The result for the MoD was that 'entire organisations were eliminated' including those:

'whose functions have since proven to be necessary for oversight of a programme as complex as the design and build of a nuclear submarine. Recruiting for future needs was also curtailed. For example, the Royal Corps of Naval Constructors, one of the key organisations in the design support and build oversight of naval defence systems, stopped recruiting new members'⁵³.

⁴⁸ National Audit Office (2015), *Major Projects Report 2015 and the Equipment Plan 2015 to 2025*, www.nao.org.uk

⁴⁹ Andrew Matthews (2008), *Showing the US the way?* (NB: taken from speaking notes)

⁵⁰ National Audit Office (2013) *The Major Projects Report 2012- Appendices and Project Summary Sheets*, www.nao.org.uk

⁵¹ Sarah Arnott (2009), *Britain's £1.3bn new sub 'Astute' sets sail*, www.independent.co.uk

⁵² Andrew Hankinson (2014), *In depth: the nuclear submarine that can remain underwater for 25 years*, www.wired.co.uk

⁵³ John F. Schank et al (2005), *Ministry of Defence Roles and Required Technical Resources*, www.rand.org

In addition, the government introduced a new acquisition model whereby the contract for Astute would be open to competition and industry would take the lead on both designing and constructing the submarines. The overall result, according to RAND, was that the MoD was ‘rapidly losing its ability to be an informed and intelligent customer’ so that the new model was ‘detrimental to the government’s interests’⁵⁴. Astute thus suffered cost and time overruns with the first three boats 57 months late and 53% (or £1.35 billion) over-budget by 2009, so that its final costs are expected to be over £9.6 billion⁵⁵.

Beyond the importance of Astute for ensuring the possibility of Successor lies the importance of Successor for ensuring the replacement of Astute when it retires from service after its 25-year lifespan. As the Trident Alternatives Review states, the UK’s nuclear submarine industry was ‘optimised during the Strategic Defence & Security Review 2010 through a planned build programme of 7 Astute Class SSNs, followed by 4 Successor SSBNs, followed by a future submarine known as “Maritime Underwater Future Capability” (MUFC)’. This statement suggests that the government could be following RAND’s advice to MoD in 2005 that ‘the operational life of the Vanguard class could possibly be extended to around 40 years...This allows spiral development of the Astute class and minimises the gap prior to the design effort for the MUFC,’ given its announcement in the 2015 SDSR that Vanguard ‘will begin to leave service by the early 2030s’⁵⁶.

In summary then, industrial and technological imperatives and timelines seem to be strongly determining the British decision-making process so that future governments will be met with a *fait accompli* when they assume power. Moreover, elected officials need to be aware of this dynamic if they are to gain control of such projects, be in a position to change or cancel them and explore alternatives beyond the status quo.

1.2.1 Conventional forces and the ‘deterrence spectrum’

As well as considering the detrimental impact that the UK remaining a NWS with Trident has on national democracy and decision-making, it is also important to consider the impact that the cost of Trident has on conventional forces and thus the concept of deterrence. For example, reflecting on the decisions made in the 2010 SDSR, Vice Admiral Jeremy Blackham wrote in 2013 that:

‘Conventional force levels are again at risk and so therefore is the credibility both of the nuclear deterrent and of deterrence more generally ... To be credible, the nuclear deterrent must be underpinned by strong conventional deterrence ... If you remember nothing else from this article, remember this: When bad things don’t happen, it is because they have been deterred. Nuclear deterrence is simply the most extreme example of this deterrence spectrum ... In Britain today ‘defence policy’ appears to be

⁵⁴ Ibid. and John F. Schank et al (2011), *Learning from Experience: Lessons from the United Kingdom’s Astute Submarine Program*, www.rand.org

⁵⁵ House of Commons Defence Committee (2009), *Defence Equipment 2010 Sixth Report of Session 2009–10*, www.publications.parliament.uk

⁵⁶ HM Government (2015), *National Security Strategy and Strategic Defence and Security Review*; John F. Schank et al (2005), *Sustaining Design and Production Resources*, www.rand.org. [It is therefore also important to note the costs of Vanguard SSBN life extension, which Ritchie \(2016\) discusses in the BASIC report Feeding the Monster.](#)

merely to have a nuclear deterrent and then buy whatever else can be afforded, with no informed consideration of how the whole strategy fits together⁵⁷.

Blackham was arguing here that an overdependence upon nuclear weapons leaves a wide credibility gap concerning military responses to any threats short of the destruction of the British state, and that this gap renders the UK's nuclear deterrence posture itself untenable. Several observers have noted that the primary function of the UK's nuclear weapons is political, so that, as Tony Blair remarked, Trident's utility in the post-Cold War world is 'less in terms of deterrence, and non-existent in terms of military use'⁵⁸. At the same time however, as Dr Karl-Heinz Kamp and Major General Robertus Remkes note, nuclear weapons 'have to be militarily usable to fulfil a political effect'⁵⁹.

The importance of military credibility to the political value of nuclear weapons has led many of those who want to see the UK continue to be an interventionist, global power—standing four-square behind the US—to argue that if the UK is perceived as being unable or unwilling to use military force, up to and including detonating a nuclear weapon, then others won't be deterred and will do as they please. This position justifies continued high spending on conventional defence to both support Trident and make it credible from a strategic point of view. Rory Stewart, former Chair of the Defence Select Committee, illustrated this point prior to the 2015 election when he argued that if the UK does not spend 2% of its GDP on the military then the 'character of the nation' will be affected so that British nuclear weapons will be akin to 'a gold inkstand on the Table- a golden pinnacle on top of a cathedral, when the foundations and the structure of that cathedral are lacking and the faith of the nation has been lost'⁶⁰.

If one accepts Blackham and Stewart's arguments then it is logical to consider the conventional portion of the UK's £36 billion military budget as the 'foundations and structure' necessary to make Trident credible and sustain the UK's NWS status. The problem now facing defence planners at a time of mounting costs for building a new generation of SSBNs (whereby submarine construction is projected to eat up to a third of the defence capital budget for about ten to fifteen years from the early 2020s) is that Trident replacement threatens to jeopardise the UK's conventional military strength—capabilities which are, as described above, themselves foundational to the theory of nuclear deterrence⁶¹.

These conclusions should lead us to revisit the meaning and value of Trident for UK political elites, both in terms of domestic politics and Britain's international relations, particularly with the US. For reasons of space and time it is not possible to do this here, although previous Oxford Research Group briefings outline some of the key drivers behind UK nuclear weapons decision making⁶².

⁵⁷ Jeremy Blackham (2013), *Deterrence is not just about nuclear weapons- Time for serious strategic thought*, www.uknda.org

⁵⁸ Nuclear Information Service (2010), *Blair on Trident: 'There was a case either way'*, www.nuclearinfo.org

⁵⁹ Karl-Heinz Kamp and Robertus Remkes (2011), *Options for NATO Nuclear Sharing Arrangements*, <http://www.nti.org>

⁶⁰ Rory Stewart (2015), *Trident Renewal*, www.rorystewart.co.uk

⁶¹ Malcolm Chalmers (2013), *Mid-Term Blues? Defence and the 2013 Spending Review*, <https://rusi.org> ;

Malcolm Rifkind et al (2014), *The Trident Commission- Concluding Report*, www.basicint.org

⁶² See for example:

2. Options: Keep, Scrap or Downgrade Trident?

As important as the question of cost is for the debate over the UK's nuclear future—so that some, such as Crispin Blunt MP, believe that current cost estimates represent a tipping point whereby Successor has become unjustifiable and other, apparently cheaper, nuclear weapon systems are now preferable—for other supporters of the UK remaining a NWS, cost is an important but not decisive concern. Thus, as the Final Report of the BASIC Trident Commission stated: 'we believe that cost must be of secondary importance to the judgment over whether forsaking the UK's nuclear deterrent capability could open the country to future strategic risk'⁶³. Yet, as we have seen, escalating costs for Successor threaten to undermine conventional military spending and thus the very foundations of nuclear deterrence, with the Trident Commission itself noting that 'important defence projects currently in the pipeline will surely suffer delay or cancellation'⁶⁴.

Absent a deeper consideration of the issues surrounding the nuclear debate, leading to a change in the positions of opinion-formers, the public and decision-makers, it is understandable that the Labour leadership will try to find a middle ground or intermediate option between full rearmament and full disarmament to achieve some sort of acceptable compromise, if not consensus, both in the parliamentary Labour party and the nation as a whole. As noted above, future cost escalation for Successor may make other nuclear weapon postures such as ending continuous-at-sea-deterrence (CASD)⁶⁵ and systems, such as deploying B61-12 bombs on F-35 jets, seem more attractive⁶⁶. This is not least because the more expensive Successor is, or appears to be, the greater the gap between it and other, apparently cheaper options, becomes.

Those seeking an alternative to full rearmament might therefore be tempted to use future cost escalation of Successor as a way of justifying other options. However, considerations other than cost must, of course, be taken into account given the beliefs and interests of those supporting and opposing the UK remaining a NWS. This submission focuses on the ideas and principles of the latter camp i.e. associated with those supporting disarmament, both for reasons of space and because of the broad available literature representing the former point of view.

www.oxfordresearchgroup.org.uk/publications/briefing_papers_and_reports/politics_british_nuclear_disarmament and

http://www.oxfordresearchgroup.org.uk/publications/briefing_papers_and_reports/uk%E2%80%99s_nuclear_future_options_between_rearmament_and_disarmament

⁶³ Malcolm Rifkind et al (2014), *The Trident Commission- Concluding Report*, www.basicint.org

⁶⁴ Ibid.

⁶⁵ CASD involves one of the UK's four *Vanguard* submarines being at sea on operational patrol in the Atlantic at all times and fully armed with up to 48 nuclear warheads. This set up is intended, in the words of Lord David Owen, to provide '100 per cent assurance that a retaliatory blow can be delivered via an invulnerable delivery platform' to defend against a 'bolt from the blue' attack, a posture Owen considers unnecessary. See: Nick Ritchie (2010), *Continuity / Change: Rethinking Options for Trident Replacement*, www.york.ac.uk

⁶⁶ The implications of ending CASD have been discussed in depth by authors such as Nick Ritchie (2012), *Rethinking Trident Replacement*; Hugh Chalmers (2014), *A Disturbance in the Force* and Malcolm Chalmers (2010) *Continuous-At-Sea-Deterrence: Costs and Alternatives*.

2.1 The UK's dual international disarmament obligations

The UK has obligations under the Nuclear Non-Proliferation Treaty (NPT) committing it to 'pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament, and on a treaty on general and complete disarmament under strict and effective international control', an objective reaffirmed in 1996 by the International Court of Justice⁶⁷. The UK also made a commitment at the 2010 NPT Review Conference to: i) reduce the salience—i.e. the role and significance—of nuclear weapons in its national security policy ii) 'apply the principles of irreversibility, verifiability and transparency in relation to the implementation of their treaty obligations' e.g. on nuclear disarmament⁶⁸.

In order to realise these obligations there are a range of possible measures the UK could now take. The most straightforward approach would be to opt for full disarmament which would, on a purely material level, i.e. not considering the significant domestic and international political implications, entail: i) decommissioning and dismantling the UK's nuclear weapons system using a phased approach which would cover the submarines, missiles and warheads and last for several years ii) diversifying AWE and nuclear weapons-related industry into civil sector work or closing these facilities iii) cancelling Successor⁶⁹.

If opting for full disarmament in the short-term is deemed to be politically unacceptable at present, then alternatives to the Trident system and CASD are available that could begin to reduce the salience of nuclear weapons in the UK's defence and foreign policy. Assessing the significance of these alternatives should be done according to the UK's dual international obligations to eliminate its nuclear arsenal and contribute to the creation of a nuclear weapons free world (NFWF). These yardsticks are vital to bear in mind given that if a future UK government were to pursue an alternative to building four new SSBNs and maintaining CASD, it would likely wish to frame this as *some sort* of contribution to disarmament.

In addition, were a future government to opt for an alternative nuclear weapons posture or system, it would need to convincingly show that it was doing this as a means of putting the UK on a glide path to *eventual* full disarmament. This would, not least, be necessary if the government were to succeed in the difficult task of persuading those who are undecided about the issue, or who presently favour disarmament, that investing significant resources in a new nuclear weapons system was part of a longer-term commitment to eliminate the UK's nuclear arsenal. Clearly the problem this raises is that those who support full rearmament and/or oppose disarmament would find this commitment unacceptable and thus reject such an option outright.

2.2 Assessing alternatives: reducing the salience of nuclear weapons

Given the complexities of the discussion it is not possible here to provide a full assessment of the pros and cons of the different options between full rearmament and full disarmament either in terms of their political appeal to the various interest groups involved in the debate

⁶⁷ NPT (1968), *Treaty on the Non-Proliferation of Nuclear Weapons*, www.un.org; ICJ (1996), *Legality of the Threat or Use of Nuclear Weapons*, www.icj-cij.org

⁶⁸ NPT (2010), *Final Document*, www.nonproliferation.org

⁶⁹ John Ainslie (2012), *Disarming Trident*, <http://actionawe.org>

or their relative strategic strengths and weaknesses- which have, in any case, been discussed in depth elsewhere. The option to delay a decision—i.e. on whether to build new SSBNs and, if so, how many—is also not discussed because whilst this may have merits as a short-term solution a definitive path will eventually have to be chosen⁷⁰. This section is therefore limited to a consideration of the possible value of the different options between these two poles in terms of whether and how they might reduce the salience of nuclear weapons in the UK's security policy.

Aspects of the UK's current nuclear policies which could be changed to reduce the salience of nuclear weapons concern: i) acquisition i.e. what kit is bought and owned ii) declaratory i.e. public statements about the role of nuclear weapons iii) deployment i.e. how nuclear weapons are arranged and positioned iv) employment i.e. the circumstances and ways in which the government plans to use nuclear weapons to achieve strategic aims. The options presented below are adapted from recent publications by Paul Ingram, Dr Nick Ritchie (i.e. options 1-4), Toby Fenwick (option 5), Professor Malcolm Chalmers (option 6) as well as the previous government's Trident Alternatives Review⁷¹. They are assessed according to the four nuclear policies outlined above in order to produce a broad initial assessment of how they might be considered in terms of reducing the salience of nuclear weapons and moving towards disarmament.

Before outlining these options, it is important to note Ritchie's argument that a changed conception of what the UK's '**minimum deterrence**' requirements are is necessary to open up alternative options to the Trident system and CASD⁷². This would entail a move away from British nuclear strategist's Cold War calculation, which remains operational, that 'minimum' means having sufficient destructive power to deter the then Soviet Union, today's Russia, so that Moscow's air defences could be overcome and its government and military command centre wiped out⁷³.

Reassessing the UK's role in the world in line with sustainable approaches to security would provide a coherent approach which the government could follow in order to rethink its minimum deterrence requirements so that nuclear and other offensive forms of power are eventually replaced by conventional and defensive capabilities⁷⁴. It is also important to note that any significant change to the UK's nuclear weapons policy would have wider political implications given the nature of the UK's close nuclear relationships with the US, NATO (and thus the alliance's nuclear posture which does not rule in or rule out the **first use** of nuclear

⁷⁰ Paul Ingram has suggested that a decision on whether to build new submarines could be suspended, which could be achieved by 'reassessing the life-expectancy of the current Vanguard class submarines, planning for further life-extension activities, measures to monitor and extend the life of the reactor pressure vessel, changing the patrolling patterns (relaxing CASD requirements) and deployment of submarines (perhaps mothballing two), or by reducing the estimated time for the construction of Successor submarines'. A delay, whilst not without its own risks, would allow the potential vulnerability of submarines to cyber threats and underwater technology to be properly considered as well as the wider costs and risks of remaining a NWS. See: www.basicint.org/news/2015/memo-next-prime-minister-options-surrounding-replacement-trident.

⁷¹ Nick Ritchie (2010), *Continuity / Change: Rethinking Options for Trident Replacement*, www.york.ac.uk

⁷² Nick Ritchie (2012), *A Nuclear Weapons-Free World? Britain, Trident and the Challenges Ahead*, www.palgrave.com

⁷³ John Ainslie (2013), *Unacceptable Damage*, www.swordofdamocles.org

⁷⁴ See Part One of ORG's submission to the Labour Defence Review for a wider discussion of what moving to sustainable security policies might mean for the UK.

weapons) as well as France, with which the UK signed a far-reaching nuclear co-operation agreement in 2010.

Elsewhere, Professor Michael J. Mazarr has outlined another way to look at the question of intermediate steps between the UK's current status of maintaining assembled, ready-to-use nuclear weapons and complete disarmament, which involves the concept of '**virtual nuclear arsenals**' (VNA). Mazarr outlines how the purpose of a VNA would be 'a situation in which no nuclear weapons were assembled and ready for use'. NWS could thus gradually:

'dismantle all assembled nuclear devices and place the resulting parts—perhaps including warheads, delivery vehicles, and fissile material—under bilateral, multilateral, and/or international inspection. The weapons would be separated from the delivery systems in such a way that any attempt to marry the two would be verified'⁷⁵.

In addition, NWS with SSBNs—such as the UK—could gradually reduce 'the **operational readiness**' of nuclear weapons by, for example, 'removing guidance sets from missiles at sea' or by removing and separately storing 'whole warheads'⁷⁶. The selection of illustrative options presented below are therefore also assessed according to the ease with which they might be dismantled and made less operationally ready as part of a transition to a VNA. This is because all the options i.e. platforms could be configured differently through different declaratory, deployment and employment policies e.g. with nuclear weapons at lower or higher levels of readiness. Finally, it should be noted that the nature of the subject means that this must be a subjective and provisional assessment which is open to re-evaluation e.g. as more information comes to light.

1. A 'Trident lite' programme that adheres to current understandings of 'minimum deterrence'.

- CASD would be retained but only three new submarines might be built and could be armed with fewer missiles.
- This option amounts to a very minor reduction in the salience of nuclear weapons.

2. A 'reduced readiness' downsized Trident replacement programme that scales back 'minimum deterrence' requirements.

- This would mean ending CASD and building only three new submarines, possibly reducing the number of missiles and warheads.
- This option could be a more significant reduction in the salience of nuclear weapons and an initial step towards a VNA.

3. A flexible, dual-use 'hybrid' submarine programme for conventional and nuclear missions that also ends CASD and scales down 'minimum deterrence' requirements.

⁷⁵ Michael J. Mazarr (1997), *Nuclear Weapons in a Transformed World: The Challenge of Virtual Nuclear Arsenals* (New York: St Martin's Press)

⁷⁶ Ibid.

- This option could be a more significant reduction in the salience of nuclear weapons and an initial step towards a VNA.

4. A nuclear-armed cruise missile capability aboard current or new attack submarines i.e. Astute-class SSNs with less missiles and warheads.

- Cruise missiles have a shorter range than ballistic missiles so that the Trident Alternatives Review found that this option would reduce who the UK 'could deter unilaterally in all circumstances'⁷⁷.
- In relation to this and option 3, Malcolm Chalmers notes that the submarine fleet could be 'rationalised around a single model of boat, which could be used either for conventional roles (with warheads unloaded) or in a deterrent role.' Significantly, however, it would not be possible 'for potential adversaries to detect whether or not a particular boat was nuclear-armed when it went on patrol'⁷⁸.
- This option could be a more significant reduction in the salience of nuclear weapons and an initial step towards a VNA.

5. F-35 Joint Strike Fighters armed with B-61-12 bombs

- This option, proposed by Toby Fenwick, involves cancelling Successor and producing a 'British-built version of the new US precision-guided B61-12 thermonuclear bomb delivered through the UK's forthcoming F-35 Joint Strike Fighters, operating from land bases and from the Royal Navy's new carriers'⁷⁹.
- Amongst the justifications for this proposal, Fenwick claims that it will:
 - Significantly enhance the UK's conventional force projection capabilities.
 - Save £4.8–13.1 billion to reinvest i.e. in conventional forces.
 - Be a 'concrete step down the nuclear ladder and towards future nuclear disarmament' in accordance with the NPT.
- Leaving aside the substantial concerns regarding cost, legality and procurement for this option, it is important to consider the claim that this option would be a contribution towards 'future disarmament'⁸⁰. Hans Kristensen of the Federation of American Scientists observes of this option that it would consist of 'a less capable posture' than i.e. Trident 'because of different range and alert capability'. As such, 'it could potentially be viewed as a move down the ladder to a more recessed posture'⁸¹. Elsewhere, Paul Ingram has noted that 'dual-capable systems have greater flexibility

⁷⁷ HM Government (2013), *Trident Alternatives Review*

⁷⁸ Malcolm Chalmers (2010), *Continuous-At-Sea-Deterrence: Costs and Alternatives*, <https://rusi.org>

⁷⁹ Toby Fenwick (2015), *Retiring Trident: An alternative proposal for UK nuclear deterrence*, www.centreforum.org.

⁸⁰ On the astronomic cost of F-35 see: www.cnbc.com/id/101883138#; on the astronomic cost of B61-12 see: www.ploughshares.org/blog/2012-07-30/golden-mistake

⁸¹ Personal correspondence

adapting their scale over time to the level of threat' - an observation that could be equally applied to the relevant submarine options described above⁸².

- Yet, as Kristensen has also highlighted, General James Cartwright (former commander of U.S. Strategic Command and former Vice Chairman of the Joint Chiefs of Staff) recently observed that the increased accuracy of the B61-12 nuclear bomb could make the weapon 'more useable'⁸³. Modernisation and improvements to nuclear systems which make them more destructive and/or useable go against NPT commitments to act in good faith towards irreversible nuclear disarmament.

- Whilst this option might, depending on how it was put into operation, be seen as a reduction in the salience of the UK's nuclear capability, it is also vital to be aware of the impact that any enhancement in conventional capability would have on the UK's ability to contribute to multilateral nuclear disarmament- a question explored further below.

6. A non-deployed strategic force

- Malcolm Chalmers has suggested that 'a more radical option' would be for the UK to 'abandon a submarine-based nuclear deterrent altogether, relying instead on a non-deployed arsenal to provide deterrence of future nuclear attacks'⁸⁴. This could entail 'a range of possible post-attack delivery systems, for example using surface ships, special forces, and/or aircraft' allowing 'guaranteed, but not prompt, retaliation'.

- This option would be a more significant reduction in the salience of nuclear weapons and a more significant step towards a VNA.

7. Sharing nuclear weapons with France

- France reportedly proposed in 2010 that it and the UK join their nuclear forces by sharing submarine patrols- an idea which London rejected. Bruno Tertrais has discussed this possibility, noting that while France and the UK's nuclear cooperation is closer than ever before there are three barriers to sharing a nuclear force: 'the close US/UK nuclear partnership; different modernization timelines; and the force of habit'⁸⁵.

- Given the level of political support for the nuclear status quo in France it is highly unlikely that if this option became reality it would enable a reduction in the salience of nuclear weapons e.g. through ending CASD.

In summary, on a technical level, the brief initial assessment presented above suggests that—purely in terms of reducing the salience of nuclear weapons in the UK's security policy—options 2, 3, 4 and 5 could be seen as more significant reductions in the salience of nuclear weapons and, as they are, small initial steps towards a VNA, whilst option 6 would clearly be

⁸² See: www.basicint.org/news/2015/memo-next-prime-minister-options-surrounding-replacement-trident

⁸³ Hans Kristensen (2015), *General Cartwright Confirms B61-12 Bomb "Could Be More Useable"*, <https://fas.org>. As Fenwick (2015) himself notes, 'with a 5 – 30m CEP, B61-12 should be significantly more accurate than the publicly available data suggests Trident warheads are, allowing a smaller warhead to achieve the same level of damage as larger, less accurate warheads'.

⁸⁴ Malcolm Chalmers (2010), *Continuous-At-Sea-Deterrence: Costs and Alternatives*, <https://rusi.org>

⁸⁵ Bruno Tertrais (2012), *Entente Nucleaire: Options for UK-French Nuclear Cooperation*, www.basicint.org

a more substantial move. Option 5 i.e. F-35/B61-12 could be seen as a less capable—albeit potentially more useable—choice than a SSBN-based nuclear weapons system. Options 3, 4, 5 and 6 could also be seen as being easier to downgrade and dismantle e.g. if nuclear weapons were removed so that only conventional missions were possible. For all of these options, it is important to highlight that there are more or less ‘ready’ versions i.e. in terms of posture, which could include, for example, the adoption of a No First Use policy⁸⁶. Thus, as noted above, each of these options could be gradually made less salient on the path towards a VNA or disarmament.

The UK would, of course, be entering uncharted waters if it either chose to reduce the operational readiness of its nuclear arsenal or moved towards a VNA. The complex technical nature of the different options outlined above would likely make it difficult for a government to communicate, e.g. to the public, the meaning of a decision to move away from the traditional posture and would also likely be subject to intense criticism from opponents⁸⁷. If one of the above—or similar proposed—options were chosen, policy-makers would therefore need to take care to frame their decision, e.g. for options 2, 3, 4, 5 or 6, according to its significance as a short- to medium-term contribution to a longer-term commitment to eliminate the UK’s nuclear weapons, which could include the transitional phase of a VNA. It is also useful to bear in mind when thinking about these questions that the UK will always be a NWS according to the NPT so that, as Professor Scott Sagan argues, even if the UK did disarm it would be ‘more latent’ than states which ‘did not have their technological expertise or operational experience’⁸⁸.

2.3 How can the UK help create a NFWF?

As discussed above, the UK has dual international obligations under the NPT- to eliminate its nuclear arsenal and contribute to the creation of a NFWF. Conservative and Labour governments alike have, in recent years, responded to these obligations by arguing that whilst unilateral disarmament is unacceptable, they support multilateral nuclear disarmament, stating that when ‘useful’, the government will willingly include in any negotiations ‘the small proportion of the world’s nuclear weapons that belong to the UK’⁸⁹.

Yet the NPT also makes clear that the elimination of nuclear arsenals and the achievement of general and complete disarmament will be facilitated by ‘the easing of international tension and the strengthening of trust between States’⁹⁰. It is therefore important to consider how the UK—as a depository state of the NPT and member of the UN Security Council—may act responsibly in terms of its international actions, military capabilities and posture, both to enable nuclear possessors to move towards disarmament and reduce the incentives for others to seek non-conventional deterrents.

⁸⁶ See p.58 of the *Trident Alternatives Review* (2013) for an overview of how different nuclear weapon systems might be configured in terms of readiness and deterrent postures.

⁸⁷ See e.g. Julian Lewis MP’s objection to ending CASD as being ‘the slow boat to unilateralism.’ www.julianlewis.net/essays-and-topics/3902:the-slow-boat-to-unilateralism-2014-05-01

⁸⁸ Scott Sagan (2010), *Shared Responsibilities for Nuclear Disarmament: A Global Debate*, <http://carnegieendowment.org>

⁸⁹ HM Government (2009), *Lifting the Nuclear Shadow: Creating the Conditions for Abolishing Nuclear Weapons*

⁹⁰ NPT (1968), Treaty on the Non-Proliferation of Nuclear Weapons, www.un.org

Progressive policies in this area should be based on an understanding of other state's threat perceptions. For example, China and Russia primarily see their nuclear weapons as deterrents against the West's overwhelming conventional military superiority and policies of containment and expansion. Downgrading or disarming the UK's nuclear arsenal in order to enhance the nation's conventional military power and force projection capabilities would therefore actually be antithetical to multilateral disarmament efforts.

In the short-term it is also imperative that Britain—as a leading NATO power—acts in ways that reduce rather than increase the risk of nuclear war between NATO and Russia. This is not least because any escalation to nuclear conflict would potentially involve the UK's nuclear force, and would have the direst consequences for this country and the world. Elsewhere, as Dr Alan J. Kuperman observes, NATO's bombing and overthrow of Libyan leader Muammar Gaddafi 'greatly complicated the task of persuading other states such as Iran and North Korea 'to halt or reverse their nuclear programs'⁹¹. The lesson Tehran and Pyongyang took is thus that because Gaddafi had voluntarily ended his nuclear and chemical weapons programmes, the West now felt free to pursue regime change.

Overall, if progress on non-proliferation and disarmament is to be made, short-term economic and political goals must not be allowed to trump critical national and international security concerns. Advocates of multilateral disarmament therefore need to produce and enact policies that make sense across government. For example, the UK needs to consider how its arms transfers to regions of conflict such as the Middle East contribute to tensions and reduces the chances of establishing a Weapons of Mass Destruction Free Zone, which the UK has an obligation to help create.

Another key concern is the UK's nuclear relationship with India, including the 2010 agreement for the export of civil nuclear technology, which continues to this day⁹². This move raised fears of leakage to India's nuclear weapons programme, meaning the UK would be engaged in blatant vertical proliferation, leading to responses from Beijing and Islamabad⁹³. Again, if the UK government is to act responsibly it must cease acting in ways which drive nuclear proliferation and understand the various economic, psychological and strategic factors that might enable nuclear possessors to disarm.

⁹¹ Alan J. Kuperman (2015), *Obama's Libya Debacle- How a Well-Meaning Intervention Ended in Failure*, www.foreignaffairs.com

⁹² See e.g. <http://blogs.fco.gov.uk/viyer/2014/06/20/uk-india-civil-nuclear-collaboration-phase-iii/>

⁹³ Nicholas Watt (2010), *Britain to allow export of civil nuclear technology to India*, www.theguardian.com

Conclusion

Providing a responsible answer to the question posed at the beginning of this submission—what, if any, nuclear arrangement is suitable for the UK today?—requires an analysis of the strategic context alongside a recognition of the need to fulfil the UK’s international obligations under the NPT. Any proposal would also need to be agreed through a democratic, transparent and accountable process. Yet, as Malcolm Chalmers has pointed out with regard to why the UK retains a CASD posture—but which could be applied more widely to the UK’s nuclear policies today—decisions in this area are ‘now driven as much by institutional and political momentum as by strategic necessity’⁹⁴.

This is one of the main reasons why it is particularly difficult for politicians, of any party, to have meaningful influence over nuclear weapons decision-making and one of the main obstacles in the way of disarmament. As we have seen above, the future costs and risks of Trident replacement are difficult to precisely estimate but likely enormous, raising several serious questions as to whether the UK has the industrial capacity and skills to deliver them, not just within estimated budgeting and timeframes, but at all.

The next government is therefore set to inherit a range of massive (both in terms of size and expense) civil and military nuclear construction projects that will make it much more difficult to pursue alternative, more sustainable, policies in future—including on renewable energy and nuclear disarmament—despite both the latter boasting significant public support. It is therefore crucial now, before construction of these mega-projects has begun, to carefully consider both the case for cancellation as well as more responsible and sustainable policy options.

About Oxford Research Group

Oxford Research Group (ORG) is a UK-based think-and-action tank, founded in 1982, that provides information, analysis, methodology, policy advice and mediation in order to promote a more sustainable approach to global security. ORG currently runs or hosts programmes working on: sustainable security and alternatives to militarisation; the implications of ‘remote control’ warfare; preventive diplomacy and track II mediation of several conflicts in the Middle East. ORG is independent of all political parties and seeks to work with all actors to enlarge the space for alternatives to military confrontation and violence.

This submission was researched and written by Tim Street, Senior Programme Officer with ORG’s Sustainable Security Programme.

⁹⁴ Malcolm Chalmers (2010), *Continuous-At-Sea-Deterrence: Costs and Alternatives*, <https://rusi.org>