



Short policy brief

# Trident: the need for a comprehensive risk assessment

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## 1. Introduction

The Strategic Defence and Security Review (SDSR), planned for publication on the same day as this brief, is expected to include an update on the Trident renewal project and financial estimates. Main Gate decision is likely to be put to Parliament early 2016. Like every major government project, MoD procurement officials will have conducted a detailed confidential risk analysis for the construction, but this project requires a far broader, comprehensive risk analysis over a set of areas, as listed in this briefing. If HM Treasury (HMT) is taking over financial oversight of the project as reported earlier in November then it needs to establish and maintain its own wide-ranging risk register.

The nature of the public debate over Trident renewal has been very polarised, focused on the decision on whether to invest in a new system or not. But Parliament has grave responsibilities beyond this single decision, in particular in overseeing the project and ensuring parliamentary accountability. We would suggest that the National Audit Office (NAO) conduct a rapid multidimensional risk assessment encompassing the issues outlined in this brief and to make this available to all MPs. The NAO produces the annual defence Major Projects Report and the Equipment Plan, but this does not address the risks as outlined here.

## 2. Financial

Like any major project, the Trident renewal programme involves significant financial risk. The original estimates for the capital cost when the White paper was published in December 2006 was £15-20bn in 2006 prices,<sup>1</sup> equivalent to £18-24bn in today's (2016) prices. Until now official government figures have stuck to this estimate, through Initial Gate in 2011 and beyond. Recent leaks, however, suggest this line could now be broken and that estimates could rise to £30-40bn in this SDSR. This could be one reason for the decision to bring financial oversight of the project into HMT.

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**BASIC** (British American Security Information Council) takes a uniquely non-partisan, dialogue-based and inclusive approach to promoting global nuclear disarmament and non-proliferation. We look for ways to build constructive engagement through a wide range of publications and events to influence political and public thinking, but also provide a space for broad and open-minded debate, drawing on its own expert research and analysis. In the UK we set up and ran the BASIC Trident Commission, co-chaired by Sir Malcom Rifkind, Lord Browne of Ladyton and Sir Menzies Campbell, which reported in July 2014. This recommended the UK renew the Trident system, but that it also needed to consider associated risks, options around posture and declaratory policy, and engage in robust international action to rejuvenate global nuclear disarmament efforts.

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<sup>1</sup> 'The Future of the United Kingdom's Nuclear Deterrent', [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/27378/DefenceWhitePaper2006\\_Cm6994.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/27378/DefenceWhitePaper2006_Cm6994.pdf), December 2006, p.7

Procurement costs are far from fixed at Main Gate, and there will remain major financial risks well into the 2020s - such major defence projects are frequently late and over budget. This project is particularly risky on account of its size, complexity and its nature, related to unique technical, strategic and industrial factors, some of which are identified in the following pages.

Who bears these financial risks and what the consequences might be remains unclear. It was an early decision in 2010 by George Osborne, Chancellor of the Exchequer, that this project would be fully funded through the Ministry of Defence's (MoD) own budget, in the face of strident opposition from Liam Fox, Defence Secretary at the time.<sup>2</sup> This remains the position officially, even with Treasury oversight. On the other hand, it may become politically very difficult for a future government to hold the line on this indefinitely as costs rise.

HMT's decision to take the project under their wing may actually be welcome within MoD. The MoD's Permanent Secretary in evidence to parliament's Public Accounts Committee, has already recently described Trident renewal as a 'monster' keeping him awake at night,<sup>3</sup> and threatening to suck the life out of other projects. Even before the cost inflation expected in next week's SDSR the Trident project was set to consume a full third of the defence procurement budget, year-on-year, for the next 17-odd years. This proportion could rise to 50%. For a budget that would be under pressure even without Trident, this will have serious consequences for the UK's conventional forces moving forward. Prime Ministerial statements promising extra investment for Special Forces and the intelligence services in the wake of the Paris attacks means something has to give.

### 3. Technological

This is a deeply complex binational engineering project integrating cutting edge components with highly demanding dynamic requirements involving unique technologies with limited spin-on or off applications. Designers have to account for technologies and threats that currently may only be theoretical, but which could become acute realities within the timeframe of the project.

Defence procurement projects often slip from their original budget because requirements change as they develop - this is very likely in this case because of the long lead time and the dynamic nature of the underwater battle-space, particularly around anti-submarine warfare.

It is a principal requirement that this platform be stealthy, perhaps even more important than the reliability to fire ballistic missiles. The whole point of putting nuclear ballistic missiles on a submarine (SSBN) is that it remains undetected prior to any launch of its missiles, as most other dimensions of large submarines (slow, vulnerable and isolated) are weaknesses. Ever since submarines first emerged as an effective tool of warfare in the First World War, anti-submarine technologies have developed alongside. It has been a game of cat and mouse, most famous during the Second World War when U-boats stalked the Atlantic. As anti-submarine capabilities have developed (such as naval, aerial and satellite surveillance and attack, mines and hunter-killer submarines), advanced navies have deployed highly sophisticated methods of reducing noise and developing other forms of stealth for their submarines - more highly classified than the design of the warheads the submarines carry. But there is a revolution in underwater technology that disproportionately benefits anti-submarine warfare over stealth. The concept of the transparent ocean, around for a while, could soon become a reality.

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<sup>2</sup> BBC, 'Trident costs must come from MoD budget, Osborne says', <http://www.bbc.co.uk/news/uk-10812825>, 30 July 2010

<sup>3</sup> Reuters, 'Exclusive - Trident programme to cost 167 billion pounds, far more than expected' <http://uk.reuters.com/article/2015/10/25/uk-britain-defence-trident-exclusive-idUKKCN0SJ0ER20151025>, 25 October 2015

It is intrinsically inevitable that as technology develops transparency increases over time, as it does in other fields. This point is most easily understood by considering the longer-term trend. When submarines first submerged they were able to disappear into the oceans, vulnerable only at the point of engagement or in and around their own ports. Surveillance technologies have been improving quickly, with a variety of methods that penetrate the water to locate targets at significant depths. The ability to track wildlife or map the sea-bed for commercial purposes is already well advanced, and open, public knowledge. In the naval arena these technologies include remote, unmanned autonomous underwater vehicles (AUVs),<sup>4</sup> underwater communication nodes, hunter-killer submarines, satellites, aircraft and UAVs, operating with efficient long-distance communications systems above and below water, active low frequency and long distance sonar, ultra-fast, portable, high-power computing and reliable networking capabilities. Collectively sensor technologies that do not rely upon sound alone mean that even totally silent submarines shaped for stealth will be detectable and therefore highly vulnerable.<sup>5</sup> Year by year, the capabilities improve and costs reduce.

## 4. Industrial

Leading defence economist Professor Keith Hartley, in a report for the Trident Commission, identified a number of factors within the UK submarine industry that would tend to magnify project risk and inflate the price, given single monopoly suppliers for each of the three principal activities (construction, reactor and support), a complex set of supply chains and one customer (MoD), gaps in the design process, a need for highly specialised resources, small numbers of submarines involved, and limited incentives to reduce costs.<sup>6</sup>

In a project of this cost and complexity there are inevitable pressures to extend or delay the project. Officials move on, and the longer the project continues the more institutional commitment to its specifics build up, enabling rent seeking. There is every incentive on the part of contractors and the Ministry to delay cost increases to later stages in the life of the project. The dominant assumption in defence circles is that the current SSBN fleet has an inflexible life expectancy running out around 2028. While we cannot know the state of the submarines in 2028, the current commitment to continuous patrolling counts against accepting higher levels of risk. This situation will tend to favour the prime contractors in any future mid-project price renegotiations, but also add another element of risk from slippage.

## 5. Political (domestic)

The principle domestic political risk to the future of the UK lies in the widespread perception north of the border that this decision, taken in London, has a disproportionate impact on Scotland. The vote to continue basing Trident out of Faslane is likely to be opposed by 58 out of 59 Scottish MPs, and could well strengthen the sentiment amongst the Scottish public for independence.<sup>7</sup> This risk will become acute if the EU referendum currently expected for Autumn 2016 results in the UK leaving the EU in the face of a majority of Scottish voters

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<sup>4</sup> NATO Centre for Maritime Research and Experimentation, 'Next Generation Autonomous Systems in action in the Ligurian Sea', <http://www.cmre.nato.int/news-room/blog-news-archive/42-rokstories/298-next-generation-autonomous-systems-in-action-in-the-ligurian-sea>, 23 October 2014

<sup>5</sup> Reuters, 'NATO's annual submarine warfare exercise begins in Norway', <http://uk.reuters.com/video/2015/05/05/natos-annual-submarine-warfare-exercise?videoid=364103210>, 4 May 2015

<sup>6</sup> Keith Hartley, 'Defence Industrial Issues: Employment, Skills, Technology and regional Impacts, BASIC Trident Commission Discussion Paper 2, March 2012

<sup>7</sup> William Walker, 'Trident's Replacement and the Survival of the United Kingdom', *Survival*, October-November 2015. <http://www.iiss.org/en/publications/survival/sections/2015-1e95/survival--global-politics-and-strategy-october-november-2015-3ec2/57-5-02-walker-b122>

opposing this result. If, as a result, a second independence referendum were to cause Scotland to leave the UK this would not only spell the dissolution of the union and the creation of an extraordinarily complex set of governance questions, it would also lead to extremely challenging questions over the future deployment of SSBNs. Relocation is not a simple option.

## 6. Safety and security

There are inherent traditional risks associated with the manufacture, transport, storage and deployment of nuclear weapon systems, and some of these risks evolve as time goes by. There are particular emerging vulnerabilities associated with cyberspace with relevance to the reliability and safety of nuclear systems.<sup>8</sup> There are six groups of actors responsible for the proper development of security culture: States, organisations, managers in organisations, personnel, public and the international community.<sup>9</sup> Safety and security is never guaranteed, and needs to be properly accounted for in any proposed risk register.

## 7. International (alliance, deterrence and proliferation)

The relationship with the United States and our European allies, and the cohesion of NATO and the EU, remain critical dimensions in our foreign and defence policy. There is significant concern that if the Trident system is not renewed this could impact negatively upon our standing with the United States, and send an unwelcome message to European allies of reduced commitment to our collective security. On the other hand, there is a danger that if Trident renewal were pursued at the expense of other defence and security capabilities, the UK would in any case suffer damage to its capability to support NATO operations and therefore its reputation. There is also a particular danger associated with an over dependency upon nuclear deterrence as conventional capabilities hollow out, giving potential adversaries incentive to escalate beyond the limits of those conventional capabilities but staying below the threshold of credible nuclear threat in response.

The risks arising from nuclear proliferation and the deterioration of strategic relationships are well documented. The inability of nuclear armed states to agree on multilateral steps towards disarmament have been heavily criticised in successive NPT meetings, but the risks to the Treaty are increasingly acute, particularly after the failure of the 2015 Review Conference. There is a double risk arising for UK security arising from a fragile NPT: weakening global commitments to essential non-proliferation measures, and weakening legitimacy of continued possession by the five leading to isolation. International attitudes towards nuclear weapons are on the move. Whilst some states, particularly Russia, China and south Asia may see greater utility in their nuclear arsenals, the recent global intergovernmental initiative to focus on the humanitarian impacts of nuclear weapons use has been gathering pace and may yet morph into an effort to ban nuclear weapons.

The UK Trident renewal project is not in itself a major driver in the global picture, but it undoubtedly harms the credibility of UK demands that other states refrain from developing their own nuclear capabilities and accept greater (and more expensive) transparency and inspections. In order to reduce global nuclear risks the UK needs to consider how it can best rejuvenate the multilateral disarmament process and work with partners, allies and others, to create the conditions for disarmament. These questions ought to form a major consideration during the debate on Main Gate.

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<sup>8</sup> Chatham House, 'Cyber Security at Civil Nuclear Facilities – Understanding the Risks', [https://www.chathamhouse.org/sites/files/chathamhouse/field/field\\_document/20151005CyberSecurityNuclearBaylonBruntLivingstone.pdf](https://www.chathamhouse.org/sites/files/chathamhouse/field/field_document/20151005CyberSecurityNuclearBaylonBruntLivingstone.pdf), September 2015

<sup>9</sup> IAEA, 'Nuclear Security Culture, IAEA Nuclear Security Series No.7, Implementing Guide', [http://www-pub.iaea.org/MTCD/publications/PDF/Pub1347\\_web.pdf](http://www-pub.iaea.org/MTCD/publications/PDF/Pub1347_web.pdf), p.7

The modernisation of nuclear arsenals by all nuclear armed states, including the UK Trident renewal, risks arms racing and security dilemmas. It also harms the capacity of the international community to engage in the collaborative approaches necessary to tackle global challenges like climate change, financial stability, resource depletion, the degradation of ecosystems and the proliferation of nuclear technologies itself. Global governance requires a shared commitment to the rule of law, rational behaviour and a sense of common interest; nuclear deterrence requires states to threaten irrational acts, and to be prepared to annihilate other states they need to partner with. It is essential that states consider strategies to mitigate these impacts.

The theory and practice of nuclear deterrence relies upon the communication of a credible threat - the combination of capability and intent.<sup>10</sup> This contains within it a number of risks that need to be fully assessed, including the possibility of miscalculation or miscommunication in crisis, escalation and over-commitment, complexities around moral hazard, particularly involving allies, and difficulties in containing adversaries with unclear values or assets. This will become particularly acute if allies in the Middle East demand security guarantees after the nuclear deal with Iran. Whilst we have avoided any nuclear exchange to date since 1945, the record of nuclear deterrence is more complicated than is often assumed and involves a number of failures. This can only worsen with nuclear proliferation.

## **8. Conclusion**

The Main Gate decision investment decision immediately prior to the start of construction of the submarines, due in early 2016, will be seen by many as an opportunity to engage in a legitimate debate over Britain's possession of nuclear weapons in the 21<sup>st</sup> century. Of course, ultimately, the decision is a binary one - whether to go forward or not. But beyond this, there are also critical issues of project and systemic risk that need to be properly identified and assessed, tracked and minimised by the government and separately by Parliament as the project matures. It is crucial that Main Gate is used as an opportunity to put in place this critical machinery in a manner that grants credible assurance that these risks are minimised.

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<sup>10</sup> BASIC Trident Commission, 'Concluding Report', [http://www.basicint.org/sites/default/files/trident\\_commission\\_finalreport.pdf](http://www.basicint.org/sites/default/files/trident_commission_finalreport.pdf), July 2014, p.13