



# CHALLENGES

in the generation and  
support of front line forces

*a report for Prospect by  
Professor Trevor Taylor and  
Brigadier (Retired) Jim Campbell*

*January 2011*





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# CHALLENGES IN THE GENERATION AND SUPPORT OF FRONT LINE FORCES

An analysis by **Professor Trevor Taylor**, Professorial Research Fellow, Royal United Services Institute, and **Brigadier (Retired) Jim Campbell**, Independent Defence Acquisition Consultant

## Foreword



**Mike Clancy**, Prospect Deputy General Secretary

The future for UK defence and what we as a society are prepared to spend to support our armed forces is attracting almost daily media coverage. The gap between our foreign policy commitments and our defence expenditure has never been more evident. But the media, whilst lauding the bravery of our armed forces, is prepared to gloss over the vital contribution of defence civilians who can seemingly be cut without consequence.

The shape and capacity of the Ministry of Defence has been thrown into doubt by the strictures of the Comprehensive Spending Review (CSR) and confidence in the analysis underpinning the strategic defence and security review (SDSR) is diminishing as its content is subjected to expert scrutiny. As MOD cuts expenditure and equipment programmes, the defence industry is being forced into further rationalisation with the resulting loss of scientific, engineering and research capability and skills. Much of this capacity once lost is irretrievable. If we conclude that we have no option but to cut, given financial constraints, we should be absolutely clear about the risks we are then accepting.

There is no doubt that we need to reconsider our defence posture and decide our spending priorities accordingly. Prospect commissioned this report as a contribution to that debate and to focus upon the crucial role of defence civilians. Produced by leading defence academics and augmented by evidence from Prospect members engaged in support to the armed forces, it is a powerful assessment of the issues that confront MOD, industry and policy makers.

In our view the SDSR is not the end of the debate but rather the beginning. The contraction in MOD and the defence industry has long-term implications not only for our ability to project force against our enemies, however they manifest themselves, and immediate consequences for thousands of civilians in the public and private sector who are set to lose their jobs.

We owe it to future generations to take decisions now that as

far as we can predict do not irreparably damage our ability to respond to emerging defence scenarios. Prospect will, where possible in coalition with like-minded groups, continue to press our concerns about the current direction of government policy and its consequences for UK defence. We believe the evidence in this report deserves attention and we will ensure that the case for defence civilians and their crucial role in support of the armed forces is heard.

As we went to press, MOD announced the appointment of Bernard Gray as the new Chief of Defence Materiel. It is a reasonable assumption that his mission will be to implement the recommendations, or at least the broad direction of travel, of his October 2009 report: *Review of Acquisition*. Prospect gave that report a cautious welcome and it is interesting to note that the author of a report for a Labour government has been appointed to this key role by a coalition government. Does this signal a new consensus about the organisation of defence procurement?

## The Authors



**Trevor Taylor** is a Professorial Fellow at the Royal United Services Institute and Emeritus Professor of Cranfield University, where for 11 years he headed the Department of Defence Management and Security Analysis. He was for six years an elected Council Member of the former Defence Manufacturers Association and is a member of the Acquisition Focus group which publishes in each issue of RUSI Defence Systems. In 1989 he wrote a book with Keith Hayward on *The UK Defence Industrial Base* (London, Brassey's).



**Jim Campbell** is an independent consultant specialising in defence technology, defence acquisition management and defence training and education. He learned his trade during 34 years as an officer in the British Army, where his final appointment was Director of Studies at the Defence Academy College of Management and Technology. This was followed by 5 years with a medium-sized defence technical consultancy, where he combined his responsibilities as Technical Director with regular consultancy assignments. He is a graduate of the Royal Military College of Science, Staff College Camberley and the Royal College of Defence Studies. He is a Chartered Engineer and a Fellow of the Institution of Mechanical Engineers.

## Authors' note

The analysis on which this report is based was carried out between July and September 2010 and the report was originally published on 30 September 2010. This date, three weeks in advance of the publication of the Strategic Defence and Security Review (SDSR), was chosen deliberately because the report is designed to be an enduring piece of work with relevance and utility beyond the specific issues of the SDSR itself. In particular it was designed to provide background information and analysis to help inform Prospect's contribution to the defence Equipment, Support and Technology (ES&T) Green Paper published before Christmas 2010 and the work of the Defence Reform Unit, which is due to be completed by June 2011. The former will impact mainly on Prospect's members in the defence industry, while the latter will have a major impact on Prospect's members in MOD.

Inevitably the timing of our analysis required us to indulge in some informed conjecture as to what the SDSR would contain and in the main our predictions were close to the mark. However there were some significant areas of divergence. In particular:

- The funding reduction was 8% rather than the 10% we predicted. In theory this should reduce the impact on defence industry jobs (from the 21,500 we predicted to 17,200) but, given the lack of programme detail we think it would be wiser simply to assume 'around 20,000.'
- In the event, SDSR sticks to two aircraft carriers rather than the one we predicted, although it did confirm our predicted reduction in Joint Strike Fighter.
- While we predicted the early demise of Harrier we did not expect it to be withdrawn from service as early as 2011.
- We did not anticipate the imposition, without underlying analysis, of cuts of 25,000 in MOD civil service posts.

Individually, these divergences will impact on the follow-on work but none of them changes the basic premises of our report.

Following the publication of the SDSR we have had an opportunity to review some of the thinking behind it, partly by analysing what was not said as well as what was said. This review, included at Annex C, has allowed us to set out some themes which will inform our presentation to the Prospect seminar planned for 18 January 2011 and help shape Prospect's response to the ES&T Green Paper.



# 1



## INTRODUCTION

### Prospect concerns

**1.1** Prospect has become increasingly concerned about the growing misalignment between the strategic aims of the government's defence and security policy and the size and shape of the defence procurement programme, and the impact this misalignment is having on the ability of both the Ministry of Defence (MOD) and defence industry to sustain and nurture the pool of necessary specialist skills. Key areas of concern are summarised in Steve Jary's response to the MOD's Green Paper<sup>1</sup> summarised in the April 2010 issue of Platform<sup>2</sup>.

### MOD strategies and their implementation

**1.2** MOD's Defence Industrial Strategy (DIS)<sup>3</sup> published in 2005 sought to specify "which industrial capabilities we would wish to see retained in the UK for defence reasons." This was followed in 2006 by the Defence Technology Strategy (DTS)<sup>4</sup> which set out how MOD intended to "support further the skills base in science and engineering within the UK to provide for both MOD and the defence industry sectors." However, neither strategy has been converted into an effective plan for identifying and sustaining the requirement for specialist skills in defence, whether within MOD or the defence industry.

### Policy evolution

**1.3** The DIS and the DTS were elements in a series of MOD policy publications amending and building upon the Strategic Defence Review (SDR) of 1997-98<sup>5</sup>. This series comprised the Strategic Defence Review: A New Chapter published in the immediate aftermath of the attacks of 11 September 2001, and Delivering Security in a Changing World in 2003. A final element in Labour thinking was the Green Paper on Defence published in early 2010.

**1.4** Clearly incremental adjustments were made after 1998, but there was no repeat of the comprehensive effort made in 1997-98. Consequently in 2010 the Conservative-Liberal coalition government elected in May opted to launch a Strategic Defence and Security Review (SDSR).

### Defence review and reform: finances and timetables

**1.5** The timetable for the SDSR is being driven by financial considerations. The next Comprehensive Spending Review

<sup>1</sup> Adaptability and Partnership: Issues for the Strategic Defence Review, Cm 7794 dated February 2010.

<sup>2</sup> Platform, briefing for Prospect members in the defence industry.

<sup>3</sup> Defence Industrial Strategy Defence White Paper, Cm 6697, dated December 2005.

<sup>4</sup> Defence Technology Strategy, MOD SIT, October 2006.

<sup>5</sup> Strategic Defence Review, Cm 3999, dated July 1998.

(CSR), to be completed and announced by 20 October 2010, will provide ministries with their (reduced) spending levels for the next three years. The SDSR is to be published soon afterwards and needs to include sufficient guidance that MOD can adjust its plans for Planning Round II (PRII) whose implementation will begin in April 2011. Because MOD brought unaffordable plans into the SDSR process (see below), the SDSR is likely to announce cuts in force structures, reductions in the scope of some projects and the abandonment of others.

**1.6** The 1998 SDR included significant elements of organisational and process reform in MOD, but the studies concerned took over a year. The 2010 SDSR process will take less than six months and a separate activity is being devoted to broader reform thinking. In August 2010 the Secretary of State for Defence (SofS), Liam Fox, announced the formation of a Defence Reform Group under Lord (Peter) Levene which would report after about a year. The Government also made clear that it would launch a study of an ES&T Green Paper in November 2010, once the SDSR had been published.

### This analysis

**1.7** This analysis examines issues of specialist capabilities within both MOD and the defence industry, and assesses the impact of a range of changes that could be made in the SDSR on the sustainability of those capabilities. MOD has developed an accepted model capturing all the elements of front-line military capability known as the Defence Lines of Development (DLoD). The DLoD framework points to the need to integrate Training, Equipment, People, Infrastructure, Doctrine, Organisation, Information and Logistics, (TEPIDOIL), taking account in specific circumstances of the contributions of allies, the particular physical environment and the attributes of adversaries. Awareness is growing more slowly, however, of the elements that industry requires in order to underpin these individual DLoDs and improve them over time. The modern UK MOD relies on significant industrial contributions for not just the equipment, but also much of the training, infrastructure and logistics DLoDs. To play its part, industry also needs effective combinations of people with the right knowledge and skills, infrastructure and other capital assets, and of course access to finance.

**1.8** This report is designed to inform Prospect's response to the CSR to be published in October 2010, and to the SDSR, anticipated shortly afterwards. It will also inform Prospect's input to the ES&T Green Paper that has been promised in due course.

### Outline of the report

**1.9** This report first examines the wider context in which the SDSR is taking place, and then considers three key issues which arguably should be dealt with explicitly and transparently. They

should not be overlooked, ignored or disguised in the interest of political expediency. The context of the SDSR comprises five key elements: the nature of evolving defence and security policy; over-commitment in the current programme and the practices that led to it; the nature of contemporary military operations and the need for industrial inputs; the vulnerability of research spending; and the wider economic crisis and the condition of public finances.

It is asserted here that, in considering its defence responses to this situation, the government should deal explicitly and carefully with three key issues: the place of defence industry in UK capability; the place of the defence industry in the wider economy; and the role of civilians and civil servants in the generation and delivery of defence capability.

# 2



## CONTEXT

### POLICY EVOLUTION

#### SDR and its follow-up

**2.1** Following its election in 1997, the new Labour government commissioned a foreign policy-led Strategic Defence Review (SDR). It had recognised the fundamental changes to the global security environment stemming from the end of the Cold War and set out to review the roles, missions and capabilities of the armed forces. The SDR was published in July 1998 and prompted a series of major changes in defence posture and practice including the Smart Procurement Initiative which followed in 1999<sup>6</sup>. The SDR established the ambition that the UK should have the capability to intervene in conflicts on a significant scale. Force projection moved to the centre of the defence stage, in contrast to the defence of NATO territory which had dominated the Cold War era. SDR was followed by a New Chapter<sup>7</sup> in 2002 which reflected particularly the impact on global security of the attack on the World Trade Centre in New York in September 2001. Two papers on Delivering Security in a Changing World, the second covering force structures and capabilities, were published in late 2003 and 2004<sup>8</sup>. During the Labour administrations the guidance in policy, and the planning assumptions that were drawn from it, struggled to keep up with events as UK forces were regularly committed on a larger scale than had been foreseen.

#### Pre-review policy indications

**2.2** To date, before and during the SDSR process there have been no signs that the government wishes to abandon the UK's status as a major political and military power able to contribute positively and extensively to security challenges around the world. An excerpt from Liam Fox's first speech as SoFS provides an indication:

"In the final analysis we will need to retain the capacity to deploy military strength in defence of our own national interests.

"This must be based on a hard-headed assessment of the current security environment and the growing threats to peace and stability.

"It remains true that we live in a period in which direct military threats to UK territory are low.

"But the wider risks to our interests and way of life, whether from terrorists, failed states, conflict between

<sup>6</sup> The Smart Procurement Initiative was later re-launched and extended as Smart Acquisition.

<sup>7</sup> Strategic Defence Review: A New Chapter, Cm 5566, dated July 2002.

<sup>8</sup> Ministry of Defence, Delivering Security in a Changing World: Future Capabilities, London, 2004 [http://www.MOD.uk/NR/rdonlyres/147C7A19-8554-4DAE-9F88-6FBAD2D973F9/0/cm6269\\_future\\_capabilities.pdf](http://www.MOD.uk/NR/rdonlyres/147C7A19-8554-4DAE-9F88-6FBAD2D973F9/0/cm6269_future_capabilities.pdf).

other states, nuclear proliferation, climate change or competition for resources, are all growing.

“And we know from historical experience the difficulty of predicting future conflict.

“We cannot jeopardise our future security on the assumption that future conflicts will mirror the current ones.

“The Defence contribution to the SDSR will balance the immediate demands of the mission in Afghanistan with planning for alternative futures”.<sup>9</sup>

**2.3** It therefore seems that the government will be very reluctant to point to any radical change in direction or extensive cutbacks in ambition as far as UK forces are concerned in the SDSR, although there will of course be an emphasis on a more integrated approach to security in general.

**2.4** It remains unclear how the SDSR will relate to the subsequent work of the Defence Reform Unit (see below) and the ES&T: the basic question concerns the extent that it will provide strategic guidance and constraints for these exercises, or whether it will make little reference to them. During his briefing on progress with the SDSR on 13 August, the SoF announced the appointment of Lord (Peter) Levene, a former Chief of Defence Procurement, to head a steering group which would oversee the work of the newly created Defence Reform Unit (DRU). The task of the DRU is to review:

*“how MOD is run and how we can reform the armed forces to produce more efficient provision of defence capability, and generation and sustainment of operations.”<sup>10</sup>*

In conducting its review, the DRU will follow two “broad principles:

- ▶ A structural reform which will see the department reorganised into three pillars of policy and strategy, the armed forces, and procurement and estates.
- ▶ A cultural shift which will see a leaner and less centralised organisation combined with devolved processes which carry greater accountability and transparency.”

**2.5** It is widely acknowledged that structural reform is both necessary (indeed long overdue) and ultimately achievable. Indeed there is a common view that the Defence Board itself is dysfunctional. However, the resulting changes will be disruptive and costly at a time of continuing operational commitment

and severe financial pressure. Cultural change presents much greater challenges. Successful implementation will require a degree of political, military and civil service ‘common purpose’ and leadership that has been conspicuously absent over the last decade. However, the outcome for defence industry is likely to be greater clarity of MOD intent and therefore a more reliable basis for future planning.

**2.6** Annex A provides a brief estimate of the possible, perhaps likely, outcome of the SDSR. This estimate will clearly be rendered obsolete when the SDSR is published in October 2010. Updated information is set out in the authors’ note at Page 2 and at Annex C.

## OVER-COMMITMENT IN THE CURRENT PROGRAMME

### Acquisition change and its consequences

**2.7** It is today recognised that MOD’s equipment procurement and support plans cannot be afforded within the resources likely to be available, and the overall likely costs of defence, including personnel costs, are likely to make the situation worse.

**2.8** MOD processes, procedures and structures for equipment procurement and support have undergone a period of almost continuous change since the publication of the SDR in 1998. The most obvious manifestations of change have been Smart Procurement (later expanded as Smart Acquisition) in 1988 and the formation of the Defence Logistics Organisation (DLO) and Defence Procurement Agency (DPA, formed from the former Procurement Executive) in 1999. Despite these major initiatives, ‘acquisition change’ has continued to be a constant feature of the last decade. The most significant were the publication of the DIS in 2005, followed by the Enabling Acquisition Change programme in 2006. This in turn led to the amalgamation of DLO and DPA to form Defence Equipment and Support (DE&S) in 2007. Despite the changes there remains much disquiet, in parliament, in government and externally about the effectiveness and efficiency of MOD’s acquisition performance. These are clearly and authoritatively articulated by the National Audit Office (NAO) in its annual Major Projects Review. Enduring concerns are overheating of the equipment programme, stultifying bureaucracy, lack of individual empowerment and a lack of key skills.

### Three reports

**2.9** The degree and nature of a growing sense that all was not well with MOD was encapsulated in three separate but linked reviews, summarised below:

- a Bernard Gray.** The review of acquisition carried out by Bernard Gray was commissioned by the then (Labour) SoF, John Hutton, in December 2008 and published in October 2009. MOD’s immediate response, a Strategy for Acquisition

<sup>9</sup> SoF Liam Fox on 14 June 2010 at RUSI, (<http://www.rusi.org/events/past/ref:E4BE420B71D43A/info:public/infoID:E4C10E45E74A53/>). See also Conservative Party, A Resilient Nation: National Security Green Paper, London 2010, speech by Secretary of State Fox at the Royal Institute of Chartered Surveyors, 14 August 2010, (<http://www.MOD.uk/DefenceInternet/AboutDefence/People/Speeches/SofS/20100813TheNeedForDefenceReform.htm>) and other SoF speeches. (<http://www.MOD.uk/DefenceInternet/AboutDefence/People/Speeches/SofS/>).

<sup>10</sup> Liam Fox, SoF, RICS, August 2010.



Reform, followed in February 2010. The Gray report's main findings were:<sup>11</sup>

- (1) "Our long-term equipment plans are unaffordable and we need to make significant reductions to these plans". Gray identified a potential shortfall of £37bn over 10 years.
- (2) "Delaying rather than cancelling projects, in order to meet short term affordability pressures, adds substantially to longer-term costs."
- (3) "We could do more to improve the planning and delivery of individual projects."

**b Haddon-Cave.** Following the crash of a RAF Nimrod MR2 in Iraq September 2006, MOD commissioned a review by a leading aviation barrister, Charles Haddon-Cave QC. In addition to examining the direct causes of the crash, Haddon-Cave identified a number of MOD structural, cultural and procedural shortcomings in a highly critical report. MOD responded energetically with a renewed (some would argue restored) emphasis on the engineering, procedural and cultural elements of safety and by creating an aviation safety body led at 3 Star level. Haddon-Cave also caused MOD to re-examine the skills required internally and to reflect on the degree of unsupervised trust it could reasonably place on non-MOD suppliers and advisers.

**c National Audit Office.** In its Major Projects Report 2009, the NAO confirmed the over-commitment in current plans. It observed that "the Ministry of Defence has already reduced the deficit between the defence budget and planned expenditure by £15bn, but a shortfall of between £6bn and £36bn remains. The financial crisis means a substantial increase in funding is unlikely, and closing the gap will require bold action as part of the Strategic Defence Review which is expected after the General Election." The NAO underlined Gray's criticism of the impact on slowing down projects on their final costs: "To address the deficit the Ministry of Defence has reduced equipment numbers being bought on some projects and taken short-term decisions to slip other projects. This short-term approach to savings will lead to long-term cost increases. In 2008-09, costs on the 15 major defence projects examined by the NAO increased by £1.2bn, with two thirds of this increase (£733m) directly due to the decision to slow projects. Attempting to save money in this way does not address the fundamental affordability problems, increases through-life costs and represents poor value for money on the specific projects affected."

Its press release headlined a statement from the head of the organisation:

"The Ministry of Defence has a multi-billion pound

budgetary black hole which it is trying to fix with a 'save now, pay later' approach. This gives a misleadingly negative picture of how well some major projects in MOD are managed, represents poor value for money and heightens the risk that the equipment our armed forces require will not be available when it is needed or in the quantities promised. Bold action will be required to prioritise defence spending as part of the planned Strategic Defence Review after the General Election."<sup>12</sup>

## MILITARY OPERATIONS

### Incidence of military operations

**2.10** Since the publication of the SDR, the armed forces have been involved in operations continuously, principally in the Balkans, Afghanistan and Iraq. These operations have presented a number of challenges relating to effectiveness and their economic and human costs. The Iraq and Afghan campaigns in particular proved much more problematic than expected.

### Industrial implications of military operations

**2.11** Experience of these operations has underlined that it is not possible to undertake significant military operations of any duration or unexpected elements without active help from a supportive defence industrial sector. That sector need not necessarily be located within a state's frontiers, but its assistance is invariably required. While an important objective of MOD is to generate force elements at specified levels of readiness and sustainability, in practice such elements cannot normally be used beyond a low number of weeks without industry being called in to assist. UK experience is of needing to call on industry to modify existing equipment for a particular mission in a specific place, to accelerate the introduction into service of selected new equipment, to respond to calls for urgent operational requirements (UORs), to enhance production of certain items and so on. For Afghanistan and Iraq, the UK has generated hundreds of UORs, procuring many of them successfully from UK sources. Of those that have been bought from overseas, it is perhaps worth asking MOD how easy it has proved to arrange their in-service support, particularly for platforms.

**2.12** This is all a contrast with the Cold War era, where deterrence and the capacity to fight effectively against Warsaw Pact forces rested on existing stocks of ammunition, fuels, spares and so on. There would have been no question of mobilising industry in Europe for the Third World War, in which the threat of escalation to the nuclear level, and therefore a short war, was a key element of NATO thinking.

11 HCDC Supplementary Memorandum SDSR2.

12 Amyas Morse, Comptroller and Auditor General, Ministry of Defence: Major Projects Report 2009, London, NAO.

**2.13** The increasing role for industry as design authority (with responsibility for modifications and technology insertion) and as support provider through long-term partnering arrangements has led to a growing awareness in MOD and among the military of the pivotal importance of a healthy defence industry. Arguably, enhanced awareness of the importance of access to the defence industry for sustained fighting capabilities lay behind the UK Defence Industrial Policy of 2002 and the DIS three years later.

### DIS objectives

**2.14** The objectives of the DIS initiative were to:

- a** “Give(s) a strategic view of defence capability requirements (including new projects, but also the support and upgrade of equipment already in-service), by sector. Part of the strategic view is specifying, in order to meet these, which industrial capabilities we would wish to see retained in the UK for defence reasons. We aim to communicate the overall view to industry as clearly as possible, recognising that plans change as the strategic or financial environment changes.
- b** Give(s) further detail on the principles and processes that underpin procurement and industrial decisions.
- c** Where there is a mismatch between the level of activity our own plans (and export/civil opportunities) would support and that are required to sustain desired capabilities, investigate(s) how we might with industry address that gap, within the bounds of affordability.”<sup>13</sup>

### UK freedom of action

**2.15** Sovereignty is a legal attribute of a state, frequently associated with UN membership. Sovereignty is not particularly meaningful if governments are highly constrained by external states and international bodies. The language of the DIS indicated that the UK aspired to ‘appropriate sovereignty’ and ‘operational autonomy’, ie it envisaged significant choice about when and how it used its forces. While ‘appropriate sovereignty’ and ‘operational autonomy’ are somewhat elusive terms, they nonetheless are linked to the DIS conclusion that the UK should generally be able to sustain and modify the equipment its armed forces used. This has significant implications for the knowledge, skills, assets and overall capabilities to be sustained within UK industry and for the technology transfer arrangements that the UK would require with regard to any military equipment bought from overseas.

### Outcome

**2.16** In the main the DIS was recognised within MOD and in the defence industry as a timely and useful piece of work.

Its analysis of what constituted ‘appropriate sovereignty’ was particularly welcome, as was its division of the defence industry into a number of sectors with a sector strategy for each. However, successful implementation was inhibited by issues, as yet not fully addressed, of affordability. Key concerns were that short term programming pressures would threaten the long term provisions of the DIS in that the volume of work available in key sectors would fall below the level necessary for the sector to be commercially viable.

**2.17** A brief survey of the implementation of the DIS by sector can be found at Annex B, with the overall conclusion being that the government has worked to maintain whole system expertise within the UK in most areas. However, the UK capacity to design and develop armoured vehicles has been allowed to wither.

## VULNERABILITY OF RESEARCH SPENDING

### Defence Technology Strategy

**2.18** In principle, MOD between 1998 and 2007 recognised the significance of defence research (ie non-project specific) spending. In 2006 it published a Defence Technology Strategy (DTS) which recognised that:

- Science and technology were fundamental to UK military capability.
- There was a need for greater combined MOD and industry investment in research and development (R&D) with more emphasis on research.
- MOD overemphasised the maturing of current technologies to the detriment of the new.
- Industry investment in defence R&D was low compared with that of MOD.
- World class research skills and science and technology expertise were essential.
- MOD must own and control some key technologies.

### Next steps

**2.19** The DTS set out a number of “key initiatives” such as:

- Grand Challenges and Competition of Ideas, designed to encourage innovation and harvest bright ideas.
- Engagement with industry on its future investment in defence R&D.
- Investment in skills, to include:
  - Increased emphasis within Dstl on depth of science and technology expertise.
  - Royal Society postdoctoral research fellowships pilot scheme for up to 3 researchers.
  - Doctoral research pilot scheme for up to 30 students.

<sup>13</sup> DIS, Part A, Paragraph AI.13.

## Outcomes

**2.20** These initiatives are remarkable for their vagueness and eventual modest impact. Research activity continued to struggle for funding and, since 2006, MOD spend on R&D has actually dropped by some 23%<sup>14</sup>. While initiatives such as the Centre for Defence Enterprise (CDE) at Harwell have been welcomed as a means of encouraging innovation from small and medium enterprises (SME), the CDE does not operate on a scale or with sufficient budget to make a significant impact on the research and skills base of the UK.

## MOD view

**2.21** In evidence to the HCDC, the MOD stated that it “has reformed its in-house science and technology capability with the formation of the new Programme Office within the Defence Science and Technology Laboratory (Dstl) to deliver greater efficiency and coherence. It is developing an ‘S&T Portal’ that embeds Dstl technical expertise within DE&S delivery teams to provide informed access to the wider supply chain.” This creation of a ‘one stop shop’ for research and technology certainly adds clarity within MOD. However it has not been welcomed outside.

## Industry view

**2.22** The defence industry is concerned<sup>15</sup> both at the declining size of the overall spend on research and on the growing proportion that is being spent on MOD in-house research by Dstl. Concern is further increased by the reorganisation of research acquisition from April 2010 which has led to the function of the former Defence Technology and Innovation Centre (DTIC) being absorbed into Dstl’s new Programme Office, which means that Dstl is now both ‘decider’ and in a growing number of cases research ‘provider.’ In evidence to the HCDC, industry representatives pointed out that MOD cut its research and technology budget from £540m in 2007 to £439m in 2010. While industry has seen its share of the budget drop, Dstl’s has risen<sup>16</sup>. There is also some concern in industry that Dstl (like many centrally funded research organisations) will tend to concentrate on those areas for which it has suitable facilities and available staff rather than on what is needed. A further disincentive to industry investment in defence research is that MOD contracts are increasingly ‘fixed price’ which provides little commercial incentive to take the financial risk necessary for innovation, even when project-specific. This compares unfavourably with the US where numerous grants are made and many contracts are ‘cost plus.’

<sup>14</sup> Rees Ward evidence to HCDC 8 Sep 10.

<sup>15</sup> HCDC Uncorrected Transcript of Oral Evidence to be published as HC 451-I, Strategic Defence & Security Review, Wednesday 8 September 2010. Witnesses were Ian King, Richard Martin, Rear Admiral Rees Ward and Dr Sandy Wilson.

<sup>16</sup> FT.com. 2 September 2010.

## Purpose of research

**2.23** Part of the problem appears to be that MOD is unclear about the balance of benefits it expects from its research spending. To what extent is research expenditure about the government kick-starting technologies so that the resultant knowledge can be passed to UK industry for development and incorporation into usable products? This is the question in which industry naturally has significant interest. On the other hand, to what extent is government defence research effort about enabling MOD to be a more intelligent customer that understands the direction, pace and potential of technological change? It can thus be in a good position to write demanding but attainable requirements and to evaluate technological proposals from industry.

## THE WIDER ECONOMIC CRISIS

**2.24** The UK economy was particularly badly affected by the global downturn because of ambitious government spending in areas other than defence. Because of the government spending required to rescue the financial sector and the drop in public sector revenues caused by the recession, there is government concern about the size of the UK national debt compared with the GDP, and the year-on-year budget deficits. The government that took office in May 2010 made clear that public spending would be cut in order to begin to deal with the latter problem.

**2.25** The core defence budget has grown by around 10% since the SDR, in addition to the funding for operations provided from the Reserve, which has totalled some £18bn since 1998.<sup>17</sup> Government spending on wider security, including counter-terrorism, has also increased significantly. But these cash increases cover all defence spending, not just equipment, and are more than taken up by real increases in costs: both short term pressures such as foreign exchange and fuel price movements and longer term systemic pressures, mainly related to personnel and equipment.

**2.26** The results of the 2010 CSR for MOD will not be known for another month. It seems unlikely that MOD will be the worst hit department. It was excused any short notice cuts for 2010-11 and the most likely outcome appears that it will be given level spending in cash terms, which is equivalent to at least a 2.5% to 3% cut in real terms. However, given the over-commitment especially the equipment plan noted by Gray and the NAO, the defence programme therefore faces challenging financial pressures. The government’s commitment to reducing the deficit emerging from its response to the global financial crisis means that future resources across government, including defence, will continue to be severely constrained. Updated

<sup>17</sup> Stockholm International Peace Research Institute (SIPRI) figures.

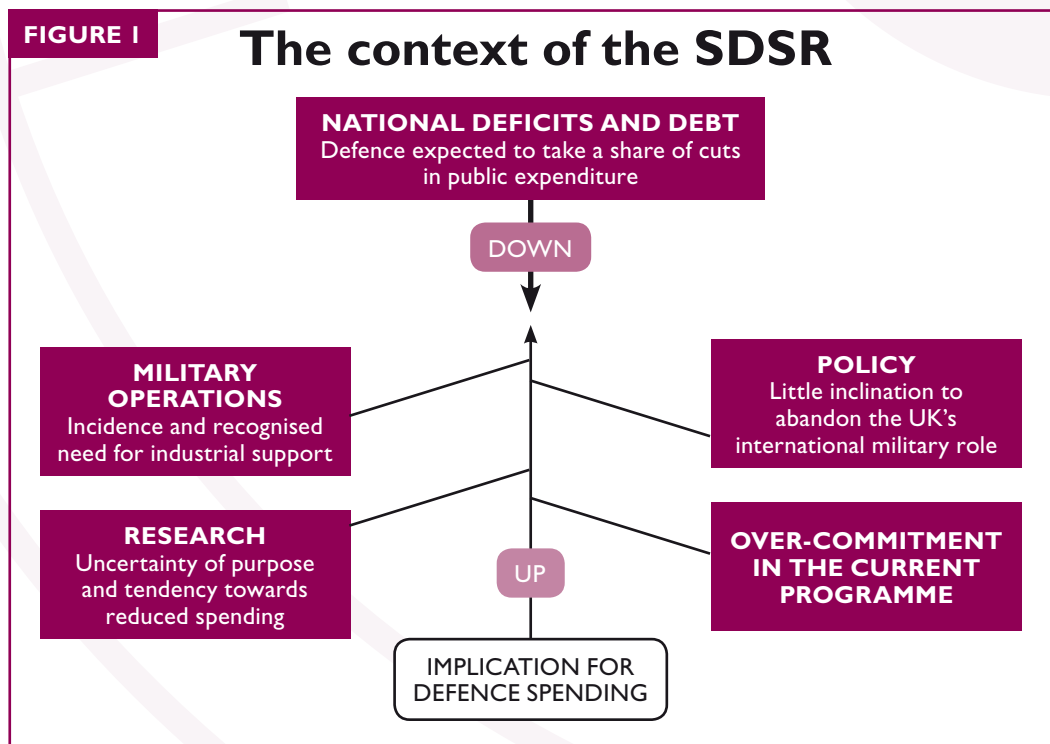
information is set out in the authors' note at Page 2 and at Annex C.

## SUMMARY

**2.27** Figure 1 presents a summary of the context in the SDSR in a simple diagram, where it can be observed that four of the five factors discussed would in other times imply that rather more should be allocated to defence rather than less. While MOD can be accused of committing to more projects than it was likely to get funding for, and when the utility of some systems being procured might be doubted given the current and recent configuration of world politics, MOD cannot be said to have allocated money to projects that do not support approved UK policy.

**FIGURE 1**

## The context of the SDSR





## 3



## THREE SPECIFIC ISSUES

## ISSUE 1 – DEFENCE INDUSTRY AND DEFENCE CAPABILITY

**3.1** In this context there are three issues which could conveniently be overlooked, deliberately ignored and/or concealed from public view. It is important for the defence of the UK that none of these happens.

### Maintaining acknowledgement of the place of industry in defence

**3.2** The first is the recognition that reliable access to defence industrial capability in national defence capability must not be withdrawn. Much of the public debate about the SDSR has been about service chiefs pleading for the value and needs of their own service. They have direct access to MOD decision making, indeed they sit on its highest boards and councils. They tend also to have backgrounds in direct combat or war-fighting positions and may not be so familiar with the supply chains and industrial capabilities that allow operations to be launched and sustained. Faced with any question of prioritisation between front-line structures and asset ownership and the means to modify and support equipment, how likely is it that a uniformed person would vote for the needs of the industrial sector?

### Hearing the industrial voice

**3.3** Undoubtedly the industrial dimension is being fed in. Key industry players are working closely with the government to try to shape the SDSR and subsequent ES&T Green Paper. However there is anecdotal evidence that the government is interested in talking to industry mainly for reasons other than understanding the industrial input to defence capability. Evidence given by the CEO of BAE Systems (BAES) to the House of Commons Defence Select Committee (HCDC), suggested that MOD is approaching defence industry seeking to explore whether it might re-negotiate or be released from some of its contractual commitments.<sup>18</sup> Corporate signalling is also being conducted by the nature and timing of announcements of job cuts. BAES announced<sup>19</sup> on 9 September 2010 that it was to shed a further 1,000 jobs in the UK, 740 of which will come from the company's military aircraft business and the rest from Insyte, its integrated technology unit. These cuts were said to be a necessary part of streamlining the business because several lines of its aircraft, including Harrier and Nimrod MR2s, were either being reduced in number or retired.

<sup>18</sup> Ian King, evidence to HCDC, 8 Sep 10.

<sup>19</sup> FT.com, published: 9 September 2010.

## Inter-dependence as opposed to dependence

**3.4** Clearly the UK cannot be self-sufficient in all aspects from design to in-service upgrade and then disposal of its military equipment. But the policy in place is that the UK should be able to sustain and modify its equipment, and any move away from this stance would bring significant risks and major implications for defence industry. It is necessary to draw a distinction between dependence and inter-dependence. In a relationship of dependence, one party is reliant on another, but the reverse does not apply. In a relationship of inter-dependence, both parties need each other. UK dependence on US has some appealing aspects but brings risks:

- a Political.** Would the US government always actively support a military action in which the UK was involved (a future effort to defend the Falklands, for instance?)
- b Bureaucratic.** There are real difficulties associated with getting supplies through time-consuming US export control processes.
- c Priority.** Would the UK get priority access to US supplies that were also needed by US or other allied forces?

## Supply chains and networks

**3.5** The generation and use of modern and effective armed forces involves contributions from a wide range of capable organisations, dominated by civilian staff, some of whom operate within government and many in the private sector. To operate effectively, these bodies need personnel with a wide range of individual skills who come together to generate a collective capability. The ability effectively to manage safety, highlighted by Haddon-Cave, is one important 'collective capability.' Understanding an organisation's capability is rarely straightforward since, when organisations routinely concentrate on core competences, many of them rely extensively on their external (and often international) supply chains to complement their own capabilities. These supply chains are complex and difficult to understand with lower tier firms sometimes serving several higher tier organisations. It may be, for instance, that the cancellation of an order for a fixed-wing combat aircraft causes financial problems for a sub-sub-sub contractor with specialist expertise which also makes a technically important contribution to the helicopter or complex weapons sector. This is demonstrated clearly in the links and mutual dependence between the military and civil aerospace sectors. Arguably, the UK government has neglected the development of understanding of ever-more complex defence supply chains in an age of globalisation. There is no equivalent UK study to the US Defense Science Board 1999 report on Globalization and Security, or the Defence Industrial Policy of the US DoD which has generated some highly detailed sectoral studies.

## Sustain, modify and certify

**3.6** The modification of equipment, obsolescence management and safety management require a wide variety of skills and a 'whole system' knowledge. There is an enduring issue, well illustrated by Haddon-Cave, over how much of this activity should be conducted in-house and how much by external providers, whether UK-based or international. Industrial capabilities depend on skill bases that are difficult to chart, difficult to understand and, most significantly in the context of SDSR and ES&T Green Paper, very difficult indeed to re-constitute once they have been broken up.

**3.7** If there is to be some backing away from the objectives of the DIS, these should be mentioned explicitly in the SDSR to inform the ES&T Green Paper, and the associated risks should be recognised and assessed.

## ISSUE 2 – DEFENCE IN THE ECONOMY

### Defence global size and shape

**3.8** Global military spending in 2009 is estimated by SIPRI<sup>20</sup> at \$1,531bn and the US alone makes up 43% of the global total. The UK spend is fourth, behind US, China and France, at 3.8% of global total military expenditure. The UK aerospace, defence and security trade association, ADS, estimates that "our exports sustain about 55,000 jobs and generate a larger research and development base, which generates better equipment for our own armed forces and for our exports."<sup>21</sup>

### UK Size and Shape

**3.9** There is no single, simple statement of what the defence industry comprises. The options and arguments are clearly expressed in a study carried out by the Centre for Defence Economics of the University of York<sup>22</sup> which, although 15 years old, has continued relevance. For simplicity this review will use the definition of the Defence Industrial Base (DIB) used by MOD and the Defence Analytical Service Agency (DASA). ADS estimates<sup>23</sup> that the defence industry employs over 300,000 people across all regions of the UK and contributes over £35 billion per year to the British economy. It is number one in Europe and second only to the US globally with an average of over 20 per cent of the global export market, generating £7.2bn in export revenue in 2009. Industry also contributes directly to current operations – there are 4,000 UK industry personnel in Afghanistan supporting the armed forces. ADS asserts that the UK defence industry is innovative, is one of

20 SIPRI yearbook 2010, summary.

21 Rees Ward, evidence to HCDC, 8 Sep 10.

22 Study of the Value of the Defence Industry to the UK Economy, Professor Keith Hartley and Nick Hooper, 1995, ISBN 0 9522308 5 2.

23 ADS Press Release A|D|S PR 2010 061 dated 13 Aug 10.

the few UK sectors to retain a world-leading position and represents 10% of British manufacturing.

### MOD equipment expenditure

**3.10** In 2008/9, MOD spent £13.387m on equipment, £6.669m on capital expenditure, £4.292m on equipment support and £2.426m on research and development<sup>24</sup>. This represents just under 40% of the overall defence budget and a little over 1% of UK GDP.

### Tax and multiplier effects

**3.11** Any assessment of the role of defence in the economy should make reference to the multiplier effects of defence spending but also to the tax consequences of cutting defence spending. According to MOD’s data, UK defence spending of around £40bn accounts for 510,000 jobs in government and the private sector. That is about £80,000 a job which at least implies that around 30% of defence expenditure comes straight back to the government in tax revenue. Cutting defence spending will cut tax revenues more than cutting public expenditure in areas where low pay predominates. Economists who believe those that lose defence employment will quickly find their way into an equally well-paid job in another sector would dismiss this point.

### Defence employment

**3.12** According to DASA figures<sup>25</sup>, total defence-related employment in UK is 300,000. The nature of these jobs is set out in the table below:

Job Attribution	Direct	Indirect	Total	Impact of 10% Cut
	(Thousands)			
MOD equipment expenditure	75	75	150	15
MOD non-equipment expenditure	50	40	90	9
MOD total (rounding error from DASA)	125	110	235	23.5
Defence exports <sup>26</sup>	30	35	65	6.5
Total defence-related jobs	155	145	300	30
Total equipment-related jobs	105	110	215	21.5

### Impact of cuts

**3.13** These numbers imply that a 10% cut in defence expenditure should not cause significant disruption in the economy. However, the numbers provided make no estimate

of the multiplier effect of defence spending and this may be felt particularly in some regions and localities such as Barrow, Preston, Blackburn, Bristol, Yeovil and so on. Of the 75,000 jobs directly attributed to MOD equipment expenditure, 22,000 are in the South East, 19,000 in the South West and 12,000 in the North West. The others are spread thinly across the other England regions, Scotland (4,000) Wales and Northern Ireland (1,000).

**3.14** For illustration only, the final column in the table above shows the impact on all of the employment figures of a reduction in expenditure by 10%. The headline figure is that if MOD expenditure on equipment procurement and support is reduced by 10% then at least 15,000 jobs would be lost in industry.

### Complications

**3.15** But life would be more complicated than this:

- If the commitment to being able to sustain and modify equipment was scaled back, more of remaining defence work could well go overseas.
- Investment in defence by private companies in the UK would become less attractive. An assurance of a shrinking market gives little incentive for such spending, especially when overseas investment is often needed to win defence sales outside the UK.
- Businesses are not infinitely scaleable and a 10% drop in business could well mean the loss of important economies of scale, unit cost increases and a loss of competitiveness that could drive a company to leave the defence sector altogether. This was the choice of many companies in the UK when the defence sector shrank after the end of the Cold War, with GEC being the most prominent (and soon unsuccessful) migrant from defence.

In reality, seeking to calculate the macro-economic effects of defence spending cuts, in a struggling economy where all the public sector is losing staff, is a complicated challenge.

**3.16** Size does not reflect influence and, as ADS point out with some persuasiveness, defence and aerospace are two high technology market sectors where the UK has a global market share significantly greater than the UK share of global GDP.

### Defence spending and public opinion

**3.17** The UK spends more on defence than most other EU states and defence traditionally has enjoyed public support in the UK: the ambitions of the SDR in 1998 and DIS in 2005 did not have to be pressed on a reluctant UK majority. It is doubtful whether that readiness to support defence would be maintained if the 22% of the defence budget spent on buying new equipment (£7bn per year) was predominantly spent overseas, and so its multiplier effects would be lost to the

<sup>24</sup> DASA figures.

<sup>25</sup> Figures for 2007/8, Table I.10, Employment.

<sup>26</sup> This is higher than the 55,000 estimated by ADS.

UK. Publics and politicians around the world tend to support defence only if they enjoy some of the economic benefits.

### Impact of uncertainty

**3.18** The major defence industry companies have a global presence and, as noted, the UK is in competition with other industrial nations for defence industry investment. Government, and MOD in particular, needs to be aware of the influence of national market conditions on investment decisions. Companies will understandably invest most where the return is greatest and the risk of disruptions or contract shocks lowest. On this basis a swift conclusion to the SDSR/ES&T Green Paper process is important in order to reduce uncertainty and encourage continued investment in the UK.

## ISSUE 3 – CIVILIANS AND CIVIL SERVANTS IN DEFENCE CAPABILITY

### Generation and use of defence capability

**3.19** There is a distinction to be drawn, albeit blurred at times, between the generation and use of military capability, both being intricate and complicated activities. In each sphere there is the issue of what should be done by uniformed personnel, what by civilian government employees and what by the private sector. There is an established tradition of many roles for civil servants in the generation of defence capability, not least in areas such as the production of policy guidance, financial management, purchasing and research. There is also a long-standing trend towards MOD sourcing more of its peace-time needs from the private sector and this is spreading to the domain of the use of force where many contractors are employed on deployed operations. In the UK, because the military are paid extra for the rather unlimited commitment they make to their employer, civil servants are often less costly employees for a particular role.

**3.20** In this situation it is inappropriate to consider simply that there are too many civil servants, as some of the press and political class were apt to do in the latter part of 2009. The real questions are whether the right people are doing jobs, and whether all jobs in defence add significant value and are therefore worthwhile.

### Going too far: the decider/provider balance

**3.21** It can be argued that in outsourcing much of its research, development, manufacture and re-manufacture capability over the past 30 years, and also much of its technical training and education, (i.e. severely cutting its capacity as a 'provider') MOD has also seriously jeopardised its ability to be an effective 'decider' of what, how and by whom such services and products should be provided. Those MOD personnel who

have personal experience of the 'provider' activities tend to be in their 50s or older and so the residual experience will quickly disappear. MOD people tend to become experts in MOD processes and procedures for monitoring the activities of providers and many have lost the deep understanding of what is involved in the 'providing' activities. The dangers of this approach were illustrated starkly in the Haddon-Cave report. However MOD would respond by pointing out that effective staff training, external recruitment (by MOD, from industry, and vice versa) and the use of secondments to and from industry all help to increase awareness. And of course military personnel are still intimately involved in providing engineering and logistic support on training and on deployed operations.

### Military influence

**3.22** There is an issue with the number of military staff in acquisition appointments, particularly in DE&S. There is clearly a need for current operational experience in the capability and requirements management appointments but it is less clear why military people should be employed in procurement, project management or equipment support management roles. Neither is it clear why so many of the senior posts should be filled by military people, selected for their high military quality but in many cases lacking specific acquisition skills and experience. In the end, some jobs require clever people who, if they are to be attracted and retained have to be remunerated appropriately and in a bureaucratic organisation like MOD this means rank (military) or grade promotion (civil servant). In any case, most senior posts (B2 and above) are filled in competition and so the most suitable candidate, by qualification, experience and competence, whether civil servant or military, should be selected.

### Workforce development

**3.23** Another important area concerns the skills and knowledge, and so personal development that individuals need to optimise their contribution.

**3.24** Government was traditionally a significant contributor to national workforce development and the national skills base through high quality apprenticeships, student apprenticeships and similar training schemes. More recently, individual departments, including MOD, with constrained budgets and short-term outlooks have been able to do less. There is now greater emphasis on short, specific, task-orientated training rather than more generic training and education. Within MOD, the SDSR is likely to exacerbate this decline. And industry is given little incentive to increase apprenticeships and similar training schemes.

**3.25** Within MOD the main focus has been on DE&S. This was highlighted by Bernard Gray who said there was a "need to raise the skill levels within DE&S on very important and valuable



*programme management, management accounting, cost-estimating, contracting, technical and engineering skills.”<sup>27</sup>* However the DE&S response has been directed at short training courses and schemes to recognise experience rather than (significantly more expensive) long-term training, education and career management plans which focus on the benefit to the business rather than the individual.

### Recruitment and retention

**3.26** If MOD is no longer providing adequate (in quality and/or quantity) training to develop its own staff it will have to resort to recruiting trained and experienced staff from industry. However, as experience from the resurgent nuclear industry demonstrates, where there is strong competition for common skills, more agile industrial players are likely to be able to offer a more attractive proposition (particularly in terms of recognition and reward) than the somewhat leaden-footed MOD. In the downturn in MOD and defence industry activity which will follow SDSR, defence is poorly placed to attract and retain those with appropriate skills.

### Skills audit

**3.27** In considering the range of specialist skills and knowledge required for ‘appropriate sovereignty’ (or national autonomy) as defined in the DIS, the issue is not just one of individual skills but of collective capability. With the exception of heavy armour and artillery (described earlier) nothing in the SDSR or ES&T Green Paper is likely fundamentally to alter the current situation. However there are key areas where urgent action is needed to improve an already unsatisfactory situation. The most pressing are listed below.

### Project management

**3.28** A superficial knowledge of the principles and practice of project, programme and portfolio management can be acquired relatively easily by specific training. There is a wide range of training providers, accredited by bodies such as the Association for Project Management (APM) and the Office of Government Commerce (OGC). MOD (particularly DE&S) has taken action to address its skills shortfall in this respect by increasing the amount of training provided and by introducing a more effective licensing regime. However, for true competence, these skills need to be complemented by experience of the environment and context in which the project management skills are being applied and this takes a breadth and depth of experience rarely found in MOD employees. A more effective, business-focused career management process will help in this regard. Meanwhile MOD has recognised that it will take time to correct the situation and is engaging suitably qualified and experienced contractors to help in the short to medium term.

### Systems engineering

**3.29** Similar arguments apply to systems engineering, a term which can be extended to cover the whole spectrum of capability integration, platform integration, systems integration and system-of-systems integration activities.

### Risk management

**3.30** MOD is aware of the requirement for effective risk management and understands the theory. However, in practice, it tends to take a ‘one size fits all’ approach and so the effort and resource devoted to the management of relatively modest project risk can be disproportionately high, and vice versa. This is a consequence of a bureaucratic, process-based scrutiny and approvals process and a cultural unwillingness to allocate and assume personal responsibility. The DRU will no doubt examine these issues but MOD will still need to address a shortage of skilled and experienced risk managers.

### MOD engineering strategy

**3.31** DE&S has recognised these (mainly engineering-related) skills shortages and is developing ‘An Engineering Strategy for DE&S’<sup>28</sup> which seeks to address them. DE&S sees this strategy as a key enabler of acquisition reform. A significant driver for the strategy is the nature and age-profile of MOD’s engineering and technical workforce; the strategy speaks of “a mass outflow of knowledge and experience during the next 5-15 years as experienced Band B and Band C engineers and technicians are due to retire.” It notes that industry is facing a similar demographic challenge and acknowledges that acquisition processes and MOD’s relationship with industry (including provider/decider demarcations) will have to be adapted to take account of the availability and affiliation of appropriately skilled workers.

**3.32** The strategy embraces:

- a Engineering for capability contracting.** Working with industry to re-define the engineering process model in order to support contracting at the capability level and define the ensuing skills requirements.
- b Engineering for legacy equipment.** Recognising where legacy equipment requires direct engineering oversight by MOD people and organising work and skills appropriately.
- c Improved risk management.** Clarifying the liability for engineering risk across the MOD-industry interface, particularly for low frequency/high consequence risks, to refine the risk mitigation effort.
- d Systems engineering approach.** Embedding a common systems engineering approach as a key enabler of new ways of working, including effective use of ‘open systems’ to

27 Bernard Gray, Section 3.10, Past and future reform of DE&S.

28 An Engineering Strategy for DE&S, Version 0.4, July 2010.

exploit the new technologies emerging from the DTS.

**e Improved safety management.** Building on greater clarity in engineering roles and responsibilities to deliver improvements in the quality and efficiency of safety management.

**3.33** If properly resourced and successfully implemented, this strategy has the potential to re-build and re-focus MOD's engineering core expertise. However, in the context of a possible 30% reduction in DE&S operating costs (the majority of which is staffing costs) following SDSR, the resources necessary to convert a laudable strategy into a funded plan must be in doubt.



# 4



## CONCLUSION

**4.1** In conclusion, it is apparent that the SDSR will be very much a foundation for further work. The document will introduce some clear changes and notable reductions in aspiration, capability and employment. But many other matters will be either parked or fudged for further attention in 2011 and there will be high level political pressure for the defence machine to become significantly more efficient.

**4.2** The sequence – SDSR followed by defence reform and ES&T Green Paper – is an obvious and serious cause for concern to the defence industry in that some strategic decisions may be taken and announced in the SDSR before their impact (probably long term; perhaps permanent) on the defence industry, defence capabilities and defence skills has been properly assessed. In effect, some options may be closed off before the ES&T Green Paper starts.

# A



## ANNEX A

### AN ANTICIPATION OF THE SDSR FROM SEPTEMBER 2010

#### Introduction: Green Paper

**A.1** The nature and scope of what is now the new coalition government's SDSR were first revealed in the Green Paper 'Adaptability and Partnership: Issues for the Strategic Defence Review'<sup>29</sup> issued by the previous administration in February 2010. This states that:

*"Managing these systemic pressures on overall numbers of personnel and platforms will therefore be a key question for the future review. We will need to establish a better balance between operational output and supporting activity and between the quality and quantity of our major platforms."*

**A.2** This extract gives a flavour for the cuts to platforms and to headcount (uniformed and civilian) which the SDSR is likely to recommend.

#### Tone

**A.3** It is widely anticipated that there will be a shift in emphasis away from 'hard power' to 'soft power.' This implies more people with less costly equipment, more emphasis on conflict prevention and defence diplomacy, and perhaps a shift in emphasis and funds from MOD to DfID. However, this sits uncomfortably with an equally widely trailed reduction of up to 20,000 in army numbers.

#### Depth

**A.4** The SDSR is likely to be a high level statement of policy, setting out the strategic effect the government wishes to achieve but, apart from a number of headline force structure and equipment planning announcements, be short on specific details; these will follow with the production of PR11, the recommendations of MOD structural reform work being carried out by the DRU, and the ES&T Green Paper. Officially the SDSR is not a 'spreadsheet exercise.' Rather it is 'policy led and resource informed.'<sup>30</sup> The NAO has reported on the limited ability of MOD to change the shape of defence spending because of existing contractual commitments.<sup>31</sup> Cancelling or even changing such commitments is likely to add cost.

29 Adaptability and Partnership: Issues for the Strategic Defence Review, Cmd 7794, dated February 2010. Chapter 1.

30 Rees Ward, evidence to HCDC, 8 Sep 10.

31 Auditor & Comptroller General, Ministry of Defence: Strategic Financial Management of the Defence Budget, London, National Audit Office, July 2010, pp.16-17.



## Impact on equipment

**A.5** Inevitably there has been much rumour and speculation, some well informed and some mischievous from elements of the defence industry trying to protect their particular position by some pre-emptive announcements about the likely impact on jobs. However some of the speculation has credibility. Commonly expected cuts are described below.

## Affordability

**A.6** The primary target of the SDSR will be the generation of a defence programme that is affordable in the light of resources likely to be allocated to MOD over the next decade. Currently, as investigations by Bernard Gray<sup>32</sup> and the NAO<sup>33</sup> have underlined, planned force structures, readiness rates and equipment acquisitions would require a significant injection of funds above the 'level real' line, ie with level funded adjusted upwards to allow for inflation in the economy as a whole. To provide a notion of current commitments and plans, the figures in the Gray Report (which are disputed by MOD) suggest that the equipment budget would need to grow in cash terms by 6% a year and the equipment support allocation by 3% a year simply to maintain existing plans. Such increases in funding are unlikely to happen and therefore new plans must be made, including the cutting back and even cancellation of some prominent projects.

**A.7** MOD appears to have been told to make plans for three possibilities regarding future funding levels over the CSR period: level real; level real less 10% over the period, which is more or less equal to level cash; and level real less 20%. The latter would clearly involve much more disruption than the former, not least because of the proportion of the defence budget that is already contractually committed. The most likely outcome appears to be that MOD will be required to make a 10% cut in its actual spending, although allocations for Afghanistan will continue to be treated separately.

**A.8** Given the multi-year contractual commitments in place in MOD to people and the supply of equipment and services, the cuts to be made will significantly reflect those that can be made rather than those that would generate the most coherent defence posture. Uncommitted money is vulnerable whatever its current envisaged purpose, with the sole proviso that the Afghanistan campaign will remain a priority. The NAO has reported that about 75% of the defence budget is committed

for next year<sup>34</sup> and that this will fall only gradually over the next three years, so the areas where cuts can be made are limited. The likely consequence will be that, Afghanistan needs apart, the UK will have a period of rather incoherent defence activity and restricted capability to act until a multitude of adjustments can be made. The RAF fears for instance, that it will have staff on its hands that it cannot afford to make redundant, but who will have no aircraft to support and operate.

## Handling of the strategic deterrent

**A.9** Close attention will be paid to the future of the strategic deterrent, where a public argument between MOD and HM Treasury has emerged as to whether defence should receive 'extra' money to pay for the capital cost of the replacement of the current fleet of Vanguard submarines. The main driver for the submarine replacement is the expected life of the four submarines in the light of at least one needing to be continuously at sea (under current doctrine). The Chancellor has said clearly that defence will not be given extra money for the nuclear deterrent. Ministerial declarations so far assert that "Continuous at Sea Deterrent" (CASD) must stay, but the extensive opportunity costs of this will become clearer in the coming months.

**A.10** MOD seemingly faces the choice of whether to use a different approach to nuclear deterrence (such as fewer submarine patrols and so less wear) or to sacrifice extensive conventional equipment to allow staying with the CASD posture in place since the Cold War.<sup>35</sup> Given that the SDSR must appear before the end of the calendar year, that the current Vanguard replacement plan does not require significant funding until 2015, and that it may take the government a longer period to finalise a doctrine and plan to replace the CASD approach, this issue may be fudged in the short term. The government may settle for adjusting the equipment procurement plan so that it is affordable until 2015, giving itself another year or so to deal with nuclear posture and deployment issues.

## Force structure changes

**A.11** The SDSR findings that will capture the headlines will be those dealing with cuts in force structures rather than capabilities *per se*. Work (and argument) continues but, even if the costs of the Vanguard replacement somehow disappear from the needs of the next decade, we would expect:

- Reduction of the Queen Elizabeth class aircraft carrier from

32 Bernard Gray, Review of Acquisition for the Secretary of Defence, London, October 2009, <http://www.MOD.uk/DefenceInternet/AboutDefence/CorporatePublications/PolicyStrategyandPlanning/ReviewOfAcquisition.htm>  
33 Auditor & Comptroller General, Ministry of Defence: Major Projects Report 2009, London, National Audit Office, December 2009.

34 Auditor & Comptroller General, Ministry of Defence: Strategic Financial Management of the Defence Budget, London, National Audit Office, July 2010, p.5 and 16-17, [http://www.nao.org.uk/publications/1011/MOD\\_financial\\_management.aspx](http://www.nao.org.uk/publications/1011/MOD_financial_management.aspx)

35 See Malcolm Chalmers, 'Like for like renewal of Trident will come at expense of conventional forces', London, Royal United Services Institute, <http://www.rusi.org/news/ref:N4C4ED70C3F1F7/>, accessed 5 August 2010.

2 to one or nil.

- A commensurate reduction in the buy of the F35 Joint Strike Fighter, probably from the 138 currently planned to less than 50.
- A reduction in activity levels or premature withdrawal from service of some aircraft types including some Nimrod, Harrier and Tornado aircraft.
- A sharp reduction in activity levels for heavy armoured forces including main battle tanks (MBT) and heavy artillery.
- An intention to withdraw UK troops from Germany.

**A.12** Other possibilities include absorbing the RAF Regiment and Royal Marines into the army and ending the navy's capability for amphibious warfare. Each service is lobbying vigorously for its roles and assets, with the army being keenest to support its headcount (a cut of more than 10,000 would be viewed as highly damaging) whereas the navy and RAF are focussed on their equipment. There might be reluctance to abandon Tornado at this stage until the remaining uncertainties of delivery date, cost and performance of the JSFs have reduced, but the RAF remains keen on the troubled US multi-role aircraft.



# B



## ANNEX B

### PROGRESS IN INDIVIDUAL DISSECTORS

#### Maritime

**B.1** The maritime market offers a good example of an effective response to the 2005 DIS. The industry has consolidated and there is a very clear view, shared by MOD and BAES (and MOD and Babcock) of the impact of changes to current plans. In his evidence to HCDC on 8 September 2010<sup>36</sup>, Ian King (CEO BAES) was quite open about having been asked to consider options to reduce the number of carriers from 2 to one or zero and that MOD had acknowledged the need to make up any shortfall in development and production work by alternative, smaller vessels. Similar considerations apply to submarines where King is confident that both MOD and BAES have learned the lessons from the Astute debacle and both will work together to avoid any gap in activity which would lead to loss of key skills and capabilities.

#### Armoured fighting vehicles

**B.2** The AFV situation is much less encouraging. There has been a significant shift in sentiment away from heavy armour such that main battle tanks (MBT – currently the Challenger 2, manufactured by Vickers Defence Systems, now BAES Global Combat Systems) and heavy artillery (currently the AS90, manufactured by Vickers Shipbuilding and Engineering Ltd, now BAES Global Combat Systems) are likely to be mothballed. This will reduce the spend on sustainment and modification and will place in jeopardy the ability to develop and manufacture replacements if and when required.

**B.3** However, light armour (tracked and wheeled) is being used intensively on operations in Afghanistan. Work on sustainment and modification has increased markedly and so the skills base is secure. That said the new generation of Protected Mobility Vehicles (Mastiff) is based on a US platform and the new FRES SV being developed by GD (UK) is based on a Spanish platform so while the high value platform and systems integration skills will flourish there is some concern over the sustainment of the 'heavy metal' chassis and body production capability.

**B.4** The role of the Defence Support Group (DSG) in the repair and overhaul of AFVs is significant in that it leaves less scope for industrial primes to keep their manufacturing capability alive through lean order book years by turning their hand to overhaul and re-manufacture. The involvement of DSG in the assembly of FRES SV is particularly significant.

<sup>36</sup> HCDC, 451-I.

## Fixed-wing including UAVs

**B.5** Here again the sector responded to the DIS, enthusiastically adopted partnering behaviours and worked to set up a number of long-life high-value support (modify and sustain) contracts, not least for Harrier, Tornado and their power plants. With support from some research spending, these capabilities and skills might be convertible into development and manufacture activities if required. That said, the principal provider (BAES) has responded to the likely outcome of SDSR by reducing its ability to support Harrier and Tornado Hawk and Nimrod and announced 740 redundancies (from a workforce of 15,500) in its Military Air Solutions Division. BAE Systems has, however, advanced its Taranis UAV and it will be up to government to decide if and how it wishes to take this forward, in either a national or collaborative framework.

## Helicopters

**B.6** Like light armoured vehicles, helicopters have had a 'good war.' The requirement is assured and growing. Industrial consolidation has taken place and, with a strategic partnering agreement in place, MOD and Agusta Westland work closely together, in many cases with joint project teams working on a shared floor-plate. The key concern is that the UK contribution will be systems integration and assembly rather than platform development. However, the UK requirement is unlikely ever to be sufficiently large to make the on-shore design, development, manufacture and integration of any new helicopter financially viable.

## General munitions

**B.7** The changes which started with the privatisation of the former Royal Ordnance Factories are all but complete. MOD spends around £500m per year on general munitions. Business is dominated by the MASS contract awarded to BAES in August 2008. The new arrangements have responded well to the unexpected demand for small arms and artillery ammunition arising from operations in Iraq and Afghanistan.

## Complex weapons

**B.8** The complex weapons (mainly guided missiles) area is probably the greatest success of the application of the principles of DIS. Industry has consolidated and MBDA and MOD work well together in an effective partnership. However, there are worries that the government may simply not put enough work into this sector to maintain its viability.

## Infrastructure (C4ISTAR)

**B.9** The key MOD concern is to ensure that industry retains and develops its ability to understand, integrate, assure and modify mission critical systems. However, unlike the other

sectors, there is considerable read-across between the civil sector and defence – both have a keen interest in the areas of high grade cryptography and associated information assurance capabilities – and the civil sector dominates. The sector is therefore resilient to any changes arising from the SDSR.

## CBRN and force protection

**B.10** This area is exemplified by the large number of small providers responding with agility to the demands placed on them by the need to respond swiftly to the threats (currently more force protection than chemical, biological, radiological and nuclear (CBRN) arising from current operations. Given the need for responsive innovation, consolidation is unlikely and the requirement is likely to increase rather than diminish. This area crosses the boundary between military and civilian presence and CBRN in particular has a large market with police, fire and rescue services.

## Counter terrorism

**B.11** Although CT is a separate sector in the DIS, it is too widely spread and disparate to lend itself to effective analysis on similar lines to the other sectors. However, it is encouraging to note that in this area in particular government policy recognises the intimate relationship between defence and security capabilities and the many shared technologies used in generating them.



# C



## ANNEX C

### POST-PUBLICATION COMMENT ON SDSR

#### Introduction

**C.1** The SDSR published on 19 October, 2010 was clearly an interim document, setting out some changes in the scale of UK ambition and policy direction, but leaving many issues for further attention. Among these issues was the generation of a Equipment, Support and Technology Green Paper, promised by the end of the year, and the implementation of a series of savings measures intended to make implementation of the policy affordable within the resources provided by the Comprehensive Spending Review (CSR) of 20 October. Central to the savings measures was an intention to cut 25,000 civil service posts from MOD (20,000) and its agencies (5,000).

#### Civil service cuts

**C.2** In the year leading up to the general election there had been some assertion in the press that MOD had too many civil servants, but the SDSR has been published with no clear sense of what is to change in MOD in order to make these staff reductions possible. It is not clear if the government believes that major staff reductions can be made because many people have too little to do, or because it sees too many people being occupied in tasks that add little value, or because it plans to replace civil servants in some posts with military personnel. Nor does the SDSR provide any guide to the government's idea of which defence tasks should be done by uniformed personnel, which by civil servants and which by the private sector under contract. These sorts of issues have been left to the Defence Reform Unit under Lord Levene which is to scrutinise all aspects of the delivery of capability, and to individual defence managers under pressure to show that they can deliver their work with fewer people.

**C.3** Charles Haddon-Cave, in his report on the crash of Nimrod, criticises General Sir Sam Cowan as Chief of Defence Logistics for specifying a 20% cut in operating costs for the Defence Logistics Organisation without having done an overall risk assessment.<sup>37</sup> Nonetheless the government in the SDSR appears to have taken a similar route to General Cowan. Staff reduction targets have been set without the risks having been assessed.

#### Defence industry

**C.4** As far as defence industry is concerned, the SDSR makes it clear that the government would like to minimise any costs

<sup>37</sup> Charles Haddon-Cave, *The Nimrod Review*, London, 2009, Chapter 13, paras 13.65 ff, <http://ethics.tamu.edu/guest/XV230/1025%5B1%5D.pdf>

associated with supporting the UK defence industrial sector, but at the same time wishes to assure the industry of its backing.

**C.5** On the negative side, the SDSR says that the government will:

- a** explore a reduction in the number of defence industrial areas that are considered central to UK operational sovereignty; and
- b** look to buy more defence equipment 'off the shelf', implicitly from overseas suppliers.

**C.6** More positively, the SDSR says that the government will:

- a** Give active political and MOD support to UK defence exports; enhanced support by ministers is already apparent.
- b** Work so that UK requirements lead to products for which there is a significant export market. This policy will take significant time to have a significant impact. Work on the Type 26 Frigate includes exportability considerations but the processes by which exportability will be built into UK acquisition practices are yet to be defined.
- c** Support the involvement of small and medium sized enterprises in defence. This is far from an original point, with turning support in principle to support in practice having proved challenging.

**C.7.** It may be concluded that the government would like to see a flourishing UK defence industry but fears the cost of giving preference to UK firms and of maintaining defence industrial capabilities for which there is a long-term need but little immediate demand for the products involved.

**C.8.** The central industrial issue in the emerging ES&T Green Paper is how the UK's sovereign needs will be defined, ie the defence industrial capabilities that the UK is deemed to require:

- a** The narrowest conception would assert that the UK needs only the capabilities to generate goods and services that cannot be bought from overseas because of their sensitivity. This would guarantee a future for only a very limited UK industry.
- b** Another criterion might be that the UK should maintain industrial capabilities in areas where there is only one potential supplying company overseas, or where the potential suppliers come from only one other country. In the Defence Industrial Strategy (DIS) document of 2005, the competitive international market in armoured vehicles was used to justify a UK development and manufacturing capability in this area being given a low priority.
- c** The UK could underline the judgement in the 2005 DIS that operational sovereignty required the UK to be able to sustain and modify key items of equipment in its inventory. This criterion implies significant technology transfer to be

associated with any defence import;

- d** Traditionally the UK has maintained a capability to test and confirm the safety of the systems which its troops use. The ES&T Green Paper could confirm that that this capability needs to be sustained, which has implications for the facilities and skills to be maintained in the UK and also for the intellectual property transfers that would have to accompany all defence equipment imports.
- e** Lastly there is the political question of the defence industrial capability needed by a country such as the UK, which is to continue 'to punch above its weight', have 'global responsibilities and global ambitions'<sup>38</sup> and be a military power of 'first rank'.<sup>39</sup> The government could conclude that such a country could not credibly be dependent on industry under others' sovereign control for the majority of its supplies.

**C.9** Internationally two central issues concern how the UK will view interdependence in co-operative relationships with European states, most obviously France, and if it will specify any limits to dependence on the United States. A third question, which may not gain much political traction, concerns what the UK government will need to do to encourage defence firms to continue to invest in the UK. In an age of mobile capital, defence firms will go to where defence spending is substantial and/or growing.

## Research and technology

**C.10** The SDSR had little to say on research and technology but there is widespread awareness that the research budget has fallen in recent years and there are rumours that a further fall will occur in 2011-12. Arguably the last Defence Technology Strategy (DTS) produced too large a list of areas where the UK should invest, so some refinement is overdue.

**C.11** Overall, however, the ES&T Green Paper needs to address the intellectual base that the UK needs to be an intelligent customer for defence equipment and the extent that the government should be using research funding for work whose results can be provided to industry in order to reduce risk and accelerate development in projects. Arguably MOD has been poor in defining the problems that it seeks to get under control by means of research funding and it is desirable that the ES&T Green Paper provides some clear and credible answers in this area. With little committed money in the research area, the funding is particularly vulnerable to financial pressures.

**C.12** The privatisation of much of DERA into QinetiQ and the

<sup>38</sup> Prime Minister David Cameron and Deputy Prime Minister Nick Clegg in the Foreword to the SDSR.

<sup>39</sup> Foreign Secretary William Hague in Daily Telegraph 15 October 2010.

creation of Dstl has not made things simpler, with the latter now acting as both the contractor for and a supplier of defence research.

## Conclusion

**C.13** There is much uncertainty about the outcome of the ES&T Green Paper, with a less expensive policy being certain to look appealing in many respects. Rather than think of the much-advocated five-year defence review, it is more accurate to look for a process of continuous defence reform and change. The SDSR has just been published but the last efforts of the Defence Reform Unit are not expected to be published until the summer of 2011. Implementation of the SDSR and the defence reform programme will take a couple of years with preparations for the next CSR being needed in 2014. There will be another election in 2015 and probably another defence review to be completed towards the end of that year at latest.



## Afterword



**Jonathan Green**, Prospect  
Research and Specialist Services

Setting the right priorities for Britain's future defence needs is one of the most vital functions of government. Prospect, a union with over 16,000 professional scientists and engineers working in the defence sector, takes our role in these discussions very seriously. We fully support our front line troops in pursuing Britain's national interests. Prospect members are actively involved in providing support for those engaged in conflict zones in some cases serving alongside front line troops in an advisory capacity.

Too often debates on public services are needlessly polarised between front line and back office functions. In the case of defence there are clear differences between military roles, where service personnel are actively engaged in battle, and those providing a support function. But this does not mean that this support role is not crucially important to the success of our forces. That is why we are approaching the discussion around the Strategic Defence and Security Review (SDSR) and the follow-up Equipment, Support, and Technology for UK Defence and Security Green Paper in a very considered manner. We welcome the fact that Professor Taylor and Brigadier Campbell have produced a reasoned and well argued report that seeks to take the discussion forward constructively rather than scoring cheap political points. We do not necessarily agree with every point made in their paper, and we will make our differences clear in this Afterword, but we share their central concern that some strategic decisions have been taken without properly considering the impact on the defence industry, defence capabilities and the defence skills base.

The tensions surrounding the government's SDSR were one of the worst kept secrets across Whitehall, with or without leaks from the Ministry of Defence (MOD). Any cuts in the budget would inevitably ratchet up the department's funding crisis unless there were significant cuts in defence capabilities. Beyond the headlines over mothballed carriers and cuts in military personnel, the SDSR report has deferred the hard choices the government claimed to be making. Some of the decisions have increased defence spending, in particular the deferral of the Main Gate decision on Trident and changes to the carrier programme. Over the next few years there will be scrutiny of the government's claim that defence spending will equate to at least 2% of GDP and that Britain's role in the world has not been compromised. The SDSR is not an 'East of Suez' moment;<sup>40</sup> instead it is a continuation of the policy

<sup>40</sup> 'East of Suez revisited as Treasury axe falls on defence', FT.com, 20 May 2010 <http://blogs.ft.com/westminster/2010/05/east-of-suez-revisited-as-treasury-axe-falls-on-defence/>



that preceded the general election. The SDSR has scaled back the size of future military interventions but it seeks to retain Britain's role as a global military power.

The assumptions that underpin the SDSR are based on a reduced level of operations over the next decade. This may turn out to be wishful thinking. For most of the last decade there has been two medium operations, Iraq and Afghanistan, and multiple small operations, so it is not surprising that military resources have been stretched. The recent exchange of artillery between North and South Korea and the security threats emanating from Yemen illustrate that there are many areas of instability in the world. There may be no immediate security threats arising from the economic crisis in the Eurozone but if these emerge we would be expected to intervene. More surreally, the revelation that James Blunt refused a direct order from US General Wesley Clark to attack Russian troops at Pristina airport in 1999<sup>41</sup> when serving as a British soldier, shows how broad-based multi-national peace keeping missions can quickly become embroiled in major international incidents. So if Britain is to retain its global influence, as suggested in the SDSR, defence resources will continue to be stretched to the limit. The cuts in defence programmes announced will not balance the books. This means that MOD will continue to muddle through until the next defence review.

What the government clearly failed to do in the SDSR is fairly distribute the cuts it intends to make across MOD. You do not need to have an in-depth knowledge of the defence budget to understand that a 30% cut in civilian staff against an overall budget cut of just 8% does not add up. There is a glaring mismatch at the heart of SDSR between the defence capabilities retained, the defence planning assumptions that underpin the SDSR and the civilian staff needed to support those capabilities. To achieve these cuts it is inevitable that there will be salami-slicing across the department with key staff being needlessly lost.

Annex C of Taylor and Campbell's report, highlights the failure of the SDSR to implement one of the key conclusions from the Haddon-Cave report. As they point out, the SDSR is cutting staff without making an assessment of the risks involved. Prospect is very concerned that MOD has not learned the wider lessons of Haddon-Cave beyond the air environment. This should be considered by the House of Commons Select Defence Committee, either directly following the SDSR or as a follow-up to the implementation of the Haddon-Cave report.

The SDSR has fudged many of the issues that could have addressed the shortfall in the defence budget. As the Taylor

and Campbell report shows in Annex A many of the cuts were expected. The private sector announced a series of job losses before the publication of the SDSR reflecting a realignment of work streams with planned run-downs. However the process leading up to the publication of the Green Paper on defence acquisition does not provide any reassurance that future decisions will be based on rational planning assumptions. The defence secretary has signalled his intention to drive value for money by buying 'off the shelf' from home or abroad,<sup>42</sup> this approach has been confirmed in the Green Paper. In the context of shrinking budgets MOD is already exerting a strong downward pressure on industry contracts.<sup>43</sup> This is likely to lead to more redundancies throughout the defence sector as contractors cut costs. This means that an atmosphere of uncertainty surrounds the defence sector. But as Annex C in the report points out there will only be 3 years from the end of the defence reform review until preparations for the next CSR commence in 2014. The defence industry is likely to be engulfed in a period of permanent review until 2015. Without some stability contractors may look for alternative business opportunities outside the UK defence sector. This may mean that 'off-the-shelf' becomes the only option for certain programmes. As Taylor and Campbell point out this may have political ramifications. The defence budget may become harder to defend if the economic benefits to the UK economy are declining.

The Green Paper on defence acquisition should not be a purely cost driven exercise. The recession has exposed imbalances in the economy between financial services and other sectors such as manufacturing. A decision to spend taxes on defence goods bought 'off the shelf' from abroad will inevitably mean a dilution of the UK's sovereign capability. The defence reform review is an opportunity to promote the vitality of the UK defence sector. This is particularly important if defence jobs are going to make an increased contribution to UK manufacturing exports.

UK sovereignty has already virtually disappeared in some capabilities, such as the design of land vehicles and some areas of research. Commercial companies are not bound by the same national constraints as governments. Sovereignty can only be protected by mapping out a clearly defined industrial strategy. The defence reform's industrial strategy has to provide a blueprint of capabilities that industry needs to retain. The government needs to learn the positive lessons from the last government rather than continuing to muddle through, in particular the Defence Industrial Strategy (DIS). This attempted to identify capabilities that required retention of UK sovereignty. It was the failure to adequately resource the

41 Singer James Blunt 'prevented World War III', BBC online 14 November 2010 <http://www.bbc.co.uk/news/uk-politics-11753050>

42 SSAFA industry dinner, 25 October 2010

43 MoD review puts 900 UK contracts in jeopardy, Janes Defence Weekly, 10 Nov 2010

industrial strategy and to defer decisions or 'push to the right' Main Gate contracts that caused the equipment programme to overheat. DIS recognised that in some cases this would mean that the UK decided not to defend some capabilities. But it also recognised the need to ensure that the people with the skills needed are maintained in the future. What the DIS showed was that it is possible to work with industry to manage rationalisation in a way that retains UK sovereign capabilities.

Section 2 of the Taylor and Campbell report underlines the interconnections between industry and civilian personnel engaged in providing front line support. The value of support work to front line troops in battle zones has been widely recognised. Civilian personnel working with industry to deliver urgent operational requirements (UORs) to the frontline, shows how focused activity can deliver results. Applied research by civilian personnel posted in battle zones addressed battlefield threats such as improvised explosive devices. Armoured vehicles were adapted to cope with different environments such as the deserts of Iraq and the rough terrain in Afghanistan. There are positive lessons that should be learnt from these interconnections. Controlling future costs is about ensuring that MOD is in a position to maintain and adapt equipment to new technologies. Industry's control of design authority means that MOD is tied-in to long-term partnering arrangements. Industry will make hard-headed commercial decisions about the capabilities it retains based on the priorities signalled by the government through its procurement decisions. Losing sovereign capability means that government has less influence over the 'through life capability' of equipment. As a result access to new technologies to adapt equipment rather than buying new kit may become either prohibitively expensive or unavailable.

There are no simple solutions, and as the SDSR announcements have shown, contracts cannot be easily broken. Defence planning by its nature involves strategic decision-making, committing resources beyond the normal timeframe of Treasury budgetary constraints. The development of a reformed defence industrial strategy will require trade-offs with industry to achieve the government's objectives. Cost savings can be achieved by providing stability and certainty over a long period. The Defence Reform review needs to map out a revised version of the DIS.

Section 3 of the report, 'Civilians and civil servants in defence capability,' discusses the inter-relationships between the military and civilian personnel. Prospect do not agree with the authors on all points in this section of the report. In particular Prospect would challenge MOD's claim that there is effective staff training or that secondees from industry increase awareness of industrial developments.

The House of Commons Defence Select Committee raised their concerns about the erosion of MOD's skills base before the publication of the SDSR. The committee highlighted the

need to maintain engineering skills to improve the value for money of acquisition reform<sup>44</sup> but found that MOD was not ensuring that these skills were nurtured:

"Over the years we have highlighted the need for key skills in acquisition and procurement, and have received reassurances from MOD that appropriate training programmes were in place. However, we are unconvinced that DE&S has a properly effective strategy for the training and education of its staff, and believe that it has failed to prioritise this issue."<sup>45</sup>

The select committee report comes to the withering conclusion that;

"It is quite clear that some senior individuals in DE&S do not accept the need for radical reform, and they are only reluctantly involved in the reform process."<sup>46</sup>

The select committee graphically illustrates the need to develop MOD's skills base as part of any reforms to the defence acquisition process. A cut of 30% in civilian personnel will be a devastating blow severely undermining the reform process before the Green Paper on defence acquisition has even been published.

Taylor and Campbell helpfully identify some of the skills that are required as a matter of urgency. Prospect is concerned that the report gives a misleading picture on the project management skills required. At present DE&S are seeking to develop a pool of project managers from those with generalist knowledge. In the context of defence acquisition project management should be a sub-set of engineering so that those with the specialist skills and knowledge are able to use their skills to make informed decisions. The size and diversity of MOD should mean that it is possible to create career pathways within engineering to develop the project management skills needed.

The SDSR recognises the importance of maintaining cutting edge research to keep the UK's relative position with other leading defence countries. Investment in science and technology is described by the SDSR as 'a key element of our overall capability.' But as Taylor and Campbell highlight research spending is vulnerable to further cuts as defence spending is trimmed. Annex C of the report expands on these concerns and highlights MOD's poor record in defining research priorities. There is little reassurance in the SDSR that research funding will be prioritised.

Government funding is critical in providing a firm base for research projects in either the public or private sectors. The

44 Defence Equipment 2010, House of Commons Defence Committee, March 2010, Para. 27

45 Ibid, para. 112

46 Ibid, para. 117

last few years have shown that the private sector is unable to provide secure research funding. QinetiQ adopted a strategy of buying up companies in the United States to open up new markets for research, but did not develop the company in the UK market. As a result hundreds of jobs have been lost in the last 18 months as MOD contracts have come to an end. As a result skills and capabilities are being lost that QinetiQ will not be able to regenerate at a future date. This has implications for the UK's ability to maintain its position as a major military power.

The government's approach to defence research is subject to a review. The question of Dstl's status as a trading fund is uncertain. The recent experience of privatising parts of defence research has not been successful. The government's review should find different solutions that secures publicly funded defence research and provides an environment to retain the specialist skills needed for this work.

Asset sales, including the privatisation of the Defence Support Group (DSG), are seen as a way of raising up to £500m. The proposed privatisation of DSG is not a new proposal. DSG's forerunners, ABRO and DARA, were merged following a long review period and a part-privatisation of DARA. The creation of QinetiQ is a salutary reminder that privatisation does not always work. There does not appear to have been any due diligence taken in making the case for privatisation. The sale will lose more in-house skills to the private sector with no guarantee that those skills will be available when needed. Asset sales need to be carefully considered to avoid previous mistakes. In particular the function of DSG, which is to maintain air and land vehicles may not fit with one organisation. The fragmentation of DSG may make a sale easier but it cannot guarantee that a private sector company will continue to maintain the same range of support services that are required. This may lead to higher costs in future acquisitions as MOD has to anticipate the 'through life capability' of equipment and its maintenance costs.

The SDSR has created an air of uncertainty across the defence community. One in three MOD civilian personnel will lose their jobs, 5,000 jobs are being privatised, 900 defence contracts are under review, industry will not have a clear view of the government's strategic industry policy until the middle of next year and key capabilities are under threat. This is against a background where future threats are uncertain and priorities could change. Defence reforms should not lurch from crisis to crisis during the whole period up to the next defence review in 2015. Addressing the uncertainties that have been left by SDSR should be the focus of Lord Levene's Defence Reform Group in the months ahead. The government should ensure that the people involved in support, acquisition, research and manufacture in the defence sector are given more consideration than offered by the SDSR and that the industrial

base is considered strategically rather meeting short-term budgetary targets.

# CASE STUDIES



## Between the lines: the view from the inside

Thousands of specialist defence civilians – whether they are in the Ministry of Defence or private industry – dedicate their careers to supporting the UK armed forces, from the United Kingdom to Iraq and Afghanistan and all points in between. Their contribution can save lives.

### Babcock

#### ‘Our age profile is high skills are being lost’

Babcock International Group is one of the UK’s largest defence contractors. Assets including Rosyth and Devonport dockyards. Babcock is responsible for supporting the Royal Navy’s submarine flotilla on the Clyde and Devonport and through-life support of the Astute class submarine.

Peter Barber and Lisa Cowling are both employees at Devonport dockyard in Plymouth.

Peter is a senior quality assurance officer for Devonport’s nuclear infrastructure directorate.

“I joined the dockyard as a fabricator. Devonport has a good reputation for apprenticeships with good career prospects and I wanted to do work that was more hands-on.”

Peter was involved in a project, completed in 2010, to modify the docking cradle at the dockyard in order to accommodate the Astute class submarine.

A new cradle was required because the Astute class is much bigger than previous submarines. The cradle was part of the work of the Astute Readiness Programme drawn up by an integrated MOD/Babcock team at Clyde, where the new submarines are based.

At Devonport, the existing cradle on which the submarine is supported while in dry dock had to be extended to accept the new larger submarine with a further nine cradle blocks all designed, manufactured and installed by Babcock.

In addition to the cradles, baseplates had to be designed and manufactured. These are set into the dock floor and secured by anchors. The cradles are bolted down to the baseplates and can be removed as required, providing the flexibility to accommodate various classes of submarine.

Each cradle block must be able to resist defined seismic events. The docking cradle is a Category I structure – the term used for any structure, system or component, which forms a principal means of ensuring nuclear safety – and has undergone the highest level of quality control and inspection.

Peter said: “The cradle project was carried out with savings made by the company that were reinvested, so MOD had less to contribute.”

On defence cuts Peter said the rumour mill was a constant companion. “There is always talk that the naval base we share



this site with will close but morale so far is unaffected. You get used to living with that sword hanging over your head.” He is sanguine about the future. “There will always be a requirement for quality assurance work.”

But he did sound a warning on skills. “We must maintain our skills base, because here at Devonport we will have a problem in ten years’ time. Our age profile is high and skills are already being lost. People outside looking at a career in defence now wouldn’t do it because of the uncertainty. The infrastructure outside the yard is a problem because the skills we need are just not there, school kids are pushed towards university without considering a craft apprenticeship.”

Lisa Cowling joined Babcock in 2006 as a procurement officer and moved to the company’s commercial department as a senior commercial officer. She has recently completed an MBA and acts as a point of contact for Babcock’s prime contracts – largely with the Ministry of Defence.

Lisa and her team ensure that all the necessary documentation of contracts – commercially sensitive material – is checked for accuracy. The contracts can range from thousands of pounds to many millions. “Any problems are flagged up, so it is really a question of contractual and quality control,” said Lisa.

“In this role it does help if you have some engineering knowledge. We are encouraged to see the end product and understand it. We are customer facing, so you need to know what you are talking about.

“In turn, the company needs to ensure it does everything it can to deliver value for money. It’s not just about cost-cutting, but about providing efficiency gains and ultimately doing more for less. MOD has less funding and is clearly looking at how to improve the value it gets from contracts. We have significant commercial challenges driving us to become even more competitive. That places a responsibility on all of us to make sure we have a viable and successful business in the future.

“MOD now expects more quality for less money. We need to think outside the box in order to achieve savings without sacrificing quality. I like to think we are making a contribution to the wider defence community. And helping MOD achieve what it wants,” said Lisa.

## DSG

### A working life alongside the armed forces

Robert Wood is employed by the Defence Support Group, an agency of the Ministry of Defence.

“I started life in the civil service in 1982 as an admin assistant in the hope of using my programming training. When this failed to materialise, I retrained as an assistant telecommunications technical officer (ATTO) in the early 90s. I was promoted to TTO in 1999 and trained as an Automatic Test Engineer, where I could use both programming and electronic skills.”

He is working on debugging test programmes purchased by

MOD, but which are failing to find faults on avionic systems.

The most recent was an investigation into an Air Data Computer which was causing the flaps of Harrier jets to oscillate momentarily in mid flight. The automatic test equipment (ATE) system used by the RAF contractor had failed to find faults in the line replaceable unit (LRU).

He also carried out a feasibility study to present a bid for the work into the on-shore ATE repair of Typhoon jet avionics. The bid was for a reverse engineered solution, as no documentation was supplied from the original manufacturer.

“This resulted in a substantial reduction in the manufacturer’s contract far outweighing the cost of the bid. Although public sector leverage is well understood, the actual savings are hidden as commercial in confidence,” said Robert.

“Because of our business model, as capacity – the volume of work – is lost we are forced to lose capability, staff numbers are reduced. This deters DSG from competing, unless there is high probability of winning. The Typhoon example was regarded as a failure by the business, even though the taxpayer had made substantial savings.”

He says although cuts announced in the SDSR have not yet affected work it is because MOD has not yet worked out where the cuts will fall.

He warned that DSG was to be reviewed to assess its viability for sale – with the emphasis on selling, “unless it’s glaringly obvious that it remains in the public sector.”

“DSG provides direct support with staff deployed in theatre. I maintain and write software used for the repair of defence equipment too complicated to repair manually.

Rob is clear that the future for defence civilians is very uncertain. “There will be no public sector involvement, leaving industry to provide services. Because of the increasing complexity of technology and intellectual property rights, companies will find themselves in a monopoly situation and the taxpayer will pay through the nose, this may have benefits for members as their business models will allow for re-investment.

“Low volume work will become unviable because contract set-up costs and the lack of interest from industry, makes repairs untenable. In turn, this will lead to a loss of military capability, as equipment is declared obsolete.

“Britain no longer sees itself as an engineering nation, engineering careers are not as well understood as those in banking, law, management consultancy, entertainment and media.”

LG, is an engineering team leader for the Defence Support Group.

He has 32 years service as an engineering technician in the RAF and as a technical grade civil servant.

He is currently supporting the armed forces, through the repair, modification and general maintenance of various aircraft based equipment.

“I oversee technical document appraisal, authorship of technical instructions, the development of engineering processes and the compilation of rationalised bills of material.”

“I have been involved with various projects, like transferring

work from various UK helicopter maintenance sites into one centralised depot at DSG Sealand. This realised efficiencies in terms of staffing, equipment and property utilisation.”

On cuts, L says there is important work DSG isn't doing because of lack of funds: like the development of test and repair solutions for the Typhoon aircraft. He says cuts mean task overload on individuals and the loss of expertise, specialist skills and knowledge.

He cites examples of work done by DSG that illustrate the contribution of civilians to the defence front line.

“DSG deploys civilian staff to Camp Bastion in Helmand, in direct support to military operations at the front line. I have served there for the last 12 months. Our task is to perform in-depth maintenance on a range of light armoured vehicles. Our aim is to maximise the recovery of these vehicles while in operational theatre, alleviating the need to return them to the UK.

“Minimum maintenance turn round times improves availability of operational assets to commanders on the ground. Civilians have to live and work along side the army, in arduous and unpleasant conditions. I have witnessed verbal testimony from army personnel that the work we are doing is “helping to save lives,” said L.

“Defence of the realm is the prime responsibility for any government, and so defence will continue to be high on the agenda. However, design and development must take stock of how the nature of conflict has and will continue to change. It is not hard to predict an increased use and development of systems designed to counter threats posed from asymmetrical warfare and greater use of unmanned reconnaissance/attack vehicles.

“As a nation we have failed to realise the advantage of defence research in terms of spin-offs for industry for use in civilian applications, and we could learn a great deal from the Americans in this respect.”

L says that in order to attract young scientists, engineers and specialists into the defence sector, MOD should increase the availability of sponsored university scholarships, post graduate defence research grants and a remuneration package not necessarily attached to linear career progression.

## SALMO

The Ministry of Defence's Salvage and Marine Operations (SALMO) project team provides salvage and recovery assistance to Royal Navy and Royal Fleet Auxiliary vessels around the world. The specialist team from Defence Equipment and Support (DE&S) are all civil servants.

If a warship has been holed and needs towing to safety, if a decommissioned nuclear powered Russian submarine needs transporting, if a helicopter ditches, the Salmo unit is called in. Operations require personnel with very special skills.

Demands can be urgent: one example quoted in Defence Focus magazine involved the Royal Navy's Antarctic ice patrol ship, HMS Endurance, which in 2008 had a major flooding

problem and was drifting without power off the coast of South America. Within 24 hours, a team of 13 salvage experts were Falklands-bound to help rescue the stricken ship.

Back in the UK, colleagues liaised with the navy and chartered tugs to tow Endurance from the middle of the Magellan Straits to a berth in Punta Arenas. After inspecting the damage, a salvage plan was put into action and the ship was towed on to the Falklands. There, she was prepared for recovery to the UK.

Prospect member Nigel Hills, who joined the team in 2004 as a naval architect, said: “Sometimes our work can include the recovery of human remains. This is the sad part of the job. But when there are no fatalities, dealing with aircraft can be an interesting challenge. We are told what we need to recover. It may be a black box, but it could be a part of the aircraft which is armed.”

The 56-strong Salmo team is divided into units based in Greenock and Devonport, with headquarters in Foxhill, Bath. The team consists of divers, mechanics, electricians, engineers, master mariners, naval architects and logisticians, supported by dedicated business, commercial and finance officers.

On one high-profile occasion the team was involved in the transport of decommissioned Russian nuclear submarines to their disposal ports.

Other major incidents the team have been involved in include the 2002 grounding of HMS Nottingham, near Lord Howe Island, 200 miles off the coast of Australia. The ship was severely damaged, with several compartments open to the sea.

The salvage and recovery effort required the installation of internal reinforcement, rigging the vessel for an open ocean tow, de-watering of flooded compartments, removal and safe disposal of missiles, and, ultimately, repatriation to the UK, which involved giving Nottingham a piggy-back ride on a semi-submersible heavy lift ship.

In 1995, Salmo was asked to remove 2,000 tonnes of fuel oil from the wreck of HMS Royal Oak. The ship had been sunk in 1939 in Scapa Flow. The complex operation is ongoing, but so far it has been a great engineering and environmental success. The team is involved in managing of the wreck, and liaises very closely with other government departments like the Department for Transport.

Team member and Prospect member, Andy Liddell is now working on an operation to survey the wreck of the Darkdale, an RFA vessel that was torpedoed by a U-boat in 1944 off the island of St Helena. Its fuel oil is now threatening the environment.

In 2002, Salmo led the recovery of a Lynx helicopter from HMS Richmond that crashed in the North Atlantic. At a depth of 4,000m, it was the deepest-ever recovery of a crashed aircraft and allowed the accident investigators to identify a potentially serious defect and fix the problem it immediately throughout the rest of the Lynx helicopter fleet.





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