Written evidence submitted by Mr I J Holder and Professor D L I Kirkpatrick

Defence Industrial Policy: Procurement and Prosperity

Introduction

The Inquiry should take account of the ongoing Integrated Review of the UK's defence and security policy, and hence of the planned future roles of the UK's armed forces, which might possibly range from homeland defence with the assistance of allies to independent expeditionary operations overseas. The conclusions of the Review must affect the classes of military equipment which the UK's armed forces will require, and the procurement strategies which are most appropriate for those classes. The MoD's choices of procurement strategies will also be affected by any national industrial policies and strategies that are extant or planned. The interfaces and relationships between equipment type, procurement strategy and industrial policy are complex and need to be considered before the MoD makes any procurement decisions for major projects.

The Integrated Review must be influenced by expectations on how the UK's economy, and the share likely to be allocated to defence, will be affected by Covid-19 and Brexit. The UK's aspirations for its future military capabilities must be consistent with the financial resources available, in order to avoid shortfalls in funding (recently estimated by the NAO at up to £13B for 2019-29) [1] and the consequent wasteful distortions of the MoD's force development programme.

Note: the authors use the term *acquisition* to refer to all procurement and in-service support activities, and the term *customer* to refer to the Government, the MoD or individual project teams.

Authors and Justification for Contributing

The authors are defence professionals with extensive practical experience of defence research and development, equipment procurement and in-service support. They designed, developed and taught a Masters course in Defence Systems Engineering (MDSE) at

1 NAO MOD: The Equipment Plan 2019 to 2029, HC111, The Stationery Office, London, Feb 2020 page 4

University College London, which was announced in 1991 by the Rt. Hon. Alan Clark PC MP (then Minister for Defence Procurement) [2]. In addition, the Defence Engineering Group (DEG), which managed the MDSE course, was also designated by the MoD to be a centre of excellence in defence procurement, analysis, management and systems engineering. The authors and other key personnel of the DEG held senior MoD posts, and have published many papers on defence acquisition covering both procurement and support.

The MDSE course was designed to improve the knowledge, skills and behaviours of people implementing defence acquisition. The contents and background of the course are described, in detail, in the book Conquering Complexity – Lessons for Defence Systems Acquisition [3], which highlights the special challenges of defence acquisition, and the wide range of competences required by people wanting to excel as defence professionals.

Written Evidence

This paper addresses briefly each of the questions in the Inquiry's term of reference.

1. Is the current Defence Industrial Policy effective? Is a new Defence Industrial Strategy required?

The MoD should recognise the difference between a 'policy' which provides overarching guidance on how the MoD and the UK defence industry should operate, and a 'strategy' which plans for the UK to attain some specified military capabilities as effectively and economically as possible. The 2017 Defence Industrial 'policy' identified four diverse (and potentially inconsistent?) objectives, but it is probably too early to judge whether any of them is likely to be achieved. A new Defence Industrial Strategy would only be required if recent geopolitical developments have affected UK defence policy, and hence its procurement policy.

2. What are the national skills and competencies needed for a successful UK defence industrial sector? How can the UK ensure, and assure, that these are maintained in the right place at the right time for the right cost?

2 Hansard, HC Deb 26 March 1991 vol 188 c397W

3 K G Hambleton et al, Conquering Complexity (Lessons for Defence Systems Acquisition), TSO, 2015, ISBN 0-11-773034-3

If it is decided that the UK's future defence policy needs an onshore defence industrial sector capable of providing, with security of supply, the classes of equipment to sustain important military capabilities, that sector must be given sufficient funding to restore and maintain adequate knowledge and skills [4] in research, development, production and support of those classes of equipment. The level of funding required would depend on the variety and scale of the military capabilities for which the UK government declines to rely on foreign suppliers.

Sustaining the relevant onshore knowledge and skills for each class of equipment would require close cooperation between the MoD and chosen suppliers in the UK defence industry, facilitated by the long-term partnerships already initiated by the 2017 Defence Industrial Strategy. Such cooperation would include joint planning and scheduling of the MoD's demand for the delivery of new equipment, for the upgrade(s) of equipment in service and for support services; such plans would take account BOTH of evolving threats AND of industrial workload.

The majority of defence procurement projects use advanced technology, and the personnel involved in the projects, on both sides of the MoD/industrial interface, need exceptional technical expertise. This will enable industry to design, develop and produce equipment, and the MoD to assess, manage, accept and support the equipment. To be an intelligent customer the MoD needs to have a great depth of technical expertise to ask the right questions, to evaluate the supplier's answers, to undertake rigorous analysis of proposals and to successfully manage projects to deliver the required defence capabilities.

3. Does the market for Defence systems, products and services have any specific characteristics, which differentiates it from other markets? Does international collaboration limit the potential for defence exports?

4 K G Hambleton, I J Holder & D L I Kirkpatrick, Foundations for Success in Defence Acquisition, HHK-6-2016-KSB, 6 October 2016, Submission to HCDC reference, ACQ0003, 25 October 2016

See also published version at http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/defence-committee/defence-acquisition-and-procurement/written/40473.html

The markets for the classes of equipment which are most important for national security are very different from most markets in the civilian sector. The defence markets have relatively-small numbers of customers and suppliers; at national level there is often a single customer and a single supplier. The small number of suppliers adds to the risk of defence programmes; if the required expertise to confidently deliver an unprecedented customer requirement is not available, the customer must accept the risk of using a supplier with limited expertise, or wait until the expertise is available.

Because defence systems and equipment are produced in relatively small quantities, and often have a high unit cost, there is little opportunity for economies of scale in defence production and the customer has to rely on the expertise of the supplier to minimise the cost to the MoD. Defence systems and equipment need to achieve high performance in extreme environments, such as deserts, artic conditions, high altitude, underwater and other extremes, which add to the difficulty of designing and developing equipment and increases costs.

The Government, as a customer, has to use the public procurement rules, which are designed to provide public accountability, create transparency and fairness in competitions, and to ensure that contentious decisions can be justified and scrutinised. The public procurement rules also limit the ability of Government negotiators to get a good deal, as the industry negotiators often know most of the Government's starting points and "red-lines" before the negotiations commence.

The procurement of defence systems and equipment involves three "tribes" within the Government – political, military and civil-service – each with different cultures, objectives and measures for their effectiveness. While great effort is made to harmonise the three "tribes" there are often issues caused by differences in knowledge, skills, behaviours and objectives of the "tribes" which can lead to mixed messages to suppliers, internal confusion and ambiguous public statements.

The ability to resist enemy countermeasures provides additional performance requirements for defence systems and equipment. The use of high technology is often needed to ensure that adequate effectiveness against enemy systems is achievable throughout the lifecycle of

the equipment. It is often difficult to define the exact nature of the combat conditions in which the defence systems and equipment will operate; hence testing may be undertaken in conditions that are more benign than combat conditions, leading to vulnerabilities that might only be exposed on the battlefield. To overcome this risk, some performance requirements may be increased, to provide improved performance and effectiveness, but the additional cost of these increases can be difficult to justify.

Procurement decisions for defence systems and equipment are often controversial because at approval their forecast benefits to national security are many years in the future, and are not easily understood.

If an international collaborative project for the development and production of military equipment included nations with divergent foreign policies, the potential for defence exports would inevitably be reduced by the reluctance of some nations to export to belligerent or oppressive states. In launching such collaborative projects it has always been and will continue to be necessary to assess the likely benefits and penalties

4. Is tension between competition and strategic choice inevitable?

Once the MoD has formed a long-term strategic partnership with a particular chosen supplier (or with a consortium of suppliers) for the supply and support of military equipment, the MoD's scope for competition is inevitably reduced. The MoD might, in theory, retain some competition involving second-source suppliers in manufacturing and support, but such arrangements would forgo economies of scale, would complicate workload scheduling for the chosen supplier, and might be inhibited by constraints on technology transfer. The strategic partnership would not prevent the chosen supplier from using competition for subcontracts where that process does not imperil security of supply.

The MoD could continue to use competition for other classes of military equipment where satisfactory performance and security of supply could be achieved without a strategic partnership.

5. Should the UK adopt a formal Offset/Made in the UK policy? What impact would this have on the national and international defence markets?

In the procurement of new equipment, not involving a strategic partner, the MoD must often select either -

- An onshore supplier
- An international consortium of onshore and foreign suppliers
- A foreign supplier
- A foreign supplier prepared to arrange offsets with UK industry

For small projects the MoD can make its selection based on the cost-effectiveness of the alternative options. For major projects the selection should take account of the impacts of the alternative options (including any involving offsets) on the UK economy, on its industrial and technological bases and on its wider diplomatic and political objectives. Offsets would distort the market and would probably add cost, but might have compensating benefits which would vary from one project to another.

6. What is considered in assessments of "prosperity" and "value for money" in defence procurement? What consideration is given to the local economy, skills retention and balancing the positive financial impact across the regions and nations of the UK?

Successive UK governments have been careful not to define 'prosperity' or 'value for money' which would probably involve several economic, social and national security criteria. For three decades following the Levene reforms, the MoD's selection of defence equipment was based on the cost-effectiveness of alternative options, ignoring the effects of those options on the macroeconomics of the UK and on the development of its industrial base. Any considerable effects arising from major equipment projects were debated at Cabinet level with inputs from other Government Departments. Since the 2017 Defence Industrial Policy [5] the MoD is expected to consider the future prosperity of the UK, but it probably still relies on advice from other Departments. One key issue in forecasting the economic impacts of alternative procurement options is the flexibility of the UK labour market and its tendency to converge on the 'natural' rate of unemployment.

5 Industry for Defence and a Prosperous Britain: Refreshing Defence Industrial Policy, MoD, 2017

7. What progress has been made in implementing the recommendations from Philip Dunne's report?

The MoD's input to the Inquiry must not be based on good intentions and ambitious targets but on evidence of what has been achieved.

8. Does the MoD understand the risks and opportunities in the Defence supply chain, and the procurement strategies of other buyers in the market?

Since the Levene reforms, the MoD has delegated responsibility for subcontracts and supply chains to its prime contractors, interfering only to avoid reliance on potentially-hostile nations. Over the same period the strength of DE&S and its predecessor organisations have been very substantially reduced, while the MoD continues to procure (almost) the full range of military equipment characteristic of a first-class military power. Given such strain on its resources, it seems unlikely that DE&S has retained sufficient technological and commercial expertise undertake supply chain analysis, or to monitor adequately other national customers in the defence market.

Supply chain analysis is a complex activity as the top tiers are relatively fixed (prime defence contractors, and suppliers of major-assemblies such as such as radar and power plants) but the mid to lower tiers constantly change as suppliers enter or leave the defence market, as new materials and processes are introduced, and as the demands of different customers affect the production and supply of materials and components.

The supply chain for a defence system or equipment is complex, and often mirrors the design hierarchy for the equipment being procured, with multiple suppliers under contract to a prime contractor. The supply chain has constraints, weaknesses and vulnerabilities that should be assessed as part of any MoD procurement decision. The risks in the supply chain often involve the use of Intellectual Property Rights (IPR) which may restrict the use and application of items, processes and materials. The prime contractor needs to have a complete understanding of the supply chain to ensure that equipment can be designed, manufactured and supported to the satisfaction of the MoD.

The MoD customer also needs to understand the supply chain, as some medium and lower tier suppliers may be contributing to numerous programmes and projects, which might cause supply constraints and conflicts, if the supplier is small with limited capacity, or vulnerable to being taken-over, or uses specialised or scare materials or resources.

9. What has been the impact of reforms to defence procurement and acquisition? How should Head Office and DE&S acquisition reform be aligned to defence industrial policy and strategy?

It is notorious that the MoD (like other Government Departments and other large organisations) has been reluctant to reform [6] and [7]. After the Service staffs were merged in 1984 officers still tended to favour their own uniforms, and several years after Smart Procurement [8] was proclaimed, a newly-appointed Chief of Defence Procurement stated that it had only partially been implemented [9]. After several decades of exhortation from the Treasury and the NAO, the MoD still fails to take proper account of the whole life costs of projects [10]. The RAF continues to choose candidates who might become Chief of the Air Staff on the basis of their hand-eye coordination as teenagers. Furthermore the MoD tends to avoid assessing the effects of its most recent reforms, and prefers to announce a new package, promising that it really, really will overcome the chronic difficulties [11] which have bedevilled previous generations of officers and officials.

The MoD branches responsible for the procurement and support of military equipment are particularly prone to resist reforms which are imposed top-down by extramural experts who lack relevant experience, and who make minimal attempts to win hearts and minds of the personnel in such branches.

For historical reasons, the various branches of the MoD are widely dispersed which inevitably reduces rapport and promotes parochial bias. Senior officials should counter

6 B Kincaid, A Dinosaur in Whitehall, Brassey's London 1997
7 W A Chin, British weapons acquisition policy and the futility of reform, Ashgate England, 2004
8 MoD, The Strategic Defence Review, Cm 3999, The Stationery Office London, July 1998
9 Public Accounts Committee, MoD Major Projects Report 2003, HC 383, The Stationery Office London, October 2004, Ev27
10 T Taylor & J Louth, The Challenge of Change, RUSI Occasional Paper March 2020
11 K G Hambleton et al, Ten chronic Challenges in UK Defence Acquisition, Defence Studies September 2013, pages 361-371

internal divisions and promote a transparent set of objectives which cannot be distorted by tribal priorities and perverse objectives.

10. Given that major capability acquisition programmes are international by design—the Combat Air Strategy and Type 26 frigate for example—how does a modern national defence research and industrial policy successfully manage cross-border long term partnerships and align with the industrial approach of allies and partners? What lessons can be learnt from other defence exporting countries?

International collaboration of a defence equipment project involves the reconciliation of the capability requirements of two or more armed forces and the commercial objectives of multiple industrial suppliers. This reconciliation is always difficult, but is even more complicated when one or more of the participating nations have chosen preferred suppliers (aka national champions) in their supply chains. The negotiations must overcome divergent national constitutions, financing procedures, legal systems, languages and cultures. The ideal number of participating nations must always be a compromise between the benefits of sharing costs and accessing additional expertise and the penalties of accommodating yet another set of political, military and industrial objectives and of managing a larger number of stakeholders.

Over the last half century the MoD has undertaken several collaborative projects with its NATO allies, both with the US and with European nations. But it is always tempting for each new team of politicians, officers and officials (often lacking previous experience of collaboration) to start negotiations with a clean sheet of paper, rather than analysing their predecessors' experiences and learning from them. The new team can plausibly argue that circumstances (political, industrial and technological) have changed since the earlier collaborations, but the principles of successful management of major projects endure and it is prudent to learn from others' mistakes rather than falling into the same pitfalls.

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