Supplementary Information to Science Capability Review Panel RAG Assessment (Summary)

Capabilities

MOD's S&T capability was divided into the following areas, as agreed by the Steering Group, which are assessed in this table:

1. People

   The People capability area aligns to the Human Capability within Dstl. It covers the following nine sub-capabilities: Human Factors Integration, Human Performance and Protection, Behavioural Sciences (influence), Behavioural sciences (technology), Training, Personnel, Critically injured patients, Medical assessment and Investigation Support. The Defence Human Capability Science and Technology Centre and the Synthetic Environments Towers Framework provide a broad and vibrant external supply chain which is used for ~70% of S&T Programme work. They are also increasing competition and therefore resilience.

   The overall People research capability is much larger than that owned by Dstl with many R&D issues being dealt with by the individual Services, the Defence Academy, Defence Medical Services, the intelligence community and individual equipment programmes.

2. Weapons

   Weapons capability exists to support the development, assessment and testing of conventional and novel weapons technologies and systems. This covers all aspects of weapon technologies including anti-ship, anti-submarine, air defence, air-to-surface, air-to-air, surface-to-surface and Ballistic Missile Defence capability. The capability primarily lies outside of HMG and spans a multitude of industry organisations (e.g. MBDA, BAE Systems, QinetiQ, Thales and Selex) and academic institutions (e.g. Cranfield University and Liverpool University). A number of entities have been established to exploit and sustain the Weapons capability within the UK supply base; the Weapons Science and Technology Centre, the Materials and Components for Missiles, Innovation and Technology Partnership, the UK Missile Defence Centre and the Weapons Operating Centre at DE&S.

   The Weapons Science and Technology Centre and the Materials and Components for Missiles, Innovation and Technology Partnership form an important part of the overall Team Complex Weapons Enterprise established between industry and MOD. Team Complex Weapons defines an approach to delivering the UK's Complex Weapons requirements in an affordable manner that also ensures a viable industrial capacity with MOD being the architects of the overall strategy.

3. Decision Support

   The Decision Support capability provides analysis to support and enable evidence-based decision making. Dstl has a significant in-house capability which supplies both routine and urgent analysis work and is considered to be one of its principal capabilities. This is evidenced by its support to the full breadth of defence and security activity. Within Dstl, seven Decision Support sub-capabilities are described in the Analysis Strategy: Security and OGD Analysis, Support to Operations and Contingency Planning, Policy and Strategy Analysis, Capability Analysis, Cost Analysis, Method and Model Development, and Statistical Analysis. Parts of the capability must clearly be maintained internally, either due to the sensitive nature of the work being conducted or the requirement for rapid reporting; however there is currently a focus on gaining better access to the external supplier base.

4. Chemical & Biological

The CB capability draws upon specialist technical knowledge, highly trained individuals, unique national facilities and a large number of licences to practice. It provides decision-makers with timely information relating to the risks associated with CB materials and countering the threat associated with them in a defence or security environment.

The capability is comprised of a number of strands: Assess (hazard assessment and consequence analysis), Prevent (disablement, elimination and counter-proliferation) and Respond (detection of chemical and biological agents, development of decision support tools and provision of protective measures). Protective measures also include medical countermeasures, ranging from vaccines to protect individuals against infection, to post exposure treatments; physical protection including CBR suits, respirators and collective protection; and decontamination of personnel, equipment and infrastructure.

The programme of work maintains the UK strategic sovereign capability to assess the risk associated with emerging chemical and biological threats to UK Forces and wider UK interests. This includes the ability to handle dangerous pathogens and super-toxic chemicals, the analytical techniques to identify them and quantify their toxicity, and the ability to maintain and update UK's knowledge base.

5. Cyber

The Cyber Capability in Dstl supports both MOD and wider capability within HMG. It is a growth area in Dstl, with internal capability set to increase by ~50% over the next three years to 200 Full Time Equivalent (FTE) staff. The capability comprises multi-skilled and multi-talented teams to deliver the Dstl Cyber S&T Programme, and it supports other S&T Programmes within Dstl and wider HMG (cyber or otherwise).

6. Autonomous & Conventional Platforms (PLATFORMS)

The PLATFORMS capability covers a broad range of capabilities comprising the Dstl Key Capability Areas for Platform Systems and Integrated Survivability across the Maritime, Land, Air and Joint domains. It represents a significant capability within Dstl, which resides in 18 of the 52 Dstl Groups across nine of the 12 Departments and includes 65 Dstl Capability Building Blocks. Integrated Survivability addresses susceptibility, vulnerability and recoverability to provide a key means of delivering force protection. Platform Systems focuses on the application of Systems Engineering approaches to Systems, System of Systems and integration into defence architectures and enterprise.

7. Counter-Terrorism & Security (CT&SEC)

Counter-Terrorism & Security (CT&SEC) covers a broad range of niche technical capabilities focused on homeland and rest of the world counter-terrorism operations. It has a long heritage of delivering operational impact through S&T. Within Dstl there are six sub-capabilities: Electronic Countermeasures, Search and Detection, Special Forces, Exploitation, Energetic Materials and Pyrotechnics and Cross-cutting Capabilities. There are a number of aspects of critical S&T that must be maintained internally. However, at least 50% of the programme is currently delivered outside Dstl utilising over 200 industrial suppliers and over 50 academic partners.

8. Surveillance Reconnaissance, Sensors and Space (SR&SPACE)

The Surveillance, Reconnaissance, Sensors and Space (SR&SPACE) capability is approximately half of Dstl's C4ISR[1] key capability area. The sub-capabilities housed within C4ISR that we have reviewed are: Space, Sensors and X-Intelligence Processing[2] and (aspects of) Intelligence Production. Some aspects of the capability are highly

---

[1] Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance.

[2] X-Intelligence refers to intelligence source X, such as GEOINT, MASINT and SIGINT.

sensitive and can only be conducted in government. To ensure that MOD retains and develops SR&SPACE capabilities whilst reducing costs, there is an increased emphasis on incorporating commercial off-the-shelf technology.

9. **Command, Control, Communications Computers & Intelligence & Big Data Analytics (C4I)**
    The C4I & Big Data Analytics capability area covers a broad range of capabilities focused on enabling Contingent operations and Information Superiority. Dstl retains in-house technical capability in a number of areas (e.g. Information and Intelligence (I2) analysis), however, longer-term, the majority of research and advice to MOD and wider government in this area will be provided by the external supplier base. Dstl's role will therefore largely be to either provide support to intelligent customer status or take a technical lead in a minority of topics in a given capability area (known as stance A or B respectively).

Assessment Themes

The table shows RAG assessment of the ten S&T capability areas against the following six themes and underlying questions:

Drivers and Requirements for S&T Capability

- Are there clear drivers from policy, threat, trends in emerging technology and military capability requirements for S&T Capability?

Capability Response to Requirements

- Does the capability reflect current policy, threat, trends in emerging technology and military capability requirements for S&T Capability?

- Are MOD's S&T capability requirements robust/clear now and going forward? Is there a good evidence base for these requirements? How are these balanced between requirements for the front line commands, longer-term work, disruptive technologies etc.? Are there any gaps?

Flexibility and Agility for Capability to Respond to Future Needs

- Is the UK maintaining a Defence S&T base of sufficient depth, breadth and quality to respond to future uncertainties?

- Are the S&T Capability area's succession plans robust?

Benchmarks for current and future capability

- Are there current areas of S&T Capability (size, quality, resilience and depth) that we should be particularly concerned about?

- Are there areas of S&T capability that are currently overprovided or not needed in future?

- For those areas of technology where we look to industry (including non Defence companies) to maintain the S&T base, are we confident they are maintaining the quality of S&T capability? How would we know? How do we assure ourselves? For example, where suppliers have shifted focus away from research to managed services, are they shedding S&T capability we might still need?

Wider Engagement

- Are we engaging optimally with academia, industry and allies?

- In the current budget-constrained times and the consequent desire for significant burden-sharing amongst allies and partners, are we confident that the UK has 'peer status' or remains credible in all appropriate technology areas of engagement.

The role of an Intelligent Customer

- Do we understand what is required of 'intelligent customer' status and the capability and resource to be intelligent in the required S&T capability areas?

- Do we have the right balance of internal versus external research and are we maintaining an appropriately sized internal research base? What opportunities are there to change the balance?

RAG ratings

	Indicates a significant problem
	Indicates a potential or marginally significant problem
	Indicates no significant problem