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DEFENCE SCIENTIFIC ADVISORY COUNCIL:
TRIENNIAL REVIEW REPORT

(Communicated by: Professor Sir Alan Wilson)
(Status of Report: Final Report ver 1.0)

Acknowledgements

Executive Summary

S-1. The Triennial review of the Defence Scientific Advisory Council (DSAC) sought to challenge the ongoing requirement for DSAC and to identify whether it should be retained as an advisory Non Departmental Public Body (NDPB) or if an alternative arrangement should be considered.

Outcomes of Stage 1 and Stage 2

S-2. Stage 1: Following completion of the review, it was concluded that DSAC provides a valuable source of independent advice across Defence and the stage 1 recommendation was that DSAC should be retained as an advisory NDPB.

S-3. Stage 2: The standard 'comply or explain' approach required was used to undertake the review of the governance of DSAC against the principles required for advisory NDPB's as detailed in Cabinet Office guidelines. DSAC was demonstrated to be compliant with the principles of good corporate governance for Advisory NDPB's.

S-4. The review also looked beyond the basic question, considering science and technology more widely in the MOD in relation to DSAC's ways of working and its current effectiveness and made a number of recommendations for its future development which can be found in the conclusion section of the main report and will be followed-up after the announcement of this review.

Contents

Introduction

Aims of the review

1. Triennial Reviews are a Cabinet Office mandated process for reviewing the function of Non-Departmental Public Bodies (NDPBs), the appropriateness of the bodies' delivery mechanisms and their governance arrangements. Reviews should take place every three years for each NDPB, unless an exemption is agreed by the Cabinet Office.

2. The Cabinet Office has identified two principal aims for Triennial Reviews:

    *   to provide a robust challenge of the continuing need for individual NDPBs – both their functions and their form; and;

    *   Where it is agreed that a particular body should remain as an NDPB, to review the control and governance arrangements in place to ensure that the public body is complying with recognised principles of good corporate governance.

3. Triennial Reviews consist of two stages, as set out in Cabinet Office guidance addressing these two principal aims.

    *   Stage 1 is designed to examine the key functions of NDPBs and consider whether they are still needed. It also assesses whether the functions could be better delivered by alternative delivery options. If Stage 1 concludes that the NDPB should remain as the delivery body, the review moves to Stage 2.

    *   Stage 2 looks at the control and governance arrangements in place to ensure that the NDPB is operating in line with recognised principles of good corporate governance.

4. This report offers a triennial review of DSAC, as an NDPB, under the Cabinet office Guidelines[1].

Background on the body being reviewed

5. DSAC is the most long-standing of all the Government's Science Advisory Councils (SACs) – being in place since 1969 with antecedents back to 1940. For the purposes of this review, its activities can be captured broadly in the mission statement that follows the recent reform.

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[1] Cabinet Office: Guidance on Reviews of Non Departmental Public Bodies, June 2011

> "*DSAC will support the Secretary of State for Defence and senior MOD officials by providing authoritative, independent, informed, impartial and timely advice and recommendations on matters of importance to the Department relating to the effective development and application of science, technology, engineering, analysis and mathematics. In doing so, DSAC will be recognised as the leading standard for independent advice to Government.*"

6. More detail is available in the documents listed at Annex B relating to the DSAC reform programme and its constitution. Its methods of working will be elaborated in subsequent sections of this report.

7. DSAC consists of a Chair, Vice Chair plus nine members who provide some 20 to 40 days support. Members are paid on a per diem basis. As an advisory NDPB DSAC does not administer any public funds, but is allocated up to £226K from the CSA's research budget.

8. There is a definitional issue to be resolved at the outset. DSAC's title specifies a concern with 'science'; within the Ministry, there is a common reference to 'science and technology' (S&T). More broadly, this is sometimes expanded to science, technology, engineering, analysis and mathematics (STEAM). All of these also embrace research and development (R&D) and science intelligence and capability. S&T will be used throughout the review as shorthand to cover all, with occasional more specific references, particularly to R&D and science intelligence.

The Review: Stage One

Process

9. This review has been undertaken under the aegis of the Cabinet Office guidelines and against a background of two very helpful earlier reviews – though not specifically of DSAC – by the Government Office for Science – the review of Ministry of Defence Science and Technology of 2011[2] and the review of all departmental SACs in 2013[3]. The substance of these reviews that is relevant in the present context is presented at Annexe B sections B-2 and B-3. A full list of interviews conducted is at Annex A, while all documentation consulted is recorded at Annex B.

10. The review was conducted by Prof Sir Alan Wilson, Professor of Urban and Regional Systems at University College London and Chair of the Home Office Scientific Advisory Committee (HOSAC). Consultation took place through a series of structured interviews with members of DSAC and other key DSAC stakeholders across Defence. A list of interviews is included at Annex A

11. The Review was announced by Mr Philip Dunne MP, Minister For Defence Equipment, Support and Technology (Min(DEST)), by Written Ministerial Statement to both Houses on 9th July 2013.

Functions of the Body

12. The Defence Scientific Advisory Council (DSAC) has been MOD's main source of independent advice on non-nuclear science, technology, engineering, analysis and mathematics issues since 1969. The primary role of DSAC independent members is to provide independent, impartial, objective and timely advice. Members are appointed in a personal capacity, not as representatives of their employer or any other organisation. In order that independent members may have access to sensitive material, they are all security cleared to SC level before appointment and individuals may be cleared to higher levels as the need arises.

Evidence and Stakeholder Engagement

Science and technology in MOD

13. What is to be achieved from the contribution of S&T in MOD? Support for policy development, which requires affordable strategy, which in turn delivers effective capability to Commands – for example a range of tasks from operational support to procurement (via DE&S). The demands are often for the immediate and short term,

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[2] Government Office for Science: Science and Engineering Assurance review of the Ministry of Defence, URN 11/1032, September 2011

[3] Government Office for Science: Review of Science Advisory Councils, URN 13/850, April 2013

but capabilities are also required to meet (anticipated) future threats and how any 'new technologies' relate to these. There is a complication in that most innovation is actually in industry – and not simply the defence industry, in areas for example, such as communications. All of this is underpinned by R&D, and also science intelligence and broader S&T capabilities as appropriate.

14. All MOD users of S&T are potentially DSAC 'customers'. These include:

- o Policy
    - Ministers, civil servants, Commands
- o CSA
    - policy and S&T including (Research, Development and Science Intelligence)
- o The four Commands, including PJHQ regarding; operations, legacy issues and procurement
- o Joint warfare centre
- o Dstl
    - R&D
    - Quality/Audit
- o DE&S
    - Procurement
    - Through Life Management
    - Logistics
    - Safety
- o Military Aviation Authority
- o The Defence Academy

15. DSAC can offer advice (for example through reports), including science intelligence and horizon scanning, quality assurance and peer review in support of the full range of MOD S&T. This suggests three headings to structure accounts below of DSAC activities: **advice and reports**, **quality assurance**, and **support for customers**.

DSAC's ways of working

16. DSAC reports to the Secretary of State for Defence through an Annual Report and through ad hoc reports and advice as appropriate. It supports a wide range of customers throughout MOD. It establishes working groups as appropriate and represents 20 areas of expertise. It sets its agenda at an annual meeting – and this is partly generated from DSAC itself and partly though requests from customers. As noted in the previous section, the structure to be used in the rest of the report is based on three main headings that describe DSAC activities: **reports and advice:** long reports, short reports; science intelligence, horizon scanning and the long term; **quality assurance;** DSAC's main **customers** and how it interacts with and challenges and supports them. This embraces contributions to MOD policy, CSA, the Commands (who now have a particular need for science intelligence following

the devolution of capability definition, as well as for horizon scanning), Joint Warfare, Dstl, DE&S, the Military Aviation Authority, and The Defence Academy. DSAC functions within, and contributes to MOD enterprise – not just with its direct customers, but with the broader base that commissions R&D and S&T through the MOD Research and Development Board, the S&T Customer Board, the Defence Suppliers Forum, and through officials attending DSAC meetings.

17. DSAC's role is complemented by a wider register of some 150 security-cleared scientists – from both academia and industry - that constitutes ISTA **(Independent Science and Technology Advice)**.

18. The activities of DSAC are detailed in their Annual reports and will not be considered in depth here. The substance that is needed for the recommendations below in section 5 are partly based on readings of these and other documents listed in Annex B, and partly on a wide range of interviews, the essence of which is recorded in the next section.

DSAC's current effectiveness

19. The GO-Science reviews have been used as benchmarks – though the argument here has been structured differently. Links are noted in Annex B B-2 and B-3. The current effectiveness of DSAC is reviewed here under the three main headings cited above in the light of comments made in interviews. These comments are necessarily subjective, but over a range of interviews, a common picture builds up. The presentation here is in terms of sampling of unattributed and paraphrased comments made in conversations.

20. Views on advice and reports:

- *reviews can take too long (and become out of date or less useful);*
- *DSAC needs to contribute to 'decisions of the moment' rather than 'selling science';*
- *workshops on issues might be a better use of DSAC than the generation of reports;*
- *varying degrees of influence, DSAC often makes recommendations, but ineffective follow up such that they are sometimes no longer 'current', sometimes not driven by the DSAC Secretariat;*
- *there are problems of not having a broad 'map' of MOD S&T when deciding priorities;*
- *unless 'broad', in depth reports can only cover a very small part of the territory*
- *the role of ISTA is not clear;*
- *science intelligence, horizon scanning and the longer term: if effective, should contribute to the development of the R&D agenda (and better inform the R&D Board);*
- *how can MOD assure itself that it is fully connected to sources of science and technology intelligence, nationally and internationally?*

- *have been too backward looking;*
- *short term rather than longer term – but of course current operational requirements of the military are necessarily short term?*

21. Views on quality assurance;

- *"DSAC peer review comes too late;"*
- *Dstl has a range of customers – the Commands, PJHQ etc, and these customers via a customer board feed into the R&D Board which is responsible for deciding on the broad priorities for the S&T Programme. Dstl Programme and Delivery Directorate (PDD) then develop a detailed S&T Programme for endorsement by the Board. In doing this they will consider where best work should be placed – 'make or buy'. This is against a requirement that Dstl place 60% by value of the programme externally i.e. with industry, including primes and academia. This raises the question how is this peer reviewed and quality assured? (There was an internal 'international benchmarking process' for intramural capability within Dstl that was reviewed by Lord May);*
- *The Doctrine and Concepts Centre organises its own quality assurance via e.g. Shell and McKinseys.*

22. Views on relationship with and supporting 'customers':

- *needs to connect to 'decisions of the moment' – but doesn't really have the capacity to do this relative to CSA, Dstl etc; a common and related theme is: how does DSAC 'impact on decisions? (Similar comments also noted above under 'advice and reports');*
- *Given the breadth and scale of MOD S&T, how can DSAC cover the range?*
  - *20 areas of expertise;*
    - *these formulated in terms of academic disciplines rather than the 'capabilities' needed by the military;*
  - *Supported by 150 members of ISTA (18 disciplines?);*
    - *'Control' issues here: ISTA currently managed by the DSAC Secretariat. How active – e.g. in relation to the register? How does recruitment and updating work?*
    - *How does this work in practice?*
- *Interactions across the Department:*
  - *Are reporting lines clear? Ministers? CSA? Customers?*
  - *Some tensions in relationship with CSA arising from 'reporting to Ministers';*
  - *Meaning of 'independence' – needs to be pragmatic, not adversarial;*

- o *With senior policy officials? DSAC trawls policy areas for 'requests' but achieves little response – c.f. critical point about linking the S and T map to MOD objectives;*
- o *CSA, Dstl and DE&S: gateway processes: DSAC might be helpful here;*
- o *With the Commands? (Are military advisers always involved in projects?)*
    - ▪ *"Commands need a proper say in the construction of the S&T programme";*
    - ▪ *Dstl supports Commands in an intelligent customer role (now that military capability has been delegated to Commands, procurement remains with DE&S);*
- o *Would 'pairing' arrangements help?*
- o *How can DSAC interact with this range across MOD?*
    - ▪ *Note GO-Science report references to 'silos' in the Department;*
    - ▪ *Problem of internal 'knowledge sharing';*
    - ▪ *Need for more 'promotion'?*
    - ▪ *Knowledge management in MOD [for S&T]. The 'map'; silos?*
- *Should DSAC help MOD to connect to relevant R&D in other Government Departments? [CSA links to FCO CSA];*
- *Should DSAC also be more outward facing?*
- *Measures of DSAC's impact?*
- *Is wider academic and industrial and international engagement necessary here? ("Is DSAC too 'academic'?");*
    - o *Wider industrial liaison should embrace industries beyond 'defence' – since that is where much of future innovation might lie – e.g. computer science, mobile communications;*
    - o *MOD might identify future threats, how new technologies might help to meet these; this generates 'requirements'; industry then seeks to meet these. Can industry help identify 'products' ahead of 'need'?*
    - o *Complications of relating to the defence industry; NB 'most of' the new technologies needed aren't developed in the defence industry – e.g. hand help communications systems – Nokia, Apple etc.*
- *DSAC meetings: how effective? A lot of routine business?*

23. These comments, it should be emphasised are samples. Combined with readings of the documentation, they form an evidence base for drawing conclusions and making recommendations.

Delivery Models

24. The Cabinet Office guidelines include delivery options for that provided currently by DSAC as an NDPB

    1. Abolish,

    2. Move out of central government,

    3. Bring in-house,

    4. Merge with another body,

    5. Delivery via a new Executive Agency,

    6. Continued delivery by an NDPB.

25. It is generally agreed (for example GO-Science reports and in interviews), that a source of independent advice and challenge on MOD S & T is essential.

26. In relation to delivery options – see the six cited above – this rules out option 1; there is no case for option 2 (because of the sensitivity of defence S & T) nor for option 5; option 3 would involve bringing DSAC's functions under, for example, the Chief Scientific Adviser, but this would then remove the required degree of independence. The main candidate for option 5 would be Dstl, but that is seen as a delivery agency, not a source of fully independent S&T advice.

27. In the event of delivery option 6 being recommended, principles of good corporate governance should be reviewed – "led by the sponsoring department".

The Three Tests

28. If the recommendation to be made is the last of the above delivery options, then one or more of three tests should be satisfied.

    • Is this a technical function that requires external expertise to deliver?

    • Is this a function which needs to be, and is seen to be, delivered with absolute political impartiality? Or

    • Is this a function which needs to be delivered independently of Ministers to establish facts and/or figures with integrity?

29. DSAC meets all three Cabinet Office tests in relation to function

Conclusions of Stage One

30. It is generally recognised that while the CSA's role is to provide independent advice to the Secretary of State and his colleagues, the supplementary role of DSAC remains valuable.

31. The conclusion for stage one, therefore, is to retain DSAC as an NDPB. However, there are significant issues to be considered in relation to its future development and these lead to a number of further recommendations. These can be found in the Conclusions and Recommendations section.

32. Following on from this recommendation, undertaking Stage 2 is required to establish whether DSAC complies with the principles of good corporate governance for advisory NDPB's. This exercise was undertaken and the outcome can be found in the next section.

The Review: Stage Two

Compliance with the Principles of Good Corporate Governance

33. The outcome of Stage 1 of the review was to recommend DSAC should be retained as an Advisory NDPB. Following on from this recommendation, a comprehensive review of the Governance of DSAC against the principles of good corporate governance arrangements was undertaken, (Annex C).

34. This review, concluded, (see Annex C), that DSAC's governance is compliant with the principles of good corporate governance. Following a recent internal reform of the body, improvements had been identified in the governance arrangements for the body, which have been put in place or are undergoing implementation.

Conclusions & Recommendations

Future development of DSAC: Recommendations.

35. The recommendations below are developed in relation to the areas which have been considered in the earlier sections – with the exception of the first two recommendations which are cross-cutting.

The 'big picture'.

36. S&T is widely distributed across MOD, its agencies and suppliers. It is difficult to build a systematic overview – a 'big picture'. If this could be done, then this would not only help DSAC establish its priorities, but would have value across the Department. This therefore leads to:

Recommendation 1: DSAC, working through the CSA, should generate a 'map' of MOD S &T capability – in Head Office, and across Dstl, DE&S, the Commands and other linked agencies and suppliers. Particular attention should be paid to MOD objectives – strategy, capability and delivery by commands - so that the S&T map can be explicitly related to these. Indeed, the 'map' could be structured in these terms.

37. There is a corollary which in turn leads to:

Recommendation 2: the map should be used to generate an 'assurance and risk' map to establish a year by year work plan on an audit of quality assurance. (See recommendations 8 and 9 below.)

38. This would facilitate a structuring of DSAC objectives that related to MOD policy and strategy to overcome the 'selling science' problem. With appropriate assistance from the DSAC Secretariat, this could be done very quickly ahead of DSAC's annual planning meeting.

ISTA Register

39. It is clear that the ISTA register and its potential uses are not well known. ISTA is an important resource to support DSAC and is used for working groups and the production of reports for example. It is also used by Dstl in effect as a supplementary operational resource. It therefore serves at least two functions: to provide resources to enhance contributions of independent advice through DSAC and possibly beyond; and perhaps sometimes to provide 'operational' resource. It is formally managed by DSAC and the secretariat. However, there seem to be more potential uses and hence:

Recommendation 3: ISTA should be reviewed to ensure that it is actively managed both in terms of membership and the assignment of ISTA resources to appropriate projects within MOD, particularly including DSAC.

40. Since ISTA has a wider role than support for DSAC, if the management continued to be through a strengthened Secretariat, this would also have the effect of promoting DSAC more widely. As part of this proposed review, it should be

recognised that ISTA provides an important link to the research community – academia and beyond, but bearing in mind that MOD and its suppliers have much wider links to this community than ISTA provides. It may be that 'active management of ISTA' could be extended to consider building an intelligence system, of these wider links. This in turn relates to the need for MOD to have a broad science intelligence function (albeit that this is probably outside the terms of reference for this review!). Should there be a new MOD unit responsible for the integration (and knowledge management) of S&T intelligence – linked to DSAC, ISTA and beyond?

41. Three other issues have been raised that should be considered. First, to explore whether ISTA could be a cross-Government resource; secondly, whether it could be extended to have a section of members who are not security-cleared but would nonetheless have something to offer on an unclassified basis; and thirdly the extent to which the staffing of DSAC and ISTA and their networks has a 'young' element to guarantee a 'radical' look at futures and new technologies. This leads to:

Recommendation 4: GO-Science, the GCSA and the CSAs across government should discuss the possibility of ISTA having a cross-government role, and if this is accepted, should review the membership in relation to security clearance and expertise.

Advice and reports

42. As previously noted, what advice to offer and what reports to commission are DSAC decisions that relate to a wide range of MOD customers. It has been reported that trawls of policy areas asking for suggestions, offering help, produce very little response. This may be because DSAC is inadequately promoted, but it may also be because DSAC is seen as offering 'science' skills rather than 'problem solving' skills. It may be better for DSAC to report its available skills in terms of MOD policy, strategy and capability headings rather than the 20 science headings currently used. This would facilitate developing DSAC programmes that are as much customer-led as DSAC-led. Indeed the more activities can be seen as 'joint' in their commissioning the better, notwithstanding DSAC's independent stance. In thinking through work commissions, the comments have to be borne in mind that reviews are seen as often taking too long, are backward looking, and hence become out of date and less useful. There is also a perceived need for DSAC to focus on issues that will influence policy in the short run, though this should not detract from DSAC's longer term roles. Hence, there is a need for shorter and quicker reviews, possibly sometimes linked to Gateway issues. This argument leads to:

Recommendation 5: DSAC, using ISTA resources as appropriate, should plan its work programme first with a focus on short run, possibly mainly informal, advice and on reviews and 'reports' that are forward-looking; and secondly on the strategic longer run. Advice, even if informal, should always be documented. In seeking to assemble advice and sometimes to think through future commissioning, 'workshops' may be more effective that 'reporting'.

43. There is one broad area of MOD responsibility where DSAC might have a valuable role: the determination of R&D priorities through the R&D Board. There have been times in the past when the Chair of DSAC was a member of the R&D Board but this is no longer the case. Since DSAC could in principle offer an independent view of priorities – at least directions of travel – consideration should be given to reinstating this membership.

Recommendation 6: CSA and the Minister should consider whether it would be helpful for the Chair of DSAC to be a member of the R&D Board.

44. A specific advisory function of DSAC relates to horizon scanning. How can DSAC be more effective in providing MOD with building science intelligence for the long term and an effective horizon-scanning function? For example, how might emerging technologies help provide MOD's long-term defence capabilities? How good are the international connections in horizon scanning and who integrates this intelligence? At present there are many horizon scanning activities across MOD and its agencies and it is not clear that these are fully linked and triangulated. All of this leads to:

Recommendation 7: DSAC should develop a strategy on its role in horizon scanning as a continuing function, offering independent advice but not duplicating existing work; and quality assurance in relation to horizon scanning (in its many forms); all of this work would be more effective if connected to an MOD 'big picture'.

Quality assurance

45. There are many quality assurance processes across MOD and its agencies. For example, Dstl have their own in-house peer review process – as 'research benchmarking'; and the role of Niteworks in providing decision support and themed reviews is an indirect contribution to quality assurance. Suppliers have their own processes, QinetiQ; for example, have their own internal peer review. Some of these draw on ISTA resources. DSAC has potentially an important role here, not least because of its independent status. It could have a valuable role in 'peer reviewing the peer reviews' – in other words in auditing quality assurance procedures across MOD. It should possibly be commissioned at times to carry out quality assurance on a deep-dive basis – cross department horizon scanning mentioned above would be an example of this – to complement an audit. As a preliminary, note:

Recommendation 8: DSAC should, as noted in cross-cutting recommendation 1, use it's 'map' of MOD S and T activity and plan its quality assurance functions – audit and deep-dive - against priority requirements on that framework.

46. And then:

Recommendation 9: DSAC should audit MOD's current quality assurance processes, make recommendations for any improvements, and possibly take on some quality assurance roles itself where there are gaps.

Service to 'customers'

47. Whilst DSAC, through its chair is accountable to Min(DEST) for its activities, most of the outputs from DSAC are for a much wider customer base. Min(DEST) does commission work from DSAC directly e.g. the recent R&D Spending Level Report, however most work is commissioned by and on behalf of senior officials, both Military and Civilian. It is therefore important that the DSAC Chair and individual members actively engage with senior officials across the Commands and Head Office so that understanding and expectations can be properly managed. It may be convenient to group them as subheadings under Head Office, Dstl, DE&S and then:

Recommendation 10: members of DSAC should be assigned areas of responsibility to keep in touch on a systematic basis with these areas. A starting point could be the pairing of members with senior officials who attend DSAC meetings.

48. This would facilitate the identification of priorities for DSAC's work and would also enable ISTA resources to be promoted as well as DSAC's. It is also important to facilitate this by adding recommendations on membership and the conduct of meetings.

Recommendation 11: in due course, the Minister making appointments to DSAC should ensure that all members are of a standing equivalent to those of senior officials who attend DSAC and that there is an appropriate balance between academic, ex-MOD and industry members.

Recommendation 12: to ensure the ongoing commitment of members and officials, meetings should be structured so that they are less administrative and more strategic.

49. A particularly important relationship is that between DSAC and the Chief Scientific Adviser. Given that the CSA's responsibilities are as broad as DSAC's potential range of interest, it is essential that there is a good working relationship. There are some tensions evident at present with DSAC reporting to the Secretary of State and possibly seeing this line of reporting as an important feature of its independence. It would be more productive if DSAC ensured effective working with the CSA and, indeed, reported to Ministers through the CSA. Hence

Recommendation 13: DSAC should report to Ministers in consultation with the Chief Scientific Adviser.

50. This should not infringe the overlapping 'independence' responsibilities of the CSA and DSAC, nor prevent DSAC's direct access to ministers if circumstances demanded it.

Concluding comments

51. Taken together, these recommendations imply a significant repositioning of DSAC and ISTA within MOD along with new ways of working. The recommendations are interdependent. They embrace:

- a 'map' of MOD S&T (R1, R2);
- a redevelopment of ISTA (R3, R4);
- a re-oriented work programme (R5);
- DSAC and the R&D Board (R6);
- An horizon scanning audit (R7);
- Quality assurance and challenge roles (R8, R9);
- Areas of responsibility for members and associated officials (R10);
- Membership (R11);
- Agendas for meetings (R12);
- A new relationship with the CSA (R13);
- The DSAC Secretariat (R14, below).

52. The 'map' is a foundation for DSAC and ISTA work programmes. The ISTA resource is there to be developed and used more effectively. The work programme, horizon scanning audit, quality assurance and challenge and linked areas of responsibility all connect. Making this work demands a strengthened secretariat and hence:

Recommendation 14: the DSAC secretariat should be strengthened to facilitate the previously-recommended developments and the CSA and the Director of Science and Technology should be tasked with ensuring that this is put in place.

53. It is interesting that recommendations very similar to these were in the 2002 review outlined in Annex B section B-4. A scan of the key points in Annexe B sections B-2 and B-3 show that the recommendations here are consistent with those in the two GO-Science reviews.

ANNEX A: Stakeholder Consultation

Interviews (in order of first interviews)

A-1. Professor Ian Poll, previous Chair, DSAC

A-2. Dr Richard Bratt, DSAC Secretary, Dr Hilary Kent, DSAC Secretariat

A-3. Dr Bryan Wells, Director, Defence Science and Technology

A-4. Professor Vernon Gibson, Chief Scientific Adviser

A-5. Jonathan Lyle, Chief Executive, DSTL; Head of Science Profession

A-6. Air Marshal Sir Stephen Hillier, DCDS, (Military Capability)

A-7. Air Vice-Marshal Julian Young, Director Technical, DE&S

A-8. Rear-Admiral Paul Bennett, late Director, Development, Concepts and Doctrine Centre, Shrivenham, now Chief of Staff, Joint Command

A-9. Tom McKane, Director-General, Strategy and Policy

A-10. Dr Alex Churchill, DST Strategy Deputy Head

A-11. Richard Brooks, Director, Programmes and Delivery, Dstl

A-12. Alan Pratt, Director, Science and Technology, Home Office; attends DSAC meetings

A-13. Air Marshal Greg Bagwell, D Comm OPs, RAF

A-14. Simon Jewell, Managing Director, Niteworks

A-15. Vice-Admiral Alan Richards, Chief Defence Intelligence

A-16. Mike Jenden, Head of defence Intelligence Capability Assessment

A-17. Professor Bernard Silverman, Chief Scientific Adviser, Home Office

A-18. Professor Peter Johnson, Vice-Chair, DSAC, Professor of Computer Science, University of Bath

A-19. Mrs Judith Rawle, member, DSAC; Head of OR, CORDA (BAe Systems)

A-20. Ron Finlayson, Strategic Business Director, Defence, QinetiQ,

ANNEX B: Other Reviews Consulted

Supporting Documents

B-1. GO-Science Review of MoD S and T, 2011

B-2. GO-Science Review of SACs, 2013

B-3. DSAC's wider contribution to MoD and its method of operation, Ministry of Defence, 18 March 2002.

B-4. Defence Science Advisory Council: reform proposals

B-5. DSAC Constitution

Summary of Reviews B-1 to B-3 above:

B-1   GO-Science review of MoD S and T, 2011

- o five aspects reviewed:
    - ▪ industry engagement
    - ▪ academic engagement
    - ▪ international engagement
    - ▪ independent advice (DSAC)
    - ▪ ethics approvals
- o "It is important that … science and technology advice is secured at the earliest possible stage …. for it to have the most cost-effective impact…" [GO-1]
- o problems of silos' in MoD [GO-2]
    - ▪ the integration/big picture point
- o better evaluation and impact measurement [of initiatives] needed [GO-3]
- o better sharing of S&T information [GO-4]
- o lack of stability [GO-5]
- o should evaluate engagement mechanisms [GO-6]
- o DST Programme Office should be transparent [GO-7]
    - ▪ R&D commissioning issues
- o should strengthen industry engagement (including SMEs) [GO-8]
    - ▪ especially quality assurance
- o should strengthen academic engagement [GO-9]
- o should ensure that there is adequate research to sustain long-term capabilities [GO-10]
- o should improve knowledge management [GO-11]
    - ▪ integration/big picture again

- o refocus DSAC to be more strategic, forward looking and cross-cutting; ISTA have a complementary role in this [GO-12]
- o communicate and promote DSAC and ISTA [GO-13]
- o improve the relevance and timeliness of DSAC's work [GO-14]

B-2. GO-Science review of SACs, 2013

- o this report, which reviewed all Government SACs, made recommendations as follows (which are relevant to this review)
  - clarity in reporting lines is important
  - flexibility to ensure access to a wide pool of expertise
  - the broader each member's experience the better
  - to identify appropriate links within their department
  - to identify key policy customers
  - should publicise their presence
  - Council members to pair up with a relevant official
  - to ensure that the relevant evidence is being obtained and utilised wherever it is relevant to science-related [policy formation
  - should pro-actively identify upcoming science issues
  - should engage with the horizon scanning process led by the cabinet office
  - have a means to evaluate or identify the benefits they offer their department
  - their impact

B-3. DSAC's wider contribution to MoD and its method of operation, Ministry of Defence.

Notes from the executive summary

- o The Council should address a small number of major issues where DSAC can make a strategic analysis….. in addition to DSAC's normal business
- o this could be done through Council meetings or ad hoc working groups and boards
- o the boards should be re-aligned to military capability rather than the current systems technology axis to enable better alignment and linkage with the research programme
- o The register should be expanded, including the development of an additional pool of experts, where security clearance is unnecessary for the type of work and advice required.

ANNEX C: Compliance

C-1.   Compliance with Principles of Corporate Governance.

DSAC Adherence to the Principles of corporate governance for Advisory NDPBs	
Description	**Assessment of DSAC**
Principle: Accountability	
The Minister is ultimately accountable to Parliament and the public for the overall performance and continued existence of the advisory NDPB.	DSAC is an advisory body comprised of individuals appointed by the Minister (DEST) on behalf of SofS in accordance with the Code of Practice on Public appointments. Ministers are accountable to Parliament and the public for the overall performance of DSAC.
Supporting Provisions	
The Minister and sponsoring department should exercise appropriate scrutiny and oversight of advisory NDPB. This includes oversight of any public monies spent by, or on behalf of, the body.	Scrutiny of all activities undertaken by DSAC is undertaken by the sponsoring department through the annual reporting from the body and day-to-day oversight by the DSAC Executive Officer. Scrutiny and oversight of attendance claims and claims for travel and subsistence is achieved by the DST-Strategy DSAC Secretariat. Oversight of all expenditure on behalf of the body is undertaken by HOCS Finance.
Appointments to the board should be made in line with any statutory requirements and, where appropriate, with the *Code of Practice* issued by the Commissioner for Public Appointments.	All appointments to DSAC are made in line with the Commissioner for Public Appointments *Code of Practice*.
The Minister will normally appoint the Chair and all board members of the public body and be able to remove individuals whose performance or conduct is unsatisfactory	Min (DEST) makes all appointments to DSAC. Individual's terms of appointment allow for early removal of individuals whose performance or conduct is unsatisfactory.
The Minister should meet the Chair on a regular basis.	DSAC Chair meets with Min (DEST) routinely to discuss the DSAC Annual Report, and on other occasions throughout

	the year as required.

Principles of corporate governance for Advisory NDPBs	
Description	**Assessment of DSAC**
Principle: Roles and Responsibility	
The departmental board ensures that there are appropriate governance arrangements in place with the advisory NDPB. There is a sponsor team within the department that provides appropriate oversight and scrutiny of, and support and assistance to, the advisory NDPB.	MOD CSA provides a dedicated Secretariat for DSAC which ensures appropriate governance arrangements are in place and provides support to DSAC throughout the year.
Supporting Provisions	
The departmental board's agenda should include scrutiny of the performance of the advisory NDPB proportionate to its size and role.	Oversight of DSAC is provided through the Defence R&D Board.
There should be a document in place which sets out clearly the terms of reference of the advisory NDPB. It should be accessible and understood by the sponsoring department and by the chair and members of the advisory NDPB. It should be regularly reviewed and updated.	A set of Terms of Reference for DSAC are in place. This is further supported by the DSAC Constitution which lays out in detail the role and responsibilities of the body and its operating conditions. The Constitution is regularly reviewed and updated in consultation with DSAC.
There should be a dedicated sponsor team within the parent department. The role of the sponsor team should be clearly defined.	A dedicated secretariat is provided through the MOD CSA.
There should be regular and ongoing dialogue between the sponsoring department and the advisory NDPB.	DSAC is compliant

There should be an annual evaluation of the performance of the advisory NDPB and any supporting committees – and of the Chair and individual members.	This is clearly articulated in the DSAC Constitution. Annual evaluation of the Body is undertaken by the DSAC Executive officer. Member evaluations are undertaken by the Chairman.

Principles of corporate governance for Advisory NDPBs	
Description	**Assessment of DSAC**
Principle: Role of the Chair	
The chair is responsible for leadership of the advisory NDPB and for ensuring its overall effectiveness.	This is the case.
Supporting Provisions	
The advisory NDPB should be led by a non-executive chair.	DSAC is Compliant
There should be a formal, rigorous and transparent process for the appointment of the chair. This should be compliant with the Code of Practice issued by the Commissioner for Public Appointments.	The Chair is appointed following the Code of Practice issued by the Commissioner for Public Appointments.
The chair should have a clearly defined role in the appointment of non-executive board members.	This is the case. The Chair of DSAC is a member of the recruitment panel for all member appointments.
The duties, role and responsibilities, terms of office and remuneration (if only expenses) of the chair should be set out clearly and formally defined in writing.	These are clearly articulated in the DSAC Constitution and its supporting documents; these are provided to the Chair on appointment.
Terms and conditions must be in line with Cabinet Office guidance and with any statutory requirements. The responsibilities of the chair will normally include: • representing the advisory NDPB in any discussions with ministers; • advising the sponsoring department and ministers about member appointments and the performance of members; • Ensuring that the members have a proper knowledge and understanding of their role and	These are in line with Cabinet Office guidelines and laid out in the DSAC Constitution and its supporting documents.

responsibilities. • The chair should ensure that new members undergo a proper induction process and is normally responsible for undertaking an annual assessment of non-executive board members' performance; • ensuring that the advisory NDPB, in reaching decisions, takes proper account of guidance provided by the sponsoring department or ministers; • ensuring that the advisory NDPB carries out its business efficiently and effectively; and • Representing the views of the advisory NDPB to the general public, when required.	