

Response to the Science and innovation investment framework 2004-2014: next steps.

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Annex A: List of respondents

Office of Science and Innovation, DTI
 HM Treasury
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Section 1: Introduction and overview

- 1 This paper provides a summary to the responses received to the questions raised in the “*Science and innovation investment framework 2004-2014: next steps*” consultation (the “Next Steps” document) published on 22 March 2006 <http://www.dti.gov.uk/files/file29096.pdf>. There were many responses containing much detail and substance which will be used over the coming months, including for the Comprehensive Spending Review, to help inform future work. The initial actions, set out below, thus mark the first steps in actively responding to the points made.
- 2 The Next Steps document marks the latest effort, in a continuing dialogue with stakeholders, to gauge the Government’s progress in achieving its long-term ambition to improve the UK’s Research and Development (R&D) and innovation performance, as set out in the “*Science and Innovation Investment Framework 2004-14*” (“*the ten-year framework*”) http://www.hm-treasury.gov.uk/spending_review/spend_sr04/associated_documents/spending_sr04_science.cfm.
- 3 Since the publication of the ten-year framework, and indeed over the course of the last decade, the Government has taken significant steps to raise and sustain the excellence of the UK research base and to improve the exploitation of knowledge. The second “*Annual Report on the Science and Innovation Investment Framework 2004-14*”, published in July 2006 <http://www.dti.gov.uk/files/file31810.pdf>, found that, two years into implementation of the ten-year framework, the programme is on course. From an already strong position, the UK research base continues to improve, helped by increased investment to develop both new areas of research and a sustainable capability for the future. However, as was noted in the first annual report in 2005, considerable challenges remain to lift both levels of business R&D and to ensure that the UK has the continued throughput of trained researchers that it needs.
- 4 It is against this backdrop of continuous improvement that the Next Steps document took forward five key policy areas, namely: maximising the impact of the public investment in research on the economy through business innovation; increasing Research Councils’ (RC) effectiveness; supporting excellence in university research; supporting world-class health research; and increasing the supply of science, technology, engineering, and mathematics (STEM) skills. Consultation questions were asked in relation to the first two areas: the impact on the economy and RC effectiveness, which form the focus of this document.
- 5 The Next Steps document also announced a number of new initiatives including Sir David Cooksey’s review on institutional arrangements for health research and the review of the Research Assessment Exercise (RAE). A number of the comments submitted in response to Next Steps related to the Cooksey Review and the RAE. Such comments have been fed into the separate consultation processes in train in these two areas. Sir David will report back later this year on the best

design and institutional arrangements for public funding of health research in the UK: http://www.hm-treasury.gov.uk/newsroom_and_speeches/press/2005/press_100_05.cfm. The RAE consultation closes on 13 October and further details, including how to respond, may be found at <http://www.dfes.gov.uk/consultations/conDetails.cfm?consultationId=1404>:

- 6 Many respondents will also be aware that the proposal in the Next Steps document (questions 5 and 6) to merge the Council for the Central Laboratory of the Research Councils (CCLRC) with the large facilities operations conducted by the Particle Physics and Astronomy Research Council (PPARC) to create a Large Facilities Council (LFC) is now being taken forward. It was also decided that PPARC's grant-giving functions would not be transferred to Engineering and Physical Sciences Research Council (EPSRC). Responsibility for nuclear physics however will be transferred from EPSRC to the new Council. The detailed summary of response to create the LFC is available at <http://www.dti.gov.uk/files/file34028.pdf>. The associated Regulatory Impact Assessment will be published in due course.

Section 2: Summary of responses

- 7 A total of 190 responses were received of which 188 were submitted by the deadline. The sources of these responses are as follows:
- Universities, (including individual departments): 61
 - Personal views from individuals: 44
 - Academic and other Associations: 36
 - Industry/business: 16
 - Learned Societies: 5
 - Research Councils and Funding Councils: 8
 - Regional Development Agencies: 5
 - Other: 15
- 8 The Government are grateful to all who took the time to respond and provide encouragement and feedback on its efforts to deliver the ten-year framework. Respondents have recognised that much progress has been made and that further work is underway, including the new initiatives announced in the Next Steps document. It is also clear from the responses that there is scope to do more to maintain and improve the upward trajectory of UK's support and exploitation of research. It is important therefore to view the actions set out below as work in progress and not as a definitive statement on all the issues raised in the responses.

Structure of the summary of responses

- 9 The majority of respondents wrote in response to the seven specific questions in Chapters 2 and 3 of the document. It is these responses that are summarised below, though two of the questions (questions 5 and 6) related to the creation of the LFC, a summary of which was published on 26 July 2006 <http://www.dti.gov.uk/files/file34028.pdf> and are therefore not covered in detail here. Some respondents also commented on the new announcements or on the other chapters of the document, i.e. on supporting excellence in university research; supporting world-class health research; and improving the supply of scientists. Work is on going in these areas and such responses are being considered, where relevant, by the Department for Education and Skills (DfES), Her Majesty's Treasury (HMT) and the Department of Health (DH), as well as by the Department of Trade and Industry (DTI).
- 10 The following sections set out the summary of responses to each question and describe the initial actions the Government is taking in response.

Questions 1 and 2

Question 1:

The Government would be interested in views about whether the existing framework for supporting science and innovation enables an appropriate level of risk-taking, and if not, suggestions of how any gap might be addressed.

Question 2:

The Government would welcome views on measures to remove any remaining bias, which unfairly favours established research fields over innovative ones. The Government also invite views on how funding mechanisms can be made more responsive to new research challenges.

Responses to Question 1 and 2

11 Questions 1 and 2 are dealt with together as many of the responses to both referred to similar issues. The overwhelming response was that the current framework does lead to risk-averse decisions. Respondents thought that the current Peer Review process has a tendency to be risk averse, reinforces past successes and favours single discipline proposals over new areas of research or multi-disciplinary ones. Respondents in the main also thought that the assessment criteria favoured established institutions and research areas. Reasons given included:

- (a) ***The Peer Review process and silo mentality:*** Respondents suggested that Research Councils (RCs) were slow to respond to new challenges and/or multi-disciplinary areas and that some of their thematic priorities tended to lag behind cutting edge research. This problem, some felt, was exacerbated by the highly prescriptive nature of the calls for proposals. Some thought that this was due to the single discipline background of the majority of peer reviewers and that some inter-disciplinary proposals have to satisfy the needs of two or more funding bodies independently. Some felt that peer reviewers were also under pressure to demonstrate “success” as quickly as possible and therefore tended to choose safe short-term projects, which have a greater probability of immediate success.
- (b) ***Funding:*** A number of respondents thought that the lack of next stage funding, such as proof of concept, was a barrier to risk taking. Bureaucracy involved in obtaining funds was also seen as a potential barrier to some innovative applications. One or two suggested that funding for emergency/critical projects should not crowd out thinking and funding of longer-term projects. A couple thought that venture capitalists had become more risk averse.

12 Respondents also provided some suggestions on how the situation could be improved including:

- (a) **Research Councils/Peer Review/research funding/ process:** Respondents thought that the Research Councils and the system more widely needed to respond more flexibly and dynamically to changing scientific circumstances and to encourage more ambitious/multidisciplinary research and discipline hopping. Examples of how this could be done included: having Peer Reviewers from a wider cross section of society including international involvement and having a faster turnover rate; Peer Reviewers being better trained to deal with inter-disciplinary, more risky projects; streamlining the review process and minimising the bureaucracy/administration; shifting the approach from the initial concept to an assessment of the demonstration of the proof of concept. Others thought that RCs should increase the use of directed research calls and initiate grand challenge calls in emerging fields as well as improve public procurement policy with more emphasis on functional capability, which would provide an incentive to suppliers to propose innovative approaches.
- (b) **Funding** –There were a number of responses proposing the ring-fencing/setting aside of funds to support new fields of research, early career researchers, high-risk/innovative research, a shift of funding from projects to individuals/teams and greater funding for “proof of concept” stage. Some suggested introducing non-conventional funding mechanisms such as platform grants and portfolio awards as well as redirecting a greater proportion of the total funds to, for example, the Technology Strategy Board (TSB) and Knowledge Transfer (KT) initiatives. Respondents suggested more collaborative working between the Research Councils. Some also thought that the TSB could set out its vision better for the future, which could encourage more innovative proposals. A few thought that the Government should use the public procurement process as means of encouraging more innovative projects. A couple suggested that funding bodies should be allowed to share in any intellectual property. One respondent suggested resources for high-risk research should be focused on a few proposals rather than spread thinly across the Higher Education (HE) sector.

Initial action in response to Question 1 and 2

- 13 Research Councils have today published a statement setting out the actions they are taking to address the issues raised by the Next Steps consultation <http://www.rcuk.ac.uk/nextsteps.asp>. This reiterates the Councils' commitment to supporting high potential, high impact research and interdisciplinary research as part of a balanced portfolio of research funding. The document outlines how the Research Councils are exploring the potential for improving the efficiency and effectiveness of their peer review processes whilst maintaining the same standard of quality review, and also explains the steps Councils are taking, and planning to

take, to further improve their efficiency and maximise the funds available for research.

- 14 The Research Councils have also published today a revised protocol for assessing and funding responsive mode applications for research that straddle the remits of more than one Research Council <http://www.rcuk.ac.uk/research/agreement>. Building on the successful inter-Council funding agreement introduced in 2000, this new protocol provides clearer guidance to applicants and establishes new co-funding arrangements that will eliminate double jeopardy for small awards.

Questions 3 and 4

Question 3

The Government would welcome views on barriers limiting greater business innovation and business-university collaboration in the regions, and on what more could be done on a national and regional level to tackle these barriers.

Question 4

The Government would welcome views – in particular from outside Higher Education (HE) – which can be taken into account when developing best practice models for business-university collaboration. In addition, the Government would welcome views on how to encourage businesses to work with universities for the first time, perhaps by introducing short-term, low cost mechanisms for business-university interaction.

Responses to Question 3

15 Almost all the respondents agreed that business-university collaboration, as well as other types of collaboration, should be encouraged and that whilst the situation had improved barriers still remained. Some of the barriers that were felt to have remained included:

(a) Cultural: Respondents thought that a number of cultural differences existed between universities and business which acted as a real barrier to collaboration. For example, it was suggested that business looked for quick solutions and rapid returns whereas universities worked at a slower pace and had different priorities. Responses in general either argued that there wasn't sufficient supply side "push" or enough demand side "pull" – with typically business respondents arguing that there was not enough push and the universities suggesting the lack of pull.

(b) Regional Development Agencies (RDAs): A number of respondents identified the critical role that could be played by the RDAs in encouraging university-business collaborations. There were mixed responses on how successful RDAs had been in this area so far. Respondents thought that currently there was a wide variation between the RDAs in their understanding of and ability to act in this area. The level and quality of the support offered varied and some suggested developing a national framework to help foster consistency.

(c) Regional v National: Some of the respondents thought that the aims at the regional and the national level were not always the same and that there were dangers in over emphasising the regional to the detriment of the national perspective. A few respondents warned that a number of institutions have a

national presence and/or operate on a global scale and should not be confined to just a regional agenda. Hence it was important to coordinate between national and regional schemes.

(d) Funding: Respondents suggested that more money could be made available for programmes, including public procurement projects, to incentivise university-business collaboration directly. A few respondents felt that for some businesses, in particular SMEs, the costs of undertaking collaboration with universities was a deterrent and that this would be exacerbated with universities moving towards recovering the full economic cost of research.

(e) Coherence of strategy: Respondents cited the high number of initiatives and the many disconnected players as a potential barrier which could be confusing businesses and noted that the Government was reviewing this. Some felt that much more needed to be done to join up HEIs, research centres, RCs, RDAs and businesses. One thought there was no coherent strategy that encapsulated the whole of Higher Education and the roles different types of universities could play. A few suggested that clearer policy and guidance was required about R&D collaboration at both national and regional levels.

16 Respondents made the following suggestions to help remove some of the barriers:

(a) Strategy/Policy: Some of the respondents suggested developing a national framework pulling together the various initiatives for promoting and rewarding business-university collaboration. Others suggested that the value of encouraging links between academia and the more mature industries should not be overlooked.

(b) People: Respondents suggested that there should be a greater interaction between personnel in Higher Education Institutes and business and that this could take many forms including, for example, internships, fellowships and workers in industry spending time in universities. A few responses revolved around training including training academics in entrepreneurial skills.

(c) Funding: Respondents suggested various ways in which funding could help incentivise supply “push” and demand “pull” university-business collaboration. For example, many welcomed the proposal to extend R&D tax credits to medium sized firms, which was likely to encourage demand. On the supply side, funding could help, for example, increase the number of industrial PhD studentships, science parks and technology incubators.

(d) RDAs/regional: Some suggested that the role of the RDAs should be extended by, for example, each developing a long-term science and innovation strategy in consultation with HEIs and businesses. Others suggested the need for greater collaboration amongst the RDAs and with the Research Councils to share good practice and to help foster a more consistent and integrated approach. A few responses suggested that the RDAs and HEIs needed to improve their understanding of business needs and attitudes. Some practical measures suggested included (a) CASE awards; (b) voucher schemes for businesses to buy research time; and (c) work placements. Some responses also suggested a positive role that

the Science Cities could play to break down some of the barriers and help support the concept of innovation ecosystems.

(e) Intermediaries/translation/platforms/hubs: Respondents also felt that there was a stronger role to be played by intermediaries and technology translators who could help facilitate collaboration between universities and businesses. Suggestions to do this included expanding the Knowledge Transfer initiatives, strengthening Science Parks, development of national and regional innovation advisers and the establishment of “innovation hubs” and academic clusters. A few of the respondents based in Scotland thought that the Scottish environment was well developed in many respects, in that they felt the Scottish Funding Council, Scottish Enterprise and the Scottish Executive were better connected than their equivalent English bodies.

Responses to Question 4

17 Respondents from both the HE and non-HE sector provided a number of examples of good business-university collaboration. The suggestions can be categorised under one of four categories, namely: (a) supply “push” from the higher education sector; (b) demand “pull” from business; (c) the role of intermediaries; and (d) Government and policy. Some of the examples were:

University – supply side:

- Universities to improve their awareness programmes, including organising training events for companies, undertaking local outreach and improving their knowledge of the customer base and its needs;
- Universities to be more pragmatic about intellectual property rights (IPR);
- To foster long-term relationship with SMEs as well as larger firms; and
- Involvement of businesses in business planning and ways to exploit university services.

Business pull activities:

- Business to encourage more graduate and post-graduate placement schemes as well as encouraging their staff to spend time in HEIs;
- Businesses, in particular SMEs, to foster long term relationships; and
- Development of joint facilities between business and universities, which may be used for more than one engagement.

Role of intermediaries:

- Research Councils to extend their role to help facilitate and improve business university collaboration;
- RCUK to consider developing a scheme similar to the national measurement systems scheme but for innovators;
- Science Cities, RDAs and others to develop strategies to foster business university collaboration; and
- Development of local and regional brokering schemes.

Government and policy

- A number of suggestions were made on how Government policy and funding could help foster improved business university collaboration – many of these suggestions have been described above. However, some not noted earlier include:
 - Learn and adopt best practice in commercialisation of science and technology from abroad, such as Sweden, Finland, Germany and the US;
 - Good practice model including MIT and its partner companies; Technology University of Eindhoven and Philips; Science Parks; Enterprise Parks, University Technology Centres, Visiting Professorships and Industrial Secondment Schemes;
 - It would also be useful if the Technology Strategy Board could make all its market intelligence available to UK universities and businesses.
- Further support for Knowledge Transfer programmes.
- Government to consider extending R&D tax credits to larger companies.
- Support for national hybrid programmes such as innovation fellowships.
- Training programmes to develop skills and knowledge of overall development and operation of innovation system.

Initial action in response to Questions 3 and 4

18 The Economic Impact Group, led by Peter Warry and made up of senior academics, Research Council Chief Executives and business leaders, has recently investigated how the Research Councils could demonstrate and help deliver greater economic impact through their investment in science and research <http://www.dti.gov.uk/files/file32802.pdf>. The report recognises that Research Councils have pivotal roles, both as funding bodies and as leaders of the research base. It notes Councils are already increasing their emphasis on knowledge transfer and the economic impact of their work, and that this emphasis must increase further without sacrificing the research excellence for which the UK is rightly admired. The Group has made recommendations for the Research Councils, which can be broadly categorised into:

(a) The Research Councils' leadership of the knowledge transfer agenda - Research Councils should promote a wider awareness and wider debate of the economic impact of Research Council spending. One of the Research Council chief executives should be nominated by RCUK to champion the work on economic impact across all Councils;

(b) The Research Councils' role in influencing the knowledge transfer behaviour of universities and Research Council institutes – in ways that will increase the economic impact of Research Council funding. The nominated chief executive should focus the Research Councils on:

- working with the Universities, research institutes and Funding Councils to encourage them to take more account of economic impact in the terms under which funding is awarded;

- working with the RDAs and Development Agencies (DAs) to strengthen their linkage with the Research Councils and to promote the dissemination of the research;
- improving their interaction with SMEs, working with economic development agencies as intermediaries across the UK;
- incentivising universities and research institutes to identify and promote the economic impact of earlier Research Council spending, for example through new prizes and other awards for knowledge transfer excellence. Research Councils should promote more extensive interchange of people and ideas between the research base, industry and public services.

(c) *Increasing Research Councils engagement with user organisations* - including Government, business and the public services in a wide-ranging dialogue to develop overarching, economically relevant research missions. These missions should address major strategic challenges for the UK. These missions should:

- be in areas where the UK wishes to become a world leader (e.g. energy, creative industries and eScience);
- span all disciplines and be open to other funders; and
- bridge the boundaries created by the existing research disciplines and any organisational barriers between funding bodies.

19 Professor Philip Esler, Chief Executive of the Arts and Humanities Council (AHRC), has been appointed to chair a new RCUK Group, which will take these recommendations forward.

Regions

20 The RDAs now all have Science and Industry Councils in place, which are driving the development, review and strengthening of regional science and innovation strategies. The Science and Industry Councils include representatives of the private sector, the knowledge base and the public sector, and are well placed to bring both regional and global perspective to these strategies. In addition, following the introduction of a 'Capacity Fund' the RDAs and RCs have been building stronger links through initiatives including joint employment of personnel. In the run up to the Comprehensive Spending Review, RDAs are singly, jointly and in specific regional groupings (e.g. the Northern Way), developing thinking based on international good practice in a number of areas identified by respondents. These include further support for Knowledge Transfer, and the development of joint business/academia facilities and voucher schemes. The Sub-national Economic Development and Regeneration Review is also expected to publish an interim report this autumn, with the final report in Spring, to inform the CSR 2007.

21 Since the announcement of its five year strategy and programme of organisational change, UK Trade and Investment (UKTI) has been working hard to develop its new R&D programme designed to attract R&D investment to the UK and promote the UK's innovative companies overseas. The strategic consultancy for the programme is complete and UKTI are currently building the team that will be responsible for the delivery of the programme.

Technology Strategy Board

- 22 The Government expects the Technology Strategy Board (TSB) to play an increasing role in contributing to the development of the Government's innovation strategy across all important sectors of the economy. The TSB's terms of reference and related documents can be found at http://www.dti.gov.uk/innovation/tech-priorities-uk/tsb/Terms_of_reference/page11298.html

Funding

- 23 The Government announced in the 2005 Budget that it would guarantee at least 2.5% of the value of Departments' and agencies' extra-mural R&D contracts would be placed with SMEs, building on the Small Business Research Initiative (SBRI). In 2004/05, of a proposed baseline of £2.5 billion, £269 million (10.6 per cent) went to small firms in the form of contracts. SMEs are now also able to access Government extramural R&D contracts with a value below £100,000, via a new Government procurement portal www.supply2.gov.uk, launched in March 2006.
- 24 The Small Business Service have a number of funds available to support small businesses, such as the Regional Venture Capital Funds, High Technology Fund, Early Growth Funding, and Enterprise Capital Funds.
- 25 The Government intends to extend additional support through the R&D tax credit to companies with between 250 and 500 employees, subject to the outcome of state aid discussions with the European Commission.
- 26 In addition to the £15 million in earmarked funds having been provided to Research Councils to boost their knowledge transfer capabilities, the Knowledge Transfer Networks (KTNs) and Knowledge Transfer Partnerships (KTPs) are proving to be very successful in stimulating innovation.

Questions 5 and 6

Questions 5

The Government would welcome views on whether all large facilities operations should be integrated under a new Large Facilities Council, or whether there is a case for some facilities to remain under the management of other Research Councils.

Questions 6

Furthermore, in the event of a merger, should the grant-giving functions of PPARC be moved to Engineering and Physical Sciences Research Council (EPSRC)?

Response and Action for Questions 5 and 6

- 27 Responses to Questions 5 and 6 have already been summarised and are available at <http://www.dti.gov.uk/files/file34028.pdf>. A majority of respondents were in favour of the creation of a Large Facilities Council and opposed to the transfer of PPARC's grant giving function to EPSRC.
- 28 Following the consultation, the Government announced the decision to create the Large Facilities Council on 26 July 2006. It was also decided that PPARC's grant-giving functions would not be transferred to EPSRC. Responsibility for nuclear physics however will be transferred from EPSRC to the new Council. The detailed summary to create the LFC is available at <http://www.dti.gov.uk/files/file34028.pdf> A Regulatory Impact Assessment for this change will be published in due course.

Question 7

The Government would welcome views on what further measures could be taken by the Research Councils to improve their effectiveness.

Responses to Question 7

29 A summary of responses to question 7 is set out below (this section only picks out main themes and points, as many of the comments have been included in the overall summary of questions 1 and 2 above).

30 Although there were constructive suggestions for improving efficiency, much of the feedback related to what more the Research Councils could do for particular organisations/individuals.

Overall Effectiveness

31 There were many supportive comments, the majority of which were from HEIs, stating that the Research Councils were effective, doing a good job and should be allowed a period of stability. Good interactions with particular RCs were mentioned and their professional approach welcomed. RCUK was cited as useful and some responses suggested that the reviews in progress, on harmonisation and peer review, were likely to produce improvements and increase efficiency for the future.

Cross-Council working

32 There were several specific comments about cross Council working. In particular some suggested that as each RC had a differing remit, which was necessary in relation to specific research areas, this could cause problems where it led to differing operational practices. The points raised related to the need for closer co-ordination, more joined up working and promoting new cross Council initiatives. A few mentioned particular areas of science where initiatives would be welcomed.

33 Stakeholder communication and management were cited as areas for improvement with RCUK to act as a single contact point. Several responses mentioned the need for more effective international collaboration across all RCs.

34 Most of the other observations on interdisciplinary and risky research are mentioned in the overall summary.

Back office harmonisation

35 The differences in practices across the RCs were cited as a reason for needing greater harmonisation, in many of the responses, particularly from the HEI sector. The main theme was promotion of best practice in operating procedures. As mentioned previously there was a recognition that RCUK was already undertaking a review and this was welcomed, as was the introduction of Joint electronic

Submission System (JeS). There was strong support for rolling out the electronic system across all RCs as soon as possible and to encourage all RCs to be located on one site in Swindon. It was felt that introducing shared services could substantially reduce overhead costs.

- 36 The differences between RC and other grant sources at institutional and discipline levels were thought potentially to skew funding allocations. Universities cited the incurring of additional costs in dealing with several RCs.

Peer review process

- 37 There were many responses on the peer review process covering several aspects mostly from those making major contributions i.e. as applicants or reviewers. The majority featured a rationalisation of schemes, changes to the Committee structures as well as suggestions for a major overhaul of the anonymous peer review system. There was no support for introducing quotas for institutions, as this was thought to reinforce the status quo.
- 38 Peer review was considered too conservative and tended to stifle more innovative proposals. There was concern about the effect of block grants and cutting out peer review on new emerging and multi-disciplinary research.

Strategy/vision/funding

- 39 Many respondents picked out funding and full economic costs as factors for increasing the effectiveness of the Research Councils and the science budget. There was reference to a lack of strategic vision of the RCs/RCUK and that central monitoring capacity was missing. It was suggested that better value for money could be obtained by use of well established output measures such as biometric data instead of input measures such as grant income. Better data collection was encouraged by several organisations.
- 40 In institute governance it was deemed essential to establish clarity of where responsibility and accountability for decision making lay.
- 41 The main points on funding centred on maintaining the infrastructure through the introduction and move to 100% full economic costs. A move to more responsive mode funding was also suggested, as well as support for long-term programmes.
- 42 The boundaries within RCs and across funding bodies were thought to be a problem. Some cited a too conservative approach to structures within RCs and a need for a more responsive attitude to changing scientific priorities.

Initial action in response to Question 7

- 43 The issues raised in response to this question are being addressed by the actions set out above in paragraphs 14, 15 and 21. Briefly, Research Councils have today published a statement setting out the actions they are taking to address the issues raised by the Next Steps consultation <http://www.rcuk.ac.uk/nextsteps.asp>. This reiterates the Councils' commitment to supporting high potential, high impact

research and interdisciplinary research as part of a balanced portfolio of research funding. The document outlines how the Research Councils are exploring the potential for improving the efficiency and effectiveness of their peer review processes whilst maintaining the same standard of quality review, and also explains the steps Councils are taking, and planning to take, to improve their efficiency further and maximise the funds available for research.

44 The Research Councils have also published today a revised protocol for assessing and funding responsive mode applications for research that straddle the remits of more than one Research Council. This new protocol provides clearer guidance to applicants and establishes new co-funding arrangements that will eliminate double jeopardy for small awards.

45 In addition the Research Councils will take forward the recommendations made by the Economic Impact Group – details of which are set out above at paragraph 18.

The way forward

46 The initial actions, listed above, together with the continuing Cooksey and RAE reviews, mark a further step in the delivery of the 10-year framework agenda. The responses will continue to be used to help inform future policy including the Comprehensive Spending Review.

**Office of Science and Innovation, DTI
HM Treasury
September 2006**

List of Respondents

Universities		
1	University of Hull	Helen Dowson, Planning Officer, Strategy Development Unit
2	SPRU, University of Sussex	Alister Scott, Research Fellow
3	Kingston University	Professor Paul Lister, Pro Vice Chancellor (Science and Enterprise)
4	University of Plymouth	Professor Roland Levinsky, Vice Chancellor
5	Tyndall Centre, University of East Anglia	Professor Mike Hulme, Director Tyndall Centre
6	Solar Physics Group, St. Andrews University	Eric Priest FRS
7	IoP Thin Films and Surfaces Committee, University of Reading, Department of Chemistry	Dr George Reid, Chairman of IoP
8	Confidential	Confidential
9	High End Commuting Strategy Committee, Queen's University Belfast	Ron Perrott, Chairman
10	Clarendon Laboratory, Oxford University	Prof. Ian Walmsley (Head of Atomic and Laser Physics), Dr Andrew Boothroyd (Head of Condensed Matter Physics)
11	Department of Physics & Astronomy, University of Glasgow	John Chapman, Head of Department
12	Department of Physics, University of Oxford	Professor R L Davies, Chairman's Office, Department of Physics
13	The Particle Physics Community (submitted via the Royal Holloway)	Professor M G Green, Professor of Particle Physics
14	Institute of Astronomy, University of Cambridge	Professor George Efsthathiou, FRS Director
15	Department of Physics, University of Bristol	Professor Diana M Worrall
16	Mullard Space Science Laboratory, University College London	Professor Alan Smith, Director
17	Nuclear Physics Research Community	Paul Nolan, Head of Department, University of Liverpool
18	University of Reading	Dr Richard Messer, Director of Planning Support
19	Queen Margaret University College, Edinburgh	Isobel Lister (PA to Principal)
20	De Montfort University South and Research	Professor Jeffrey Knight, Pro Vice-Chancellor
21	Liverpool John Moores University	Gerry Kelleher

22	University of Leicester	Bill Brammar, PVC Research
23	University of Hertfordshire	Jenny Jenkin, Policy Advisor to the Executive
24	University of Glasgow	Sir Muir Russell, Principal
25	Universities UK	Davina Foord
26	University of Cambridge	Prof Ian Leslie, Pro-Vice Chancellor of Research
27	University of Warwick	Jon Baldwin, Registrar
28	University of Central England, Birmingham	Michele Mooney, Director Corporate Development Centre
29	Queen's University Belfast	Professor Peter J Gregson, President and Vice Chancellor
30	CCP5 (Collaborative Computational Project)	Professor Mark Rodger, Department of Chemistry, University of Warwick,
31	Keele University	Professor Peter W Jones, Pro Vice Chancellor for Research & Enterprise
32	University of Salford	Mike Hession, Assistant Registrar
33	University of Exeter	Professor Roger Kain Deputy Vice-Chancellor (Research)
34	University of Ulster	Professor Bernie Hannigan, Pro-Vice Chancellor (Research)
35	North West Universities Association	Tina Egan, Deputy Director
36	University of Warwick, WMG	Prof Lord Bhattacharyya, Director
37	University of Paisley	Professor Robert Chapman
38	Department of Physics & Astronomy, University of Leicester	Professor Martin A Barstow, Head of Department
39	Imperial College London	Catherine Whalley, Strategy and Planning Officer
40	Professor Carole Jordan	Professor Carole Jordan, Department of Physics, University of Oxford
41	University of Oxford	Mrs L E Sims, Head of Planning
42	University of Durham	Professor W James Striling, Pro Vice Chancellor
43	University of York	Anna Grey
44	Cardiff University	Dr David Grant, Vice Chancellor (submitted by Kath Hoose)
45	University of Liverpool, Department of Physics	Dr Paul Nolan, Head of Department
46	University of Leeds	Kathy Brownbridge (Director of Research Support)
47	Universities Scotland	Dr Charles Marriott, Policy Officer Research and Commercialisation
48	University of Newcastle	D W Robertson, Director of Business Development
49	Lancaster University	Professor Trevor J McMillan, Pro Vice Chancellor Research
50	University of Central Lancashire	Sally Irene Turnbull on behalf of Professor Patrick McGhee, Deputy Vice Chancellor

51	University of East Anglia	Professor Trevor Davies, Pro-Vice Chancellor
52	University of Aberdeen	Nicki Matthew, Senior Policy Adviser (Research)
53	University of Kent	Phil Ward, Research Funding Officer
54	The 1994 Group (Universities)	Paul Marshall, Executive Director
55	University of Surrey	Tim Julier, Assistant Secretary to the Vice Chancellor
56	University of Birmingham	Dr Elizabeth Westlake, Assistant Director (Research Policy, Planning and Performance)
57	University of Wolverhampton	Professor Gerald Bennett, Pro Vice Chancellor
58	The Open University	Prof Brigid Heywood, Pro-Vice Chancellor
59	University of Nottingham	Helen Hurman, Head of Research Business Development
60	University of Edinburgh	Simon Jennings, Head of Public Policy
61	University of Liverpool	Professor Jon Saunders, Pro-Vice Chancellor

Business		
1	Qinetiq	Dolores Byrne, MD Public Sector
2	Confidential	Confidential
3	Confidential	Confidential
4	Cancer Vaccines Ltd	Dr John Maudsley, CEO
5	Isis Innovation Ltd	Tom Hockaday, Managing Director
6	Oxford Innovation	Dr David R Kingham, Chief Operating Officer
7	Confidential	Confidential
8	General Electric Healthcare	Professor Dewi M Lewis, Vice President Physics
9	EADs Astrium Ltd	Colin Payner Managing Director
10	Association of Research and Technology Organisations Ltd (AIRTO)	Richard Brook, President
11	TWI Ltd	Sue Dunkerton, Director Health Technologies Knowledge Transfer Network
12	The Business Innovation Group	David Hughes FREng
13	Trusted Systems Lab, HP Labs	Martin Sadler, Director
14	Rolls Royce Plc	Dr D A Clarke, Head of Technology Strategy
15	Diamond Light Source Ltd	Gerd Materlik CEO
16	Infoterra Ltd UK Industrial Space Committee	Dr Nick Veck, Chairman of UKISC

RDAs and DAs		
1	Yorkshire Forward, Yorkshire Universities and Yorkshire Science	Trevor Gregory, Director Of Yorkshire Science, Yorkshire Forward
2	South East England Development Agency (SEEDA)	Ed Metcalfe, Head Science Technology, Entrepreneurship and Management and Learning Skills
3	London Development Agency	Shahid Miah, Science and Technology

4	One NorthEast, the Science and Industry Council of North East England and Newcastle Science City	Chris Pywell
5	South West RDA but prepared by the 6 science cities	Neil McInnes, Science and Industry manager

Research and Funding Councils		
1	PPARC, Science Committee	Professor Jenny Thomas, Chair
2	Biotechnology and Biological Sciences Research Council (BBSRC)	Paul Burrows, Head Strategic Planning
3	CCLRC and PPRAC	Professor Keith Mason and Professor John Wood
4	Particle Physics Dept, CCLRC	Professor George Kalmus,
5	Natural Environment Research Council (NERC)	Dr Steven Wilson, Director Science and Innovation
6	Engineering and Physical Sciences Research Council (EPSRC)	Professor John O'Reilly FEng, Chief Executive
7	Higher Education Funding Council for Wales (HEFCW)	Linda Tiller, Senior Strategic Project Manager
8	RCUK	Helen Thorne, Head of the RCUK Secretariat

Individuals		
1	Dr Patrick Harrison	Dr Patrick Harrison
2	Professor David Frohlich	Professor David Frohlich, Director of Research, University of Surrey
3	Professor Andrew Alpin	Professor Andrew Alpin, School of Civil Engineering and Geosciences, University of Newcastle
4	Professor Joe Cartwright	Professor Joe Cartwright, Geophysics, Cardiff University
5	Confidential	Confidential
6	Confidential	Confidential
7	Simon Ross	Simon Ross, Reader in Mathematical Sciences, Durham University
8	Professor Mark Lester	Professor Mark Lester, Radio and Space Plasma Physics Group, Dept. of Physics, University of Leicester
9	Alan Barr	Alan Barr, Lecturer and Research Fellow, Dept of Physics and Astronomy, UCL
10	Dr Stephen Serjeant	Dr Stephen Serjeant, Senior Lecturer, Dept. of Physics. The Open University
11	David Southwood	David Southwood, Director of Science European Space Agency

12	Professor Athene M Donald FRS	Professor Athene M Donald, Department of Physics
13	Dr Betty S Lanchester,	Dr Betty S Lanchester, School of Physics and Astronomy, University of Southampton
14	Professor AD Aylward	Professor AD Aylward, Head Atmospheric Physics Laboratory, University College London
15	Dr Ian McCrea	Dr Ian McCrea (employee of CCLRC)
16	Richard B Nickerson	Richard B Nickerson, Department of Physics, Oxford University
17	Confidential	Confidential
18	Professor William Gelletly	Professor William Gelletly, Physics Department, University of Surrey,
19	Professor Michael Merrifield	Professor Michael Merrifield, School of Physics and Astronomy
20	Professor R J Cernik	Professor R J Cernik, School of Materials, University of Manchester,
21	Dr Francisco Diego,	Dr Francisco Diego, Senior Research Fellow, Dept Physics, University College London
22	David Andrews	David Andrews
23	Dr Helen Walker	Dr Helen Walker
24	Bill Murray	Bill Murray employee of CCLRC
25	Professor Ken Peach	Professor Ken Peach, Director, The John Adams Institute for Accelerator Science
26	Mike Hapgood	Mike Hapgood
27	Professor Mike Lockwood	Professor Mike Lockwood, CCLRC
28	Professor Steven J Schwartz	Professor Steven J Schwartz, Space Physics, Imperial College London
29	Professor Tom McLeish	Professor Tom McLeish, Director IRC in Polymer Science and Technology, University of Leeds
30	Professor Brian Foster OBE	Professor Brian Foster, Department of Physics, University of Oxford
31	Professor Ofer Lahav	Professor Ofer Lahav, Perrem Professor of Astronomy and Head of Astrophysics, Department of Physics and Astronomy, UCL
32	Ian Stagg	Ian Stagg
33	Mikhail Spivakov	Mikhail Spivakov, MRC Pre-Doctoral Fellow
34	Trina Dinnis	Trina Dinnis
35	Martin Grayson	Martin Grayson
36	Janet Lewis	Janet Lewis
37	Ulrich Desselberger	Ulrich Desselberger
38	Professor John R Helliwell, University of Manchester	Professor John R Helliwell, Structural Chemistry
39	Dr Todd Huffman	Dr Todd Huffman, Researcher and Lecturer
40	Ian Halliday	Ian Halliday, President European Science Foundation, CEO Scottish Universities Physics Alliance, Member European Research Advisory Board EC
41	Sir John Kingman	Sir John Kingman, Isaac Newton Institute for Mathematical Sciences
42	Dr Phil Bland	Dr Phil Bland, Impacts and Astromaterials Research Centre, Imperial College London
43	Dr Chris Chaloner	Dr Chris P Chaloner

44	Professor Peter Taylor	Peter Taylor, Royal Society Wolfson Professor of Chemistry, University of Warwick
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	Academic and other Associations	
1	Bio Industry Association	Ryan Tinngal, Public Affairs Executive
2	Society for General Microbiology	Dr Faye Stokes, Public Affairs Administrator & Microbiology Today Assistant Editor
3	EEF	Sukhy Ubhi, Economist
4	Joint University Council Social Work Research Committee	Professor Peter Marsh, Dean of the Faculty of Social Sciences, University of Sheffield
5	Council for Industry and Higher Education	Philip Ternouth, Associate Director R&D and Knowledge Transfer
6	UK High Performance Computing Special Interest Group	Dr Jeremy Yates, Executive Member, Lecturer in Physics and Astronomy, University College London
7	Food Manufacturing Engineering Group (FMEG)	Professor Gray
8	Association for Astronomy Education (AAE)	Dr Francisco Diego, Senior Research Fellow, Dept Physics, University College London
9	ISIS Neutron Facility access panel	Professor Jayne Lawrence, Chair of the ISIS Facility Access Panel 3
10	Particle Physics Advisory Panel	Professor Peter Dornan, Blackett Laboratory, Imperial College
11	The Particle Physics Community (submitted via the Royal Holloway)	Professor M G Green, Professor of Particle Physics
12	The British Association of Planetaria	Tom Mason, President.
13	Robin Scagell	Robin Scagell, Vice President, Society for Popular Astronomy
14	European Committee for Future Accelerators	Torsten Akesson, Chairperson ECFA
15	UK Space Science Community (UK Space Academic Network)	Professor J L Culhane FRS, Chair, UK Space Activities Network
16	National Advisers and Inspectors Group for Science (NAGS)	Charlotte Clarke
17	British Association for the Advancement of Science (BA)	Sir Roland Jackson, Chief Executive
18	Field Studies Council (FSC)	Dr Steve Tilling, Director of Communications
19	Women into Science, Engineering and Construction (WISE)	Hunye Wong (PA to Director)
20	Specialist Schools and Academies Trust	Mark Done, Head of Specialism Expertise and Strategy
21	National Museum of Science and Industry	Martin J Earwicker, Director

22	Cogent Sector Skills Council	Mervin Dadd, Director Of Communications
23	Institute of Engineering and Technology	Graham Paterson, Head of Policy
24	Academy of Social Science (see Academy of Learned social science)	Professor Nigel Gilbert, Professor of Sociology, University of Surrey
25	Confidential	Confidential
26	Institute of Food Science and Technology	Professor Jack Pearce, President
27	UK Space Biomedicine Group (UKSBG)	Dr Ben Douglas, Secretary
28	Association for Astronomy Education	Dr Robert Massey, President
29	Confederation of British Industry (CBI)	Tony McBride, Senior Policy Advisor
30	Institute of Physics	Dr Robert Kirby-Harris, Chief Executive
31	Bioscience Federation	Dr Caroline Wallace, Science Policy Advisor
32	Campaign for Science and Engineering	Dr Peter Cotgreave, Director
33	Association of Heads of Psychology Departments (AHPD)	Peter Banister, Chair of AHPD
34	Prospect (Trade Union)	Sue Ferns, Head of Research and Specialist Services
35	The Joint Committee for Psychology in Higher Education	Professor Dominic Abrams, Chair, Joint Committee for Resources in HE, Dr Lisa Morrison Coulthard; The British Psychological Society; Association of Heads of Psychology Departments (AHPD)
36	Council for Mathematical Sciences	Martin Smith, Secretariat

Learned Societies

1	The Royal Society	Sir David Wallace, Vice President
2	Royal College of Physicians	Rodney Burnham, The Registrar
3	Fellows of the Royal Academy of Engineering	Phillip Greenish, Chief Executive
4	Royal Astronomical Society	none given
5	The Royal Astronomical Society	David Elliott, Executive Secretary

Other

1	The Government Chemist (LGC)	Dr J M Francis on behalf of Dr John Marriott
2	National Physical Laboratory	Dr Kamal Hossain, Director of Science and Innovation
3	The Design Council	Harry Rich, Deputy CEO

4	Chemistry Innovation Knowledge Transfer Network	Harry Ziman, Executive Team
5	Confidential	Confidential
6	Confidential	Confidential
7	Culham Division, UKAEA	Professor Sir Chris Llewellyn Smith, Director UKAEA Culham Division
8	British Antarctic Survey	Dr Alan S Rodger, Head of Science Programmes
9	ISIS Engineering User Group	Dr Michael Fitzpatrick, The Open University and Dr Jerry Swallowe, Loughborough University. Co-chairs of the ISIS Engineering User Group
10	ISIS User Committee	Professor S H Kilcoyne, Chairman ISIS User Committee
11	The Science, Engineering, Technology and Mathematics Network (SETNET)	Pat Langford, Operations Director
12	Health Protection Agency	Peter Borriello
13	National Academy for Gifted and Talented Children	Dr Barry Meatyard, Director PGCE+, University of Warwick
14	Breakthrough Breast Cancer	Dr Sarah Cant, Senior Policy and Information Officer
15	Wellcome Trust	Dr Phillip Green, Executive Assistant to the Director