THE ROYAL SOCIETY'S RESPONSE TO THE CONSULTATION ON STAGE 2 OF THE QUINQUENNIAL REVIEW OF THE RESEARCH COUNCILS

Summary

The Working Group endorsed the following basic points:

a. The primary role of the Research Councils is to ensure the continued maintenance and development of a science base within the UK that is excellent by international standards, through support of research and research training at all levels. While there are areas where some changes are desirable, overall the Research Councils have carried out this role well and should retain their UK remit.

b. University research should continue to be funded through the dual support system, and attention should be given to ensuring that the block funding is sufficient both to maintain and to develop the necessary infrastructure to achieve research excellence.

c. There should continue to be six grant awarding Research Councils, constituted as now as Non-Departmental Public Bodies (NDPBs) operating at "arms length" from Government, each with a Chairman, Chief Executive and Members appointed by the Minister for Science, and overseen by the Director General of Research Councils (DGRC).

d. While arrangements are required for developing a national strategy on the broad direction of the science base, it is important to ensure that this is neither too prescriptive nor an attempt to "pick winners".

e. There are problems at the boundaries of Councils. Such boundary problems are a natural consequence of a healthy and developing science base, and a structure needs to be put in place to aid early identification of such problems and their effective resolution.

f. The structure of each Council is generally satisfactory, but there are significant problems with some cross-Council and pan-Council issues, and with developing, reporting on and evaluating the national strategy. These problems require attention at all levels, not just at the DGRC/Chief Executive level.

g. Others areas that require attention are:

- The maintenance and development of major facilities.
- The collection and reporting of information in a more consistent form than has been used hitherto.

STAGE 2 OF THE QUINQUENNIAL REVIEW

The Royal Society welcomes this opportunity to comment on the issues being considered as part of Stage 2 of the Quinquennial Review of the Research Councils. This submission has been endorsed by the Society's Council and was drafted by a working group chaired by Professor John Enderby, Vice President and Physical Secretary of the Society, with the following membership: Professor John Ball FRS, Mathematical Institute, Oxford; Professor Peter Edwards FRS, University of Birmingham; Professor Diana Green, Vice Chancellor, Sheffield Hallam University; Professor Donald Grierson FRS, School of Plant Sciences, University of Nottingham; Professor William G Hill FRS, Institute of Cell, Animal and Population Biology, University of Edinburgh; Professor David Saxon FRSE, Physics Department, University of Glasgow; Professor Ian Young FRS, Robert Steiner MRI Unit, Hammersmith Hospital, and supported by: Dr Keith Root and Mr Bahader Singh, Royal Society

The response follows the OST headings, which are in italics.

A - mission, structure and governance

a) the missions of the Research Councils including their international perspective

1 The main objectives of the Research Councils are to support high-quality research and postgraduate training. A primary function of the Councils is to continue to advance and develop the standing of the science base in universities and Research Council institutes, and to ensure that it is capable of providing world-leading science for the medium and long term. The bulk of the research grant funding should continue to be via responsive mode, with the ideas emanating from the researchers themselves, and we would stress that many important ideas arise from individual or small groups of investigators.

2 In the case of university research, we believe that the current dual support arrangements constitute the most effective method of providing the necessary breadth and flexibility for maintaining the excellence of research in the sector. The Funding Councils should continue to provide block grants, determined on the basis of research excellence, to support the research portion of salaries of faculty while undertaking research, and infrastructure, including buildings, generic equipment and support technicians. The Research Councils should continue to support the highest quality research projects, including the cost of key equipment, and specific research and technical staff. There must be close interaction between the Funding Councils, and OST and the Research Councils, especially in the areas of infrastructure, postgraduate training and exploitation of research. It is also essential to maintain the appropriate balance between these two funding streams. It is, for example, arguable that the falling proportion of research funding over the past decade or so has resulted in universities having problems over continuity of research teams and for principal investigators becoming risk adverse and short term in their thinking.

3 While the block funding of university research capability and infrastructure being provided on a devolved basis has merits, it is important for the best research projects to be identified on a UK- wide basis and for the country as a whole to benefit from this research. Hence it is important that the Research Councils should retain their UK-wide remit.

4 Research is an international activity and the UK science base needs to maintain its strong connections with centres of excellence abroad. The Councils must continue to be associated with appropriate international facilities and with important international collaborations, including those dealing with global issues, such as climate change, sustainable energy resources *etc.*

5 The Councils, in association with OST, should provide input on the detailed science priorities into the steering of the EU Framework programmes and take account of the agreed Framework Programmes (FP) when developing their own programmes.

b) the role of the Councils as providers of research (eg. through Council institutes) as well as funders

6 Research Council institutes are of three types: those providing access to large and expensive central facilities; those providing dedicated technological expertise to develop new equipment; and those that undertake research, usually of a more strategic or applied nature that that in the university sector. Some large research institutes also provide facilities for university researchers.

7 In the case of central facilities, these are regarded as pivotal for the science base, but a major continuing problem relates to capital investment on such facilities and the need for a long-term plan; this is considered further in B(b). A proportion of the staff at such facilities are involved with research, usually in association with other users; this helps both to attract and to retain good staff, and to enable the staff to keep abreast with current scientific issues for which the role of the central facilities is essential.

8 In the case of the other types of institutes highlighted above, careful consideration needs to be given on a case-by-case basis as to whether a separate institute continues to be resource effective. Separate institutes and units may be the most appropriate arrangements where, for example:

- The activity forms part of continuous survey or monitoring (eg geological, oceanographic or social) and is not appropriate for a university to undertake.

- The research requires a longer timescale, or a degree of corporate commitment, that does not necessarily fit with the personal nature of university based projects.

- Expensive facilities, such as large-animal category 3 containment, are required.

- The expertise provided is a national asset able to provide technological support, for example CCLRC and PPARC's Astronomy Technology Centre.

Where none of these apply, the Councils should, with outside advice, regularly review whether the current arrangements for a research institute are still appropriate, or whether another of the wide range of different arrangements that have evolved should be considered. These span separate Council-owned and managed free-standing institutes, through small Council-owned units embedded in universities and university managed joint institutes or centres, to long-term or transitional support of university owned and managed centres.

9 It is important for all Research Council institutes and units to work in close collaboration with one or more universities. Amongst other things, this has the advantage of greater involvement of PhD students.

10 In some BBSRC institutes with autonomous management, the bulk of staff are employed directly by the Council itself. This may lead to difficulties for both the managers and staff in terms of conflict of interest. It also creates problems of governance, where managers have responsibility for operating the institute without control over all of the resources.

11 In all cases it is important to ensure that the quality of the research at an institute is maintained at a high level. As a minimum the Research Councils must maintain the system of visiting groups to determine the scope and level of research performance and of core funding, with other grants being secured in competition with other parts of the science base. The Research Councils might consider asking the appropriate RAE panels, after the present exercise is complete, to review the quality of the research work in its institutions by the same criteria as those applied to university units of assessment. Equally, it is desirable that in future RAEs, panel members are drawn from the institutes, which should, therefore, be encouraged to nominate suitable candidates.

12 Research Council institutes have the advantage of providing longer- term (5-year) appointments for postdoctoral researchers, with the possibility of subsequent indefinite appointments. However, too many indefinite appointments may create undue inertia and so reduce the flow of young researchers. It is important to get the balance right.

13 In the spirit of Government involvement at "arms length", we believe that institutes funded by the Research Councils must have the freedom, within their own terms of reference and subject to peer review of their quality and funding, to choose the research topics for investigation. This is not to rule out the possibility for a Government Department to contract out research to Research Council institutes if a mutually agreed financial arrangement can be made.

c) managing the Councils' place in the "tripartite" regime of knowledge transfer, research and teaching

14 The basic university infrastructure for liaising with users and for exploitation of ipr and expertise should be provided by the Funding Councils, with detailed management of these resting with the universities, who should then be accountable for the long-term deployment of these funds.

15 The Research Councils have a responsibility to encourage the exploitation of research that they have funded, for example through collaborative projects. The Teaching Company Scheme (TCS) has been successful in the past in transferring knowledge to small firms and in training the TCS fellows. Similarly the LINK scheme has been instrumental in bringing together academe and industry. However, while improvements have been made in recent years, the responsiveness of these schemes must be constantly monitored so as to keep up with the rapidly changing requirements of the commercial world. It is also important to ensure that the quality of the research supported through such schemes is of the highest quality.

d) the optimum top-level governance of the Councils

16 Potentially, the formal arrangement of DGRC and a Chairman and Chief Executive for each Council appears appropriate for managing the individual responsibilities of the Research Councils. However, further work is required to develop the capacity to manage the overall national research policy across all of the Councils. The top-level corporate function needs strengthening. A possible model is for the DGRC to be the Chairman, bringing together the Research Council Chairmen and Chief Executives in a corporate board empowered to develop the overall strategy for the Science Budget and to manage the overall science budget portfolio.

17 The discussion on the original concept of an "Expert Committee" to assist the DGRC was flawed because of the emphasis on advising on detailed subject requirements rather than on the overall national strategy. Consideration should be given to bringing to the corporate board the expertise of a senior academic scientist with a broad perspective and a main board member from the industrial or commercial sector. The Research Council chairmen already bring in private sector expertise, but at least one independent additional member with commercial experience is, we believe, essential. The presidents of the national academies, and learned and professional societies may also have a role to play.

e) the optimum structure of the Councils

18 While there are clearly problems at the boundaries of the Research Councils, we do not believe that these would be any easier to handle within a single Research Council. A single Council would in our opinion be too large and unwieldy, and hence difficult to manage. Furthermore, subject divisions naturally evolve leading to boundary problems even within the structure of a single Council.

19 The Review may wish to consider boundary changes between the six Councils, but major changes to the boundaries should only be undertaken where these would simplify the likely long-term requirements of science and bring substantial benefits to the scientific community.

f) promoting *cross-Council working and working across the sciences and arts/humanities*

20 An illustration of a boundary problem is that of bioengineering and biomaterials. These areas clearly benefit from being associated with EPSRC in that the Council can bring to bear its engineering and physical sciences expertise, which is not available in MRC. On the other hand, EPSRC has neither the expertise nor the necessary contacts with the NHS and DoH to judge clinical need, nor does it have experience of the organisation of clinical trials. This is an area where better joint working between MRC and EPSRC brings together their strengths, would be highly beneficial. Another potential area for co-operation is to bring to bear experience from within the BBSRC (and MRC) communities to some of the genomic and other molecular biological issues within NERC and EPSRC.

21 We are aware of a range of *ad-hoc* cross council initiatives designed to overcome particular boundary and cross council issues. Some of these are directed at very specific issues, such as the BBSRC/NERC initiative on gene flow in plants and microorganisms, and the EPSRC/MRC discipline-hopping programme. As there will always be boundary problems, we believe that the corporate system must be able to identify and respond to such issues rapidly, and must ensure that there is appropriate publicity for new initiatives. It may be appropriate to have both standard and non-standard formats for such initiatives, but care must be taken to ensure that they are not too bureaucratic.

22 Interaction across academia has increased, with the Research Councils supporting research in arts and humanities departments. We believe that the time is now right to bring the Arts and Humanities Research Board (AHRB) into the Research Council structure, and ways should be found of overcoming any statutory barriers while waiting for the legislation to be amended.

23 The AHRB funds should be transferred to the Science Budget, and then ring fenced for a two year period until new arrangements have been put in place that are capable of determining the correct balance across the system.

g) *respective roles of the Councils and of OST, and optimum working arrangements in areas of joint responsibility*

24 The role of the OST is to determine and deliver the overall science budget support for the science base and to ensure that the Research Councils and other funded bodies are making cost effective use of their allocated funds, within the broad guidelines determined by Ministers. In line with present policy, we agree that it is not OST's responsibility to micro-manage the Research Councils or to second-guess them on their detailed decisions on research support.

25 While locating OST, and in particular the DGRC, in DTI, has some administrative advantages, it is important to recognise that the Science Budget is a national resource, equally relevant to many other Departments and not just to support DTI's areas of responsibilities. The Society will be monitoring the position of OST within the new Departmental arrangements. We consider that it is valuable for the DGRC and the Chief Scientific Adviser to be co-located. It is important for the DGRC to retain his/her right of access direct to Ministers and to Parliament through the Select Committees on cross-Council issues. Similarly, the Chief Executives and Chairmen, who are appointed by Ministers, should continue to have access to them on specific Council business.

26 The required overall corporate functions should include:

i. Identifying the national strategy for research, in terms of broad guidelines for research , the career development of researchers, and interaction with users and the general public.
ii. Determining the required overall science portfolio to advance the national strategy.
iii. Making the corporate case for the level of the science budget.
iv. Preparing advice to the Secretary of State on the allocation of resources to the Councils.
v. Reporting formally, and informally, on the use made of those resources; this necessitates having information available on a compatible basis across the Councils (eg an OST Annual Report or in an extended version of the annual Science Engineering and Technology Statistics).
vi. Evaluating the effectiveness of the Research Councils' portfolios in taking forward the national strategy, and of the national strategy itself.
vii. Ensuring the cost effectiveness of the science base.

27 The delivery of these functions requires close co-operation between OST and the Research Councils, and much of the detailed corporate work is best done within the Councils themselves. However, this may mean greater standardisation of support systems such as finance, particularly those that feed in information into corporate management and those that interface with the scientific community.

28 The Quinquennial Review working group needs to draw up at least an outline scheme as to how these objectives can be achieved. This could build on the existing monthly meetings of the DGRC with the Chief Executives of the Councils, with perhaps a full meeting including the Chairmen and any other non-executive members (see A(d)above) twice a year. It is for the Chief Executives to ensure that the necessary commitment to corporate activities is taken forward by their staff.

B – priorities and decision-making

a) management of the "national research portfolio" supported through the science budget

29 A pre-requisite for the formulation of an effective national science strategy is a comprehensive description of the existing portfolio. We have attempted to bring together information from each of the Councils' websites and their published documentation. While these sources are generally of a high standard and provide a good description of the programmes of each Council, they are not compiled on a consistent basis across the various Councils, and even in some fairly basic areas – such as support for PhD studentships - it is difficult to obtain a pan-Council view of the situation. It is also difficult to find on a consistent basis Research Councils' support to individual universities and other bodies. OST should ensure that such information can easily be accessed on a consistent basis and make such information available in an annual report on the overall Science Budget funded programme or by expanding the science base chapter of SET statistics.

30 As we indicated in Section A, we believe that the overall OST/ Research Council arrangements do need to be improved to ensure satisfactory management of the "national research portfolio". Such management may be easier to accomplish with new or expanding areas such as the new priorities of genomics, e-science and basic technology (eg nanotechnology and sustainable energy). The highest priority, however, remains that of ensuring the long-term health and vitality of the science base. With the rapidly developing international standards, this means maintaining the UK research effort at the vanguard of world-class research.

31 The large population of the UK, coupled with its diverse needs, mean that we cannot afford to specialise in just a few areas of science. On the other hand, even the US cannot be at the forefront in every area of research. In the UK context, an internationally competitive presence should be maintained in at least some areas of all major disciplines. This allows the maintenance of expertise across a wide front, and enables relatively quick movement to emerging priority problems in areas where the UK may not currently be at the forefront of research.

b) methodology for setting priorities:

- ***in preparing proposals for Spending Reviews;***
- ***in allocating funds between Councils following a Spending Review;***
- ***in allocating funds within a Council;***
- ***and for ensuring that the following are addressed systematically in decision-making:***
    - ***strategic and basic research needs;***
    - ***equipment provision as well as provision of researchers;***
    - ***need for large capital facilities***

32 The DGRC, in conjunction with the chairmen and CEOs of the Councils as a corporate board, needs to develop the arrangements for establishing and advancing future national research strategies, which can then feed into the Spending Review. After receiving the budget for the spending review period, the board should aid the DGRC in his task of advising the Secretary of State on the allocation of funds to the individual Councils. The DGRC and corporate board should also take the lead in the preparation of broad guidance for the use of allocated funds, but it must be for the Councils themselves to take decisions on the detailed funding, including the balance between basic and strategic research in their areas of responsibility.

33 The overall arrangements within the dual support system must be such that there are no perverse incentives to employ researchers at the expense of equipment. This is true both for the use of block funding and also the proposals for Research Council grants. In the case of the Funding Council block grants, the level of funding associated with category A staff compared with technicians or capital facilities is a disincentive to maintaining a well-found laboratory.

34 Although in the past there has been much discussion of the basic/strategic/applied research balance, our view is that the distinctions are largely artificial and the real test must be concerned with excellence of the research. As stated in Aa (1) we believe that excellence is best achieved through the responsive mode although we recognise that some directed mode funding is required in some areas.

35 There are two main circumstances in which the Research Councils may wish to encourage work in particular areas. First, the Councils may identify a specific need for fundamental research to increase the UK's capacity in a new field, or in an established field with long-term commercial or public sector service potential, and second, in order to "catch up" in new and emerging fields. In both circumstances, the Research Councils may wish to initiate new targeted funding schemes at the expense of support for other areas. Such a decision necessitates wide consultation at both the national and international levels. Such directed programmes, particularly where the motivation is to catch up rapidly on a lead elsewhere in the world, have to be phased in carefully to ensure that the quality of science is not compromised. In the past some attempts to expand capacity in a particular area have been carried out without due regard to the level of available expertise within the science

base or the speed with which researchers can move into new areas. In cases where the requirement is to try to catch up with developments occurring elsewhere, this has to be handled creatively and might require the recruitment of high quality scientists from outside the UK.

36 When considering areas for which support has to be concomitantly reduced, the Councils should ensure that this does not result in the residual level of expertise falling below basic requirements. An example highlighted in the Phillips Report was the decision in the early 1980s to reduce expenditure on animal health, and more recently concern over the extent of the decline in whole organism biology research, including taxonomy.

37 As indicated in the Society's response to stage 1 of the Quinquennial Review, the arrangements for the provision of large scale capital facilities leave a great deal to be desired. It may be that the revised arrangements for CCLRC will improve the situation, but the responsiveness of the system must be radically improved to ensure that UK researchers can continue to have access to state of the art equipment. Certainly the delay in providing state-of-the-art synchrotron facilities will continue to disadvantage UK researchers in the short term.

38 A Public-Private Partnership (PPP) approach has some advantages, including cost sharing and (possibly) better management of the facilities, but these advantages may be illusory if they result in late delivery of a facility that is a compromise and does not meet fully the needs of the UK science base. Clearly, lessons need to be learnt from the difficulties in implementing the new Diamond synchrotron radiation source project.

39 Within its budget, the Particle Physics and Astronomy Research Council has developed a long-term capital programme, reconciling and prioritising the large and fluctuating capital requirements of its two major constituencies. That Council's funding is dominated by the building and running of large capital facilities, mainly in association with international partners, and its major short-term funding uncertainty – associated with currency fluctuations - is borne by the Science Budget as a whole. Capital facilities, although important are not a dominant component of the other Councils' budgets. Hence the financing of new facilities, eg a radiation source, an earth observation satellite or a research vessel can cause problems because of their intermittent nature. A centralised capital budget for these Councils might help and also ensure that satisfactory forward planning is part of the national strategy for research. We understand that a "road map" for the UK's needs for capital investment is in active preparation and we strongly support this initiative.

c) processes for establishing an optimum balance between extramural spend in HEIs and in other e.g. international facilities and intramural spend in institutes etc.

40 Research Councils have responsibility for:

i. The maintenance of the science base within the universities

ii. Maintaining centres of expertise in their own institutes and units, freestanding institutes and institutes and centres owned and operated by universities

iii. Maintaining national and international facilities– it is for the relevant Council or Councils to judge the priority for the resources that are required for these. A long-term capital programme should ease the fluctuations in the cash flow required for such facilities. In considering the cost-benefit of such major national facilities it is important to consider the lifetime costs, not just the capital cost. The potential liabilities in decommissioning such facilities must also be considered. There is a danger that the funding arrangements for facilities that span the responsibilities of more than one Council, such as CCLRC, can result in significant under funding, both in terms of running costs and the essential maintenance of the capital base.

iv. Surveys and monitoring– there is always a problem brigading survey activity with research since, unlike facilities, the science base is not usually the majority beneficiary of such activities. Nevertheless, some survey activities best undertaken within the science base by staff who are also able to undertake research, and are in close contact with others involved with related basic research. Where appropriate some work could be placed within the university community. The level of output from such activities needs to be determined by the Council and DGRC in consultation with the relevant Government Departments.

41 On the first two of these, it is for the relevant Council to determine the balance between intra-mural and extra mural spending, bearing in mind the points raised in A(b). However, the system has to be aware and take account of the possible conflicts of interest where Councils have their own institutes, and the tensions between them.

d) the operation of peer review

42 We re-iterate the Society's view that the over-riding criterion for support should be the quality of the research and of the participating researchers, and that peer review should remain a fundamental part

of the decision making process. Nevertheless, there are major issues concerning peer review that need to be taken into account in the Research Councils' systems:

- An important potential shortcoming of peer review is conservatism, either actual or expected. It may be difficult to obtain support for proposed research that challenges received wisdom or current fashion. Even a perception of such treatment can inhibit researchers from putting forward their most radical ideas, and may also discourage established researchers from moving into new fields where they have no track record. The Research Councils and their peer review bodies should be alive to such problems, and efforts made to reassure the community. We believe that the Research Councils have already taken appropriate steps to ensure that they give due attention to the needs of young researchers. We also welcome the reviews undertaken by the Councils and the Wellcome Trust into the needs of women researchers, including the particular problem of those returning to research from a career break.

- Another related issue is that it is important to ensure neutrality, possibly by using peer reviewers from other countries who are not competing for funds. However, it is important to ensure that international referees who are unfamiliar with the Research Council processes receive adequate induction. A further possibility in fields where the numbers of experts is small is to include peer reviewers who are familiar with the general area, in addition to the experts in the particular specialism.

- It is important for peer review committees and referee pools to reflect broadly the relevant scientific community with respect to age, gender and geography.

- The process should be open and transparent, both in the operation of the panels, with full disclosures of any conflict of interest, and in the role, if any, of Research Council administrative staff in the selection process.

- If possible it is important to speed up the peer review process, but not at the expense of good decision-making and the points made above.

- The need to make better use of the valuable time of the scientific community – the Councils, particularly the EPSRC, have experimented in this area and the Quinquennial Review should explore best practice, for example, in relation to openness of procedures, methods for improving the choice of appropriate referees, and the composition of peer review panels. In particular, whether the arrangements rely too heavily on the administrative use of key words in selections, and which might benefit from informed personal review by senior members of the scientific community. It is worth investigating whether anything further can be learnt from peer review arrangements outside the UK, such as within the US NIH, NSF and DOE.

43 In many of these points it is important to have open reporting of the current situation, such as the age, gender and geographic mix of committees, and for example on the critical time paths of the peer review process. Such reporting should be on a consistent basis across all of the Councils.

C – relations between the Research Councils and their clients

a) the effectiveness of the Research Councils' engagement with their clients:

44 The Councils have made a good start in this area since 1994. Particular issues are listed below.

- ***the research communities;***

45 The Councils have made a serious effort with meetings, booklets and their web sites to keep their research communities informed about the programmes and priorities within their areas of responsibilities. Problems may have arisen at some of the boundaries, and the Councils need to do more over common applications forms, and the provision of more consistent reporting of financial and other information.

- ***users of Council-funded research and postgraduates including industry, commerce, Government and public services;***

46 The Councils have made progress here, but we have identified problems within certain specialist areas, for example the biomedical programmes within EPSRC.

47 As part of their overall decision-making process, Councils should take due note of, but should not be driven by, the research priorities of Government Departments. We are concerned about the reduction in Departmental R&D budgets. It is important that other Departments do not expect the Research Councils to fund research that should be resourced from their own budgets. Furthermore, this reduction in R&D spending could also have an adverse effect on knowledge transfer from the science base, and again the Science Budget should not be expected to compensate for this. We are particularly concerned about the fall in DTI (including energy) and MAFF R&D budgets, which in real terms in 1999-2000 were only 31% and 70% of the levels in 1986-87 respectively.

- ***other research funders/providers;***

48 There may be some scope for better coordination with the HE Funding Councils over graduate education, taught MSc and the taught component of PhD courses. For example, it is generally agreed that PhD students benefit from continued formal education in areas related to, but not specifically on, their chosen field of study. Some smaller departments might find the provision of such courses difficult and an approach based on the consortia principle (which would involve both the Research Councils and the Funding Councils) might well be appropriate. Major problem of inconsistency also arise over support of students for masters courses that are the fourth year of an undergraduate course and free standing masters taken after a three-year undergraduate course.

49 The Research Councils must coordinate their activities with the NHS and the charities (especially the Wellcome Trust). Otherwise it is unlikely that the overall research activity will be optimal, with

excessive overlap in some areas and others not covered by any funding. These problems are especially likely to arise in the bio-medical area. Coordination with BBSRC is also required in the fields covered by the Scottish Executive's SERAD Department.

b) standards of service provided by the Councils, including transparency and openness of Council operations, peer review and Council and committee membership, and transaction costs associated with Council operations for clients and for the Councils;

50 Possible problems include holding together teams that are funded on a succession of short-term grants if delays arise in obtaining further grant funding. This problem can be exacerbated by the trend towards larger grants unless there are suitable arrangements for ensuring continuity for projects that are being carried forward.

51 The practice adopted by the peer review committee varies considerably from Council to Council, and we have made some comments on this under section 3(d). While we have not detected any major concerns about the membership or methodology of peer review committees, improvements could be made in some areas, including reporting of statistics, and ensuring that membership broadly reflects the research community. We welcome the Research Councils' initiative in opening up communications with the Universities and learned societies with regard to Committee membership and we would support the continuation and indeed expansion of such consultations.

c. *role of Research Councils in postgraduate and post-doctoral training and the career structure for researchers.*

52 We welcome the recent increase in student stipends. While we see a number of potential problems arising from the EPSRC moves to increase flexibility, this is a valuable experiment in giving greater freedom to the universities. It is important that the new EPSRC scheme is kept under review.

53 We are concerned about the serious problem of attracting UK PhD students in some subjects, in particular where attractive job opportunities are available after first-degree.

54 The need for taught components of PhD courses is increasing and we welcome the trends in this area. It is important for the Research Councils and the Funding Councils to consider formally the best way that the taught components should be funded.

55 The review should explore whether concentration on completion rates continues to be appropriate. At the time of its introduction, there were problems with the standard of supervision of PhD students at some universities. The Councils and the universities have now made major progress in this area and

a concentration on numerical completion rates may be causing supervisors to devise projects with less intellectual challenge in order to meet satisfactory completion rates and thus avoid financial sanctions. Nevertheless, some tension remains between the Research Councils' emphasis on research training and the Universities' emphasis on evidence of original work.

d. The General Public

56 One of the clients not explicitly mentioned in this section of the OST document, but included within the Research Councils missions, is the general public. The Councils have made important contributions to making their science accessible and informing the science debate. However, the scope for greater collaboration and coordination with the more general activities of OST, and the other major players in science communications is considerable. In this respect the reconstituted COPUS might be invited to play a major role.

57 The Research Councils' prime responsibility in this area is to support, encourage and help their grant holders, fellows and students to make the science more accessible and to engage in debate on ethical and social issues connected with or arising from their research. We welcome the initiatives taken by the Councils to provide communications training for their students and grant holders.

D – Councils' management and internal processes

58 While it is important that Councils should not waste resources on unnecessary bureaucracy and hence work towards maximising the support for high quality of research, they must ensure that the funds are allocated to the highest quality research and training. The administration must also be adequate to provide the necessary openness and transparency to stakeholders, and to support the Councils' contribution to the science in society debate.

a) defining operational strategy; b) setting objectives and targets, including outcomes; and c) managing and monitoring performance

59 The setting of objectives and targets for the national strategy, individual Council's programmes, and for administration is important, but it is essential not to lose sight of the crucial importance of ensuring that the research and training activities are of the highest quality. Great care must be taken in choosing proxy numerical targets that these do not encourage perverse changes of behaviour designed to meet such targets, irrespective of degradation of quality and other desirable outputs and outcomes that are not being measured.

d) efficiency of management, administrative and support functions;

60 While certain higher-level functions have to be carried out separately, the possibility that more of the support functions are carried out centrally within the Councils requires exploration. However, any centralised arrangements must be sensitive to the particular needs of each council and its community, and must not seek the lowest common denominator.

e) effective use of new technology, notably IT

61 Standards across the Councils must be defined, and where possible to use existing fully supported systems rather than creating completely new ones. That being said, the cautionary remarks in the previous paragraphs apply perhaps with more force on computerised systems.

f) cross-Council processes at interface with clients

62 When research is required to deal with two or more Councils, it may be an advantage for one Council to become the 'lead' point of contact. The choice of the lead Council could, in our view, be made by the individual researcher.