Efficiency Unit scrutiny of public sector research establishments : oral and written evidence / Science and Technology Select Committee.

HOUSE OF LORDS SESSION 1994–95

SELECT COMMITTEE ON
SCIENCE AND TECHNOLOGY

EFFICIENCY UNIT SCRUTINY OF PUBLIC SECTOR RESEARCH ESTABLISHMENTS

ORAL AND WRITTEN EVIDENCE

Ordered to be printed 29 November 1994

LONDON: HMSO
£18.00 net

(HL Paper 5–II)

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CALL FOR EVIDENCE

The House of Lords Select Committee on Science and Technology have appointed a Sub-Committee, under the chairmanship of the Earl of Selborne, to enquire into the Efficiency Unit Scrutiny of Public Sector Research Establishments. It is intended that the enquiry will result in a report on behalf of the House of Lords Select Committee on Science and Technology to be submitted to the Office of Public Service and Science consultation exercise.

The Sub-Committee invite written submissions on any matters relevant to the Efficiency Unit's report for the Cabinet Office[1] and in particular on the following questions. It may be that not all the questions will be relevant to your concerns, in which case you should be selective.

1. Has the case for conducting the Efficiency Unit's review been justified?
2. Are you satisfied with the basis of the choice of the 53 establishments examined by the Scrutiny team? Should any of the 53 have been excluded, and should any others have been included?
3. Are you satisfied with the way that the review was conducted?
4. Will the proposals in the report:
   — aid efficiency?
   — strengthen the effective provision of scientific expertise and advice?
   — contribute to wealth creation and to the quality of life?

   Explain your answers, and, if necessary, note how the above aims could be furthered.
5. How will the proposals in the report affect the statutory duties of the research establishments?
6. How suitable are the report's proposals for privatisation?
7. What are the advantages and disadvantages of the following proposals in the report?
   — (Nos. 3 and 4) transfer of PSREs to universities or closer formal links between PSREs and universities;
   — (No. 10) the two models for organisational structures;
   — (No. 38) the Directors of Rationalisation.
8. The report notes (paragraph 4.6) that rationalisation hitherto "has tended to take place on a departmental or individual Research Council basis" and suggests that this tendency be discontinued. How appropriate are cross-departmental and/or Department/Research Council rationalisations?
9. The report notes (paragraph 3.16) that Treasury guidelines place obstacles in the way of privatisation and limit the scope for selling services outside Government. To what extent is this the case? Will the situation alter if PSREs are transferred to or linked with universities? Should the guidelines be altered, and, if so, how?
10. What should be the role of the Office of Science and Technology in the light of the review?
11. Are there any other proposals which you feel the review should have made?

INSTRUCTIONS TO WITNESSES

Evidence should be submitted to me, the Clerk of Sub-Committee II (Efficiency Unit Scrutiny of Public Sector Research Establishments), Select Committee on Science and Technology, House of Lords, London, SW1A OPW by Monday 26 September. No evidence received after that date will be accepted for consideration by the Committee. Evidence must be clearly typed or printed on one side of A4 paper and take the form of an original copy. It would assist the Sub-Committee if evidence were prefaced with an executive summary or precis which also indicated your interest in the Efficiency Unit's review. It would be extremely helpful if evidence could also be submitted on a disk, preferably as Word Perfect 5.1 or 5.0, or if this is not possible, as a DOS text file or ASCII. (Disks will be returned to sender.) Evidence becomes the property of the Committee,

[1] *Multi-Departmental Scrutiny of Public Sector Research Establishments*, HMSO, 1994, £15.95.

and may be printed. You may publicise your evidence between submission and publication, but in doing so you must indicate that it was prepared for the Committee.

On the basis of written evidence received the Committee will invite some witnesses to give oral evidence.

The Committee would be grateful to receive copies of witnesses' submissions to the Office of Science and Technology's consultation exercise on the Efficiency Unit report. This will not be treated as evidence to the Committee.

You may follow the progress of the enquiry from the Weekly Agenda of House of Lords Select Committees. This is free, and may be ordered from Miss Sue Hunt, Committee Office, House of Lords, London SW1A OPW, telephone 071 219 5791.

Further information from the Clerk, David Batt, House of Lords, London SW1A OPW, telephone 071 219 6075; direct line 071 219 3055; fax 071 219 6715.

MEMBERSHIP OF SUB-COMMITTEE II

L. Chorley
L. Craig of Radley
B. Hilton of Eggardon
L. Howie of Troon
B. Platt of Writtle
L. Redesdale
L. Renwick
E. Selborne (Chairman)

1st August 1994

MINUTES OF EVIDENCE

TAKEN BEFORE THE SELECT COMMITTEE ON SCIENCE AND TECHNOLOGY

THURSDAY 13 OCTOBER 1994

Present:

Craig of Radley, L.	Renwick, L.
Hilton of Eggardon, B.	Selborne, E. (Chairman)
Howie of Troon, L.	
Platt of Writtle, B.	
Redesdale, L.	White, B.

Memorandum from the Royal Society of Edinburgh

The Royal Society of Edinburgh (RSE) is pleased to respond to the invitation to submit its views on the Scrutiny Review of Public Sector Research Establishments to the House of Lords Select Committee on Science & Technology. The Society has set up a Working Party to advise it on the form of its response to the Government about the Scrutiny Review. Although the findings of the Working Party have not yet been finalised, the responses given below in answer to the questions raised by the Sub-Committee II are based on the evidence gained thus far and have been discussed and approved by Council of the Society.

Before dealing with the specific questions being asked by the Sub-Committee, we wish to make a number of general observations about the Scrutiny Review itself, about the nature of scientific research and the importance of the contributions of public sector research. There are important issues of wide significance and long term national importance that the Scrutiny Review has either ignored or failed to recognise. In particular the Scrutiny does not address the important question of how the quality of the science carried out in the public sector can be ensured. We believe it is important that the report, and particularly the recommendations for structural and organisational change, should be considered in terms of the long term goals of maintaining a strong United Kingdom science base and not simply an attempt to cut costs.

The key objectives for United Kingdom science have been set forth in the Government's White Paper "Realising our Potential"; that is, to produce high quality science output, to support technological advance and thereby promote wealth creation and improve the quality of life. These have nowhere been addressed by the Scrutiny Review, although the terms of reference for the Scrutiny were in effect laid down in the White Paper. *The review has been concerned with the question of overlap and duplication of effort and hence the potential for cost saving, which is understandable, but there should also be concern about the effectiveness with which public funding should be used to secure the very best science*. The national strategy for science and its exploitation set out as national policy in the White Paper is critically dependant on a strong publicly supported science base. It is important therefore to ensure that scientific research in the PSREs is carried out in an environment that ensures creativity and innovation, attracts the most able scientists and leads to high quality science output.

It is fully understood that science supported by public funding must also be responsive to the needs of industry and wealth creation. The White Paper "Realising our Potential" sets out the case for this clearly and points the way forward for ensuring that science, technology and wealth creating industry are brought together more closely. There remains, however, the need to *consider more carefully the relationship between scientific output and wealth creation*. In this respect, the synergy between basic, long-term research as a contribution to knowledge on the one hand, and strategic and applied research relevant to the needs of present and future industries on the other, is crucially important. The Scrutiny Review has failed to make this connection. Its preoccupation with the perceived overlap of research conducted in PSREs and the apparent opportunities for rationalisation and cost-saving completely overlooks the more important issues of how to improve the effectiveness of their scientific output and their contribution to the United Kingdom science base.

The Scrutiny Review's approach in identifying overlap of research activities as a reason for rationalisation of PSREs is over-simplistic. It fails to recognise that scientific discovery and the advance of scientific knowledge is assisted by and is often dependent on similar work being conducted in other institutions. Scientists work most effectively in an environment which encourages both independent competitiveness and collaboration. Competition is the major driving force for scientific discovery but it does not preclude collaboration. Sharing

resources and overlapping of scientific interests can often escalate the advance of science. The validation of scientific discoveries by independent work in other institutions is again a vitally important part of the scientific process. Rather than simply seek to remove overlap, the Scrutiny should have been concerned about the robustness of the public sector system and its ability to deliver high quality science.

It is surprising that the Scrutiny Review makes no reference to the internationalisation of science and in particular the role of United Kingdom science in the European Union. In economic terms the availability of international funding, both public and private is becoming increasingly important. It should be just as important that the PSREs should have access to such funding as do the Universities. Care should be taken, therefore, to ensure that rationalisation at a national level, attractive though that might be in terms of immediate cost-saving, does not lead in the long-term to ineffectiveness on the part of PSREs in competing for such funding.

A great many changes have occurred in the public sector area in the past decade, the most recent being the radical reorganisation of the Research Council structure which is only now being implemented. The Scrutiny does not appear to have recognised this. *We believe there needs to be a period of consolidation and appraisal of the effectiveness of these various innovations before embarking on further radical changes such as are now being proposed.* It is surprising that no such appraisal was attempted by the Scrutiny Review. We believe this would have revealed quite dramatic changes; more effective management, increased collaboration between PSREs and with the Universities, leading to progressive rationalisation of a more natural kind and a greater readiness to undertake contract research alongside basic science with correspondingly decreased dependence on public funding. A period of consolidation at this stage would do much to encourage further development of these healthy trends and re-build confidence in the institutions, many of which are world-renowned in their fields. Further change now of a more radical nature is likely to very seriously damage the science base and further exacerbate the break-up of effective research groups, which appears to be happening already in some areas where forced rationalisation has taken place.

It is against this background that we now deal with the specific questions raised by the Select Committee.

Q1. *Has the case for conducting Efficiency Unit's review been justified?*

For the reasons outlined above, the review is flawed in concept and execution. The strategy and purpose of any proposals should have been decided first. For example, there appears to have been no consideration of the likely adverse effects of the review proposals on fundamental research and educational training. Most of the proposed privatisations have already been identified in Departmental reviews and the inclusion of ADAS, which was already well on the way to the private sector, was obvious. *It is difficult to escape the conviction that the driving motivation behind the review was to achieve savings in Government expenditure.*

The review has seriously damaged the morale of scientists already hemmed in by other political and financial constraints, has jeopardised existing and prospective collaborative links with industry and could undermine existing good relations between institutes and Universities. Continual investigation and uncertainty does little for United Kingdom science.

Q.2 *Are you satisfied with the basis of the choice of the 53 establishments examined by the Scrutiny Team? Should any of the 53 have been excluded, and should any others have been included?*

The basis for the selection of establishments was not clear. Why, for instance were only some of the MRC Units included? The lack of any clear rationale for the choice simply reinforces the view that the key strategic objectives for the review should have been decided in advance.

Q.3 *Are you satisfied with the way that the review was conducted?*

The time taken to carry out the Scrutiny, and the relatively long period of consultation has meant that there has been uncertainty over the status and future ownership of PSREs for a considerable time. On the other hand, the belief that the review could cover such a large part of the PSRE system on the given time-scale illustrates a lack of understanding of the area. The Scrutiny was under-resourced for such a major task. The report reveals a serious lack of real understanding of the nature of scientific research. From the evidence we have been given, the discussions held with the Directors of the PSREs reviewed and such site visits as were undertaken were too brief to ensure that the Scrutiny was well informed. *The report is prejudiced by lack of any argument for ruling out the* status quo *or any recognition of the beneficial changes that have been introduced in the system in recent years and which can be expected to continue.* It can only be concluded that the brief for the Scrutiny Review was to recommend radical change.

Q4. *Will the proposals in the report:*
— aid efficiency?
—strengthen the effective provision of scientific expertise and advice?
— contribute to wealth creation and quality of life?

These important questions are nowhere discussed in the report. There would however appear to be a simplistic acceptance by the Scrutiny team that there is scope for rationalisation across the PSREs and an accompanying cost saving. Although there may be some scope for rationalisation across Departments, it would not necessarily lead to greater efficiency. The report gives no indication as to whether the Scrutiny even attempted to look at the cost effectiveness of their proposals.

The review did not address: (a) how United Kingdom research should be effectively carried out or (b) how Intellectual Property should be effectively transferred to United Kingdom industry and "wealth created". The review dealt solely with the consequences of recent and proposed reductions in funding and the consequential restructuring. Initiatives for improving scientific excellence and technology interaction have to be devolved to individual research project leaders; it is only they who can deliver.

The question of how scientific research contributes to wealth creation is a complex one, not addressed by the Scrutiny. However, a strong science base must be essential if United Kingdom industry is to be properly supported technologically in economic growth. As indicated already there is a very serious risk that the proposals in the report would damage the science base. *There can be no doubt that in the fields of agriculture and food production and in the physical environment, research pursued in many of the PSREs under review contributes directly to the quality of life. This must be seen as a public good and should be funded accordingly.*

Q5. *How will the proposals in the report affect the statutory duties of the research establishments?*

The Report does not draw distinctions between the different kinds of PSRE. Some are concerned with strategic research, others supply confidential and sometimes controversial information to Ministers and are controlled directly by Departments which will presumably want to retain that control.

Both Models 1 and 2 would create tensions between the scientific missions and statutory duties of these PSREs. In connection with any proposals for privatisation or similar status, the provision of statutory support services by contract would be cumbersome and probably unacceptable.

Q6. *How suitable are the report's proposals for privatisation?*

As the report indicates, the few cases where privatisation may be beneficial have already been identified and action in that direction is under way. In considering the suitability of privatisation, there should be proper concern about the future of scientific research of a long-term nature and the importance of research of national strategic importance. Commercial secrecy, short-termism, and immediate relevance of research which is inevitable in the private sector, does little to strengthen the science base. The identification of the Universities as potential private sector owners is merely a fudge and it is far from clear whether this would be a satisfactory way forward.

Q7. *What are the advantages and disadvantages of the following proposals in the report?*
— (Nos. 3 & 4) transfer of PSREs to Universities or closer formal links between PSREs and Universities;
— (No. 10) the two models for organisational structures;
— (No. 38) the Directors of Rationalisation.

(Nos. 3 & 4)

Many of the institutes would welcome closer links with Universities but transfer or incorporation should be considered with care. In a good many cases, particularly for the larger establishments, incorporation could be inefficient. There would be loss of autonomy which could lead to less effective control of research. A further factor would be the difficulty that Universities in the current financial climate would have in entering into long-term commitments. There could be advantage in the merger of smaller institutes especially where the scientific activities are narrowly defined and fit in with those of particular university departments. In the case of those PSREs concerned with large-scale experiments and long-term monitoring programmes, it would be difficult for Universities to provide the appropriate environment alongside their normal structures.

(No. 10) *Model 1*

This model is the least attractive, especially in the Scottish context. It is based on an old-fashioned division of science into market sectors, or commodities. It would detract from the horizontal integration currently taking place between the Scottish PSREs. The model would cut across functional areas of science and would create large unwieldy organisations which could well have an inhibiting effect on collaborative relationships.

The model goes against the modern trends in business for removing rather than creating layers of management. The model seems to generate an organisational barrier between terrestrial/freshwater and marine studies at a time when these divisions demand considerable overlap. Scotland's reputation and achievements in biological sciences are internationally recognised—they span Universities, research institutes, and related organisations that interact readily and effectively. The proposed realignment in the model would not improve that symbiotic relationship and could inflict real damage on the biological science base in Scotland.

Model 2

This has more attractive elements. It does, however, suggest the transfer of a number of institutes to the Scottish Office which are currently funded from other sources. Some establishments, especially in the medical area, would oppose such a transfer on the grounds that they are part of a national network and any separation might damage their prestige and international recognition. Model 2 does recognise however the benefit of horizontal integration of sometimes widely differing institutes which have reasonable geographic proximity. This has created opportunities for collaboration between institutes and with Universities. Such developments leading to collaboration in high quality science are to be welcomed. In the Scottish context, the creation of CHABOS (Committee of Heads of Agricultural and Biological Organisations in Scotland) is an example of an evolving arrangement. Such an arrangement could be expanded to bring in other differently funded institutes in a concordat to agree priorities and to identify opportunities for collaboration for sharing resources and gaining other benefits of economies of scale. A further advantage of CHABOS and further development of it is the integration of science from fundamental research to practical application by industry and links with education. Moreover, environmental research is integrated with agricultural and fisheries research, and animal production with plant production.

The disadvantage of Model 2 is that the geographical grouping of institutes weakens the contributions from the Scottish PSREs at United Kingdom and international levels. Equally, such a grouping could weaken the inflow into Scotland. There is also the risk that this concentration of funding of the PSREs and the Universities by the Scottish Office would be restrictive as far as access to other sources of public funding is concerned.

The proposals throughout the report and its recommendations for the introduction of newly created chief executives seem unnecessary and undesirable. The imposition of this additional tier of management would cut across reporting lines to governing bodies and sponsoring departments and would inhibit the autonomy of institutes' activity.

(No. 38)

There is almost no support for this idea. There must be more effective ways of encouraging rationalisation, where it is appropriate.

Q8. *How appropriate are cross-departmental and/or Department/Research Council rationalisations?*

The Society has no comment to make on this question.

Q9. *To what extent do Treasury guidelines place obstacles in the way of privatisation and limit the scope for selling services outside Government? Will the situation alter if PSREs are transferred to or linked with Universities? Should the guidelines be altered, and, if so, how?*

"Annuality" and "additionality" are the major problems. Entrepreneurial activities involving private sector approaches such as "risk capital" and "loss-leaders" are not allowable under Treasury rules. Complex Departmental financial reporting systems and personnel restrictions create difficulties and reduce flexibility. The use of external income is constrained by rules concerning fundholding and public accountability. *In a period where there is reduction of public expenditure and constraints on civil service staffing levels, there needs to be greater freedom in the use of non-public sector income. Relaxation in this connection would greatly improve incentive for seeking external funding through research contracts and selling services*. There would be benefits in this arising from incorporation of the PSREs in Universities but such benefits would have to be measured against the disadvantages referred to in paragraph 7.

Q10. *What should be the role of the Office of Science and Technology in the light of the review?*

The role of the OST should be to develop overall strategies for scientific research without imposing too much central control. In the light of the review, the role of the OST should be to ensure that the national objectives set out in the White Paper are pursued by ensuring that any reorganisation of the PSREs will maintain their contributions to good science. The OST should identify ways of encouraging inter-institute collaboration and increasing links with Universities and the private sector.

The main danger is the OST imposing too much central control on scientific research. Intellectual endeavours and creativity emanate from the laboratory bench; the imposition of central control of research strategy and targets could stifle research.

Q11. *Are there any other proposals which you feel should have been made?*

We believe there is a case for building on the healthy development of greater collaboration between institutes and closer links with Universities already under way; that is not to say that we would simply support the status quo. *There is scope for putting in place systems which would encourage such developments leading to collaboration and rationalisation of effort where appropriate and mutually beneficial.* The experience in Scotland following the creation of CHABOS and the setting up of the Joint Consultative Council with representatives from the Scottish Office, the Research Councils, industry and the PSREs leads us to believe that this could form the basis to create similar groupings elsewhere in the United Kingdom. The move to open up funding from the SOAFD and the Research Councils for competition on a project basis to all research institutions, PSREs, Universities throughout the United Kingdom with priority given to proposals for collaborative work is an important incentive. It is important that the PSREs should be able to compete for funding in this more open competition on a level playing field and this will require reciprocal arrangements. We are also aware of the benefits of other forms of concordat such as that concerned with fisheries research involving the PSREs as contractors and the Government Departments as customers. We see no reason why these arrangements should not be expanded. *This would be a progressive approach achieving the more attractive elements of option 2 without the disruptiveness of the proposals made by the review.*

Examination of witnesses

Professor BRUCE PROUDFOOT, FRSE, General Secretary, Dr WILLIAM DUNCAN, Executive Secretary, and Professor DAVID INGRAM, FRSE, The Royal Society of Edinburgh, called in and examined.

Chairman

1. Could I, Professor Proudfoot and colleagues, welcome you and could I say to you, and perhaps others who will be giving evidence later will take note of this, that we are unfortunately constrained by time today and I do apologise, but we may have to move rather briskly. It is partly an effect of the parliamentary timetable and also the timetable of the period of consultation for this Scrutiny paper that we do have a very limited period in which to take a lot of evidence and to write a report, so I hope you will bear with us. If, at the end of our discussions with you, you feel that there are other points you would have wished to make over and above the written evidence you have already kindly supplied, do please send it to us. Now, Professor, would you like to introduce your colleagues and is there anything you would like to say thereafter by way of introduction?

(Professor Proudfoot) Thank you, my Lord Chairman. On my left is Professor David Ingram who is the Regius Keeper (Director) of the Royal Botanic Garden in Edinburgh and on my right Dr William Duncan who is the Executive Secretary of the Royal Society of Edinburgh. We are pleased, as a Society, to have been asked for our comments on the Efficiency Unit's scrutiny of the public sector research establishments. We regret that our President, Dr Tom Johnson, is unable to be with us because of illness and Professor John Forty, who chaired a working party of the Society looking at the Scrutiny Review, is unable to be present because of family bereavement. The Society set up a working party to examine the Scrutiny Review and we have taken oral and written evidence from a number of people, including some of the research directors, both those immediately involved in Scotland and others. The working party prepared responses to your requests earlier and these were endorsed by Council. The working party will finish its deliberations later this month and there is a special meeting of Council at the end of October which will then forward the Society's response as a whole to the Office of Science and Technology, and we will be very pleased to send that to you.

2. Thank you very much. Shall we start with one or two of the questions? We have, I think, given you an indication of some of the questions we might ask, though I do warn you that we are unlikely to stick rigorously to that list, but I think I will start, if I might, with the first question which is if you would give your primary piece of advice to the Minister as to what he should do about this Efficiency Unit report. What is your overall view about its contribution?

(Professor Proudfoot) Well, I think the first point we would want to make is that the public sector research establishments play a major role in British science and, in keeping with the recommendations of the White Paper *Realising our Potential*, we would advise that it is essential to maintain the quality of science of these research establishments, and the question then is the extent to which the Efficiency Unit report is likely to do this. We think that the report has in fact provided no real evidence that their proposals would indeed enhance the quality of British science. Our suggestion is, and the evidence to us suggests, that in fact most of the proposals are likely to lead to a decline in the quality and the quantity of science that is being carried out by the research establishments. The establishments, as you will know, my Lord Chairman, have been subject to reorganisation, examination and scrutiny over a number of years and we feel there is now need for a clear statement as to the status of the establishments over the immediate future in order for them to get on with their major task of producing good science and good advice to government, some of which of course is a statutory obligation, and to give good advice to the private sector, in other words, to become involved in those processes of Technology

[Chairman *Contd*]

Foresight that the Office of Science and Technology has set up.

3. I think it would be particularly helpful if you could tell us something about the Scottish system. We have had helpful evidence from the Scottish Office which describes the unique strengths of the Scottish system in the past as having been chiefly in the close integration of basic, strategic and applied research with industrial needs and applications. Would you, first of all, comment on what you see as the strengths of the Scottish system and, secondly, whether you feel that that in any way gives you a preference as to how you would wish any reorganisation, if any, to be conducted in Scotland?

(Professor Proudfoot) I wonder if I could ask Professor Ingram to say something about this because he has been very much involved in CHABOS which he will say something about.

(Professor Ingram) My Lord Chairman, my experience is of the biological and agricultural research sector in Scotland, not of research in general, and I think I would use the biological and agricultural research sector as an example. There is, as you may be aware, a very close link of an informal nature between the research institutes in Scotland and the universities and the industrial establishments. As evidence of that one can quote, for example, that all of the directors of the Biological and Agricultural Research Establishments in Scotland hold honourary university appointments in at least one university, often in two and sometimes in three. But there has been evolving in Scotland over the last nine to twelve months a slightly more formalised and certainly more effective means of facilitating communication between research organisations and of facilitating what I believe to be a better co-ordination of effort to prevent overlap and to prevent waste. The key to this is an organisation called CHABOS: the Committee of Heads of Agricultural and Biological Organisations in Scotland. What has been done is that the heads of all of the institutes under the care of the Scottish Office Agriculture and Fisheries Department have come together to prepare a joint science policy document, a research statement, in other words. In addition, all have agreed that their budgets should be top-sliced by 10 per cent in the first instance and by an increasing amount as time develops, and that this top-sliced budget should be put together into a flexible fund which is there to be bid for by the member institutions of CHABOS itself and others. In addition, and working alongside CHABOS, is a committee which is of the administrative heads of each of the institutions, the purpose of which is to facilitate the exchange of ideas and again to avoid overlap in the development of the administrative infrastructure for the scientific work. Finally, there is a joint consultative committee which includes the heads of the institutions, and, in addition, includes representatives of outside organisations, universities, industry and so on, so that they can feed into CHABOS and hear from CHABOS new ideas and thoughts and developments which again can lead to a better co-ordination of activities. On the face of it one would imagine this would be an extremely cumbersome organisation and extremely time-wasting; in fact, my experience is quite the opposite. Having been a very reluctant member of this group at the outset, I am now quite convinced that it is working very well and that it is enabling directors of institutes to work together and co-ordinate their activities in increasingly effective ways. The whole thing is evolving. It has been in existence for only a very short time, but my sense is that it will evolve into an ever stronger and stronger system that will knit together the institutions carrying out public funded research in Scotland, but without severing their very vital and important links to the rest of the United Kingdom. In other words, it is not isolating the Scottish institutions; in fact, it is allowing them to be a part of the United Kingdom community, as they rightly should be, but at the same time locally it is bringing together organisations which might better collaborate and work in unison and in concert.

4. Just for the sake of clarity, so we can all be clear, could you tell us within CHABOS how many of the 53 public sector research establishments are members; and, secondly, and perhaps more important, how many of the government research establishments, that is the departmental establishments which was the original objective of the Scrutiny Exercise?

(Professor Ingram) The number, my Lord Chairman, is relatively small at the moment; but this is a growing and evolving organisation. There are only two government institutions, namely, the Scottish Agricultural Science Agency and the Fisheries Laboratory; there are then the Scottish Office Agricultural and Biological Research Institutes, and the Royal Botanic Garden, Edinburgh and the Scottish Agricultural College, which I believe comes to nine in total. There is scope for others to join CHABOS, such as the Forestry Commission, Scottish Natural Heritage and so on. These, of course, are administered by other departments, and so the grouping would have to be one of consensus, in other words a voluntary coming together, with the agreement of the institutions and their sponsoring departments. All this is enshrined in this document, my Lord. It is the Policy for Science and Technology for the Scottish Office, Agriculture and Fisheries Department; it has Ministerial approval, indeed it is Ministerial policy. A copy of this document can be left with the Committee if you require it.

Baroness White

5. You did not answer the question, because we were asking how many of the 53 organisations included in this Efficiency Scrutiny are relevant.

(Professor Ingram) I am so sorry, I was imprecise in my answer. My answer should be seven, plus two that were not.

Chairman

6. Of which five would be described as "research institutes", and two as "government research

[Chairman *Contd*]

establishments", plus the Royal Botanic Garden Edinburgh and the Scottish Agricultural College?

(Professor Ingram) That is correct, yes.

Lord Craig of Radley

7. I would like to relate your experience with CHABOS to two particular aspects of the Scrutiny Review Report. One was the point which both you and others touched on about concerns over overlap of research activities. In your written evidence to us you make the point that the Scrutiny Review fails to recognise that scientific discovery and the advance of science and technology is assisted by and is often dependent upon similar work being conducted in other institutions. My question there is: do those other institutions have to be nationally funded, or can they not be elsewhere in the world, other research institutions overseas? The second point, if I could just put it on the table, is how you relate your CHABOS experience to the proposal that there might be directors of rationalisation as a way of pulling together the various research institutes and establishments?

(Professor Ingram) May I ask Professor Proudfoot to discuss the question of overlap and to begin to discuss the question of directors of rationalisation.

(Professor Proudfoot) I think the question of overlap is somewhat at a tangent, because I think the Scrutiny Review in one sense does not address the way in which science really works. Because science depends on independent replication; therefore different bodies are going to be working in the same area and in that sense there may well be overlap but that is in fact the way in which science advances. There may well be some supposed overlap of facilities but in fact institutes cannot carry on their work unless they have the appropriate equipment. There is no evidence in the Scrutiny Review that equipment or facilities are being under-used. Indeed, talking to directors and others, our impression is that where institutes do have the same facilities then these facilities are being fully used in order to carry out science. That is one of the important arguments about this question of overlap. If we take the Research Council Institutes, the Research Councils themselves are very careful in allocating funds to individual grant holders as well as to the Institutes to ensure that there is the maximum use of equipment for research, and that the equipment is available both locally and nationally.

8. To follow up my point that there are institutes elsewhere in the world which may be operating in a similar field, to what extent could they be used rather than national institutes and establishments where there is overlap, or believed to be overlap, in order to enhance, in the way that you have outlined, the advancement of science?

(Professor Proudfoot) I think we would not want in fact to abandon all kinds of science that are going on in the United Kingdom simply because it was going on elsewhere, surely? This competition between institutes, both within countries and between countries, is the hallmark of modern science.

(Professor Ingram) Could I clarify one point. I think there is a distinction between duplication and overlap. Overlap is essential if there is to be a seamless network, if I can mix the metaphors, of collaboration between institutions——

Chairman

9. Networks can overlap.

(Professor Ingram) ——within the United Kingdom and overseas. Duplication is an entirely different matter, and of course scientists themselves are very anxious not to duplicate one another's work because of course it is counterproductive to the progression of their own careers. Duplication only becomes necessary to validate scientific advances. A basic principle of science is that new advances should be replicated. This means that there must be a certain amount of replication both within the United Kingdom and overseas.

Baroness White

10. Do you need a new layer of management called directors of rationalisation, as recommended by the Scrutiny Committee?

(Professor Proudfoot) The answer, briefly, is, no. We do not in fact want any further layers of administration; we want the money to be devoted to science.

Lord Howie of Troon

11. I would like to go back, Professor Proudfoot, to your answer to the first question posed by my Lord Chairman, and that is what would be your primary piece of advice to the Minister. I noticed, looking at your written evidence, that in your answer to question 1, you say that "the review is flawed in concept and execution". In your answer to question 3, you say that the "report reveals a serious lack of real understanding of the nature of scientific research". In your answer to question 4, you remark that "these important questions are nowhere discussed in the report". Do I assume from that that your piece of advice to the Minister would be that he ignores the report?

(Professor Proudfoot) Essentially, yes, but going back to the point I made, to what extent is there anything in the report which will advance the quality of British science? As far as we can see, some of the real questions in terms of quality and most effective use of public funds have not been addressed in the report.

12. So you think in fact that this report had a totally different objective?

(Professor Proudfoot) I think it did. I think it addressed, if you like, the narrow financial side of the Public Sector Research Establishments without asking how effectively this money was being used.

13. And you would say that was the wrong question to ask?

[Lord Howie of Troon *Contd*]

(Professor Proudfoot) I think that is the wrong question.

Baroness Hilton of Eggardon

14. Could I return to Professor Ingram and CHABOS? Did I understand you to say that bureaucratic constraints meant that the Forestry Commission could not join CHABOS because that seems to me to be quite idiotic when science is a matter of collaboration?

(Professor Ingram) No, I did not actually, and I did not mean to imply that either. What I did say was that the Forestry Commission was administered by a different department. This initiative began in the Scottish Office Agricultural and Fisheries Department. It is an initiative, I believe, that can and will grow, expand and develop and I am certain that the Forestry Commission and other research institutions will be drawn into CHABOS as it evolves into the future, if they wish it. I do not believe that administrative arrangements will be any barrier to co-operation.

15. You seemed to be saying that they could not join unless they were ordered to do so.

(Professor Ingram) No.

16. Surely it would be a matter of invitation and encouragement?

(Professor Ingram) It would. I did not even mean to imply that they would only join if they were ordered to, but quite the opposite. I believe that all research institutions in Scotland will see the great strength of the working of CHABOS. Might I add one last thing, which I think is very important, however. CHABOS has set up a flexible fund which is available to all institutions within the United Kingdom to put up proposals for research projects to be funded from it. There is no reciprocal arrangement for the Scottish Office research institutes to bid for money from BBSRC and NERC and so on and I think that it is very important in the future that reciprocal arrangements should be put in place.

Chairman

17. Perhaps we could follow up that point because there is one specific recommendation, is there not, in the recommendations that the research councils should in principle be willing to accept applications for funding for researchers in any sectors? Do I understand, Professor Ingram, from what you said that you would support that recommendation?

(Professor Ingram) I am sorry to ask you to repeat that question, my Lord Chairman, but I want to be sure that I give you the answer that I believe to be the right one.

18. Within the document there is a recommendation, and I am sorry but I do not think I can give you chapter and verse at this stage, but I could in a moment, and it asks that the research councils should in principle in future be willing to accept applications for funding for researchers in any sector. In other words, I believe at the moment it would be true to say that the BBSRC would be unlikely to fund work in an institute at the moment sponsored, for example, by the Scottish Office.

(Professor Ingram) Then the answer to your question is yes. I believe that all flexible funding should be open to competition from all publicly funded institutions within the United Kingdom.

19. Does it follow, therefore, that you would be willing to see the Scottish Office funding work at Rothamsted, for example?

(Professor Ingram) This is possible already, my Lord. This is already possible. The flexible fund exists and the research projects to be funded from the flexible fund have been advertised nationally and all institutions within the United Kingdom may apply for that money, so yes, that possibility exists. The decisions on the allocation of the first tranche of flexible fund money have not yet been made, so I do not know whether the Scottish Office will be funding work at Rothamsted, but it is quite possible that it might.

20. Just for the record, the Clerk reminds me that it was recommendation 27, so I think you have affirmed your agreement to recommendation 27 at least.

(Professor Ingram) Not really; without rereading the recommendation, my Lord Chairman, I do not wish to commit myself.

Baroness Platt of Writtle

21. I was interested in your initiative of CHABOS which obviously you would be keen to expand and it is clearly working well and capable of development. The report recommends the geographical separation which you say weakens the contribution of Scottish PSREs both at the United Kingdom and international level. Obviously part of the backing of CHABOS has come because Scotland is small and people know each other probably. How would you, had you been carrying out this survey, marry, as it were, the idea of Scotland having an independent existence, but at the same time being part of the United Kingdom from the point of view of international collaboration?

(Professor Proudfoot) If I could answer that, as well as this collaboration between Scottish institutions, we already have the Scottish institutions collaborating, for example, in the fisheries area with opposite numbers in England and also of course across the North Sea.

Baroness White

22. Do you get as far as Wales?

(Professor Proudfoot) Absolutely. If I could just, my Lord Chairman, carry on a little bit with this argument and say that this is the kind of flexible arrangement that we see which is capable of development in a way that a kind of centralised reorganisation, such as Model 2, would not promote.

Lord Craig of Radley

23. Could we turn to Treasury guidelines. I note that in your evidence you say that there is a need

[Lord Craig of Radley *Contd*]

for greater freedom in the use of non-public sector income and clearly this is constrained by the current Treasury guidelines. I notice in the recommendations of the Scrutiny Review that they say that the Treasury should issue and disseminate fresh guidelines. I would be very interested to know what views you have on the current guidance and where they can be improved.

(Professor Proudfoot) I wonder if I could ask Professor Ingram who has direct experience of this to answer that question.

(Professor Ingram) Well, I think, my Lord, in the time available it would be extremely difficult and perhaps dangerous for me to go into too much detail, but the Treasury guidelines of course do impose considerable constraints on the way that directors can operate in trying to capitalise on their existing resources and one might cite as an example the fact that in my own institution, the Royal Botanic Garden Edinburgh, we have set up a business, the Botanics Trading Company, which is now raising a significant sum of money to support the work of the Royal Botanic Garden Edinburgh. However, in getting that business established, because of Treasury guidelines, it has been impossible to borrow money on the open market and it has been impossible to go to the Scottish Tourist Board for help, despite the fact that the business is directly benefitting tourism in Scotland. Treasury rules, whilst on the one hand inviting me to look to new ways of raising income for the Garden, which I am doing, at the same time are tying my hands behind my back and preventing me from operating in a truly commercial way to achieve the best advantage for the Garden and, therefore, in the end, for the Treasury. Does that answer your question?

24. Yes, well, it highlights the fact that the Scrutiny Review's recommendations that the Treasury guidelines should be looked at again is a very important point if you and others are to make greater use of the opportunities which come your way.

(Professor Ingram) Well, there are tremendous opportunities there for us and the more freedom we have to operate in the real world, I think the more we can make of those opportunities.

(Professor Proudfoot) Many of the Scottish establishments with whom we have been in contact report to us that they now are in fact generating substantial sums without the public sector. The argument applies very widely, I think.

Chairman

25. If I could go back to the inception of this Scrutiny Exercise. It was forecast that it would happen in the White Paper, *Realising our Potential*, and we understand that as part of the exercise of reviewing allocation management and use of government expenditure on science and technology ministers decided that an efficiency scrutiny would be appropriate not only of the GRE's, which I think was the original idea, but also related laboratories in the research council sector. I think we understand it is perfectly reasonable for ministers, if they wish, to conduct such a review of allocation of management resources. You made the point, which I think we entirely understand, that if this is to be undertaken it must be wider than just economic efficiency; it must also take into account the effectiveness of the science. Nevertheless, if we could just question you as to whether you are really quite so certain that there has never been any spare capacity within Scotland, as I think you have hinted, and whether you feel that from time to time government should not be entitled to conduct an exercise in order to test whether the allocation of resources is adequate. I accept that many of the research councils, and certainly the Scottish Office, over the last few years have been through a painful and very expensive exercise in reallocating their resources, presumably because they felt it was necessary. The Scottish Office, as we understand from evidence, has made a number of redeployments and restructurings. Would it be your perception therefore that this has also been taking place within departmental research establishments; or do you feel that they were in any way lagging behind the initiatives taking place within the research institutes and the Scottish Office? I will ask you here to wear your United Kingdom hat because, clearly, departmental GREs are wider than just those in Scotland.

(Professor Proudfoot) I am not really sure that we can answer the question fully. We are obviously most knowledgeable about the Scottish situation and we have not really looked at the departmental situation within the rest of the United Kingdom. Most of the departmental research establishments scarcely operate in Scotland. They may in fact have some general responsibilities within Scotland as they do throughout the United Kingdom, but they must actually have institutions within Scotland.[1]

26. Surely, if you give the advice that the minister should ignore this report it is important you have a view as to whether it was needed or not. It was, as I remind you again, initiated in order that the government could compare the facilities available to the GREs with research institutes to see whether there was any better way of deploying resources?

(Professor Proudfoot) I think our general impression is that some of these institutions, as you have remarked yourself, have been subject to a variety of scrutinies over the last ten years or thereabouts, so we can only observe from the outside. We get the impression that in fact there has been so much reorganisation, indeed one might almost call it disorganisation at the moment, that this is an appropriate time to rein back from further reorganisation and see how effective these changes are being, which you have said yourself have been very expensive.

(Professor Ingram) My Lord Chairman, I would

[1]The Royal Society of Edinburgh note further to their evidence that "Exceptions would be the Torry Research Station, now part of CSL, and the National Engineering Laboratory, now a DTI agency. There are of course a number of Research Council Institutes in Scotland, as well as out-stations of other Institutes. The Forestry Commission with a Great Britain remit is based in Scotland and has research laboratories in both Scotland and England".

[Chairman *Contd*]

like to add that the report seems to identify very little evidence of duplication, and that is our impression too. As I said before, there is a distinction to be drawn between duplication and overlap. Overlap, I believe, is an essential part of the collaborative process. It is not to be inferred as meaning duplication of activity. To support Professor Proudfoot's statement and to pick up your question about the government's right to scrutinise its establishments, of course government has every right to scrutinise its establishments; it has exercised that right on a number of occasions recently. A great deal of duplication has been eliminated and now the time has come to allow public funded research to settle down and try to deliver the goods (to put it crudely) that it very much wishes to do.

27. In your written evidence you helpfully commented on both the two models which are referred to as preferred options. Would you like to comment further on which of those two you could most easily live with? I know that you are not entirely happy with either.

(Professor Proudfoot) Model 1 we feel really has few merits; in fact, from the scientific point of view, it cuts across many of the functioning areas of science, and that I think would be a great mistake since these establishments are primarily scientific establishments. Model 2 has some more favourable features in it, in as much as it does suggest certain elements of collaboration, such as we have described in the Scottish situation. I have already made the comment, my Lord Chairman, that in fact we do not see a centrally imposed reorganisation to have much merit at all. We think, in fact, there is likely to be much better progress, much more effective science carried out, by the voluntary growth of organisations like CHABOS. Similarly, there are already in existence, bodies such as joint fishery committees, looking at problems across the United Kingdom as a whole.

28. You have told us about CHABOS and how effective it is in bringing together institutes with common interests, and with a geographical interest in this case. Is there, do you feel, a wider application for this principle within the United Kingdom as a whole?

(Professor Proudfoot) I would have thought so, yes. As well as the geographical commonality, there can also be major areas of science which are in common to different institutions. In Scotland we have a very close proximity of research institutions. Many of the institutions are, if you like, locally resource based because part of their function is to give advice to the Scottish Office in terms of management of the Scottish land resource or marine resources, for example. There are other areas of science where similar levels of collaboration can be carried out on a scientific basis rather than on the resource base.

(Professor Ingram) My Lord Chairman, to add to that, one of the advantages of CHABOS is not only that it brings together institutions with a common geographical interest, as you yourself pointed out at the beginning, but in addition facilitates the situation where those institutions can work together in collaborating with institutions within England, Wales, Ireland and into Europe as well. It is not only drawing together institutions with a common geographical interest in an introverted way, but I think it is enabling them to look outwards at the same time and to work more effectively together to that end.

29. Thank you very much. I fear, as I warned you, that we are running out of time, and it seems we have only had a very short time in which to question you. Unless any of my colleagues have a point they particularly wish to make before we conclude this part of the Enquiry, I will say thank you very much for joining us. Is there anything, finally, you wish to add?

(Professor Proudfoot) I think a point worth making is that there has been a very close collaboration between many of the research institutions in Scotland and the Scottish universities. The lengthy discussions that have been going on about reorganisation have in fact absorbed a lot of time and energy not just in research establishments but, for example, in the universities; and suggestions which have been made about the universities taking over some of these institutions has again diverted many people from their primary activities as scientists.

30. Thank you very much. We are most grateful to you, once more, for joining us today.

(Professor Ingram) My Lord Chairman, should I deposit this document?

31. The Clerk will relieve you of it.

(Professor Ingram) It does not describe CHABOS as such. CHABOS assumed its name after that document was published, but the structure is the same.

Chairman] Thank you very much.

Further Memorandum from the Royal Society of Edinburgh

1. *Recommendation 27*

We believe it is proper to open up funding from the Research Councils to competition on a project basis to all research institutions and PSREs, in addition to the Universities. The Scottish Office is making its *flexible* funding open to all in these sectors, and we feel that the Research Councils should do likewise, in order to create a level playing field. However, we would not go as far as is recommended in the Scrutiny Report to advocate that Research Councils' funding should be available on the same basis to the private sectors. As we understand it, European Community open competition rules would mean that if Research Councils' funds were opened up to all-comers within the United Kingdom, then this would apply to similar bodies throughout the European Community. Clearly this could have far reaching consequences, especially for the British Universities, but the overall effects would depend on the extent to which other countries within the European Union opened their research funds to open competition.

2. *Role of the Secretary of State for Scotland*

As Q.10 originally set by the Select Committee dealt specifically with the role of the Office of Science and Technology, our response to that question did not refer specifically to the role of the Secretary of State for Scotland in the formulation of United Kingdom and Scottish science policies nor to the role of other Ministers. It would be clear from the evidence given by the RSE and others, that there is a distinct Scottish dimension. The Secretary of State for Scotland plays an important part in establishing science policy through his membership of the relevant Cabinet Committee—EDS. We understand the Secretary of State for Scotland attaches considerable importance to his membership of this Committee. It is he who sets policies for many aspects of R&D and S&T in Scotland. Indeed, his role is wider than that of many other Ministers, in view of his responsibilities for higher education, industrial policy and others affecting science and technology. The Secretary of State for Scotland takes an active role in the overall formulation of S&T policy at a United Kingdom level, and our response to the question about the role of OST was not intended to imply that science policy should be determined by OST alone. Indeed, as we have stressed, we are opposed to the imposition of too much central control. However, we would also hope that Ministers who are responsible for Public Sector Research Establishments would take cognisance of the findings of the appropriate Technology Foresight Panels in setting policies for R&D and S&T.

Examination of witnesses

Sir FRANCIS GRAHAM-SMITH, SecRS, Physical Secretary, Sir DAVIS SMITH, FRS, President of Wolfson College, Oxford, and Dr PETER COLLINS, Head of Science Advice Section, The Royal Society, called in and examined.

Chairman

32. Well, Sir Francis, Sir David and Dr Collins, thank you for joining us today. I know that you are well known to the Committee and we are grateful to you for joining us once more. Sir Francis, is there anything you would like to say by way of preliminary observations on this exercise?

(Sir Francis Graham-Smith) Thank you, my Lord Chairman. The Royal Society, which exists to support science and scientists and to represent them, has already been concerned with this matter, made a public statement on 16 March and held an open discussion on 6 July. We feel that the Scrutiny Report has not addressed policy questions with which we are very much concerned, and I will give you one example: how do you combine the requirements to address short-term problems and to build up long-term expertise and capability? Other principles which we think should have been addressed may emerge during our discussion. Thank you.

33. So you feel that this science has not been taken into consideration?

(Sir Francis Graham-Smith) Exactly so.

34. Now, could I say, first of all, how grateful some Members of the Committee were to be able to join you on 6 July. Unfortunately, as it turned out, that was before the report had been published, but, nevertheless, it was a useful induction into some of the issues which have proved to have appeared. Could we ask you, first of all, whether you feel that the scope of the Scrutiny exercise, that is 53 establishments, some of which belong to or are sponsored by research councils and some of which are departmental, was logical, rational or wise?

(Sir Francis Graham-Smith) My Lord Chairman, we do not see the logic of the selection that was made and perhaps that is a sufficient answer.

(Sir David Smith) My Lord Chairman, may I make a supplementary specific case. I see absolutely no logic in considering the strategy for marine research if you exclude the very major investment in the Southampton Oceanographic Centre (it does not make any sense to me) which is large amounts of public money.

35. Well now, of course the marine sector under the first of the proposals was to go to Scotland on the basis, I think, that Scotland has a large interest

[Chairman *Contd*]

in fisheries and also the marine environment. Am I correct that that is the recommendation?

(Sir David Smith) That is the recommendation in the report.

36. Perhaps this preempts the question as to whether you would find that division to be one which you find defensible?

(Sir David Smith) I wonder if I could answer, my Lord Chairman, in the following way: it is as if one is being asked what punishment would you accept for a crime you did not commit, flogging or hanging, and I would choose flogging which is the geographically-based solution. If I say it is a crime which was not committed, it is because I do believe that the Natural Environment Research Council is the best trustee of strategy for marine science. One model divides the land from the seas, which does not make a lot of sense because of the interface between the land and the seas, and the other model divides the seas north of the border from the seas south of the border, which does not make a great deal of sense. You need a national strategy. I am just taking this as one example of a larger problem which I see in the report and I feel that the present arrangement, which was not allowed in the Scrutiny because the *status quo* was not acceptable, is in fact the best.

37. But clearly what you are saying is that it was the wrong question in the first place?

(Sir David Smith) Yes.

38. What would have been the right question?

(Sir David Smith) The question, as you yourself, my Lord Chairman, pointed out to the previous group, really emanates from the White Paper *Realising our Potential*, and the White Paper, which had very wide support and I am broadly supportive of the aims of the White Paper, did draw attention to the need for greater efficiency and in fact, as you might expect, better value for money in terms of scientific research and so on. I think also the Government has an absolute right to follow that to determine the efficiency. I think it would have been better to have begun with a deeper analysis of the current situation before assuming a solution which is privatisation.

39. Would that, therefore, have been a review of all publicly-funded research establishments?

(Sir David Smith) May I, my Lord Chairman, give one example. One of the proposals in the recommendations is to consider transfers or encourage transfers to universities and to call that privatisation. Perhaps I should explain that until March I was Principal of the University of Edinburgh. That is just an accounting device and it is still consuming public money, under whatever head you are doing it. In this report the universities were not consulted, as far as I am aware, not even for a single day. From my former perspective as the Principal of the University of Edinburgh, and I look at the institutes in this report, the university had relationships with Roslin which was mentioned in the report, with the Reproductive Biology Unit, which was included in the report, but not included in this report is the largest MRC group which is human genetics, and it makes it a sort of crazy way to look at it from a university's point of view. Also the universities themselves have their own strategies and their own ways of doing things. None of this was included and I could not clearly see either for myself by inference or in black and white in the report the logic behind the choice of these particular 53 institutions.

40. I wonder if I could press you, Sir David, because I think this is really the central issue. Given that, as you agree and as we would all, I think, have to agree, the Government is quite entitled when it wishes to look at the allocation of resources for its departmental research establishments, and given that its choice appears to have been illogical, particularly including some departmental establishments but not all, some research institutes but not all, and not consulting the universities, either the review could have been a much wider one (and you hinted that in the area of marine sciences it might have been wise before coming to a recommendation to have consulted at least Southampton University and perhaps other universities, in which case it would have been a very much larger exercise and taken much longer), or it could have reverted to what I suspect was the original concept which was to look at specific departmental research establishments and to look to see whether they were being fully utilised and efficiently managed or whether other linkages might have been more appropriate. That would have been a rather smaller exercise and perhaps would not necessarily have involved all the research institutes which have been involved as part of the numbers making up 53. Which of those two options would you feel most happy with?

(Sir David Smith) I have never been in government, so it is a little difficult for me to give an informed answer, but I certainly believe that simply restricting yourself to the government research establishments would have been one way. Another way would have been, as it were, a pilot project on one sector and to look at how one sector does. If you look at the one sector, you do get the full involvement and variety of organisations not included in this report. If you do it the Government's way, I accept that has merit and logic. One problem which this exercise has created is a further—I do not know what the right word is—destabilisation of attitudes and morale within the institutes that are being scrutinised because they have been the subject of, they feel, an enormous quantity of scrutiny and some of us think this has been to the detriment of the scientific output.

Baroness Platt of Writtle

41. I was disappointed when I read this report, and I have not read it all, I must say, that on page one of *Realising our Potential* it says very firmly that science, engineering and technology contributed greatly to wealth creation and also to the quality of life of the nation through medical research and so on, and I would have liked to have seen that on page

[Baroness Platt of Writtle *Contd*]

one of this report. Nevertheless, when one reads the Efficiency Unit letter and, as my Lord Chairman said, the Government is funding it and they want as far as possible to put that funding of £2 billion to output rather than overheads and to get the best possible science, and I would add engineering of course, and best value for money. With that in mind, how would you have started out?

(Sir Francis Graham-Smith) May I start, my Lord Chairman, by saying we have formulated two more objectives, policy questions, which should have been addressed, and this is what we are talking about. How do you manage PSREs so as to optimise the health of United Kingdom science, of which they constitute a major part? The second one is: how do you position PSREs so that they can contribute most effectively in the long run to wealth creation and quality of life? What incentives can be devised to encourage better performance in this regard? These are very broadly expressed but we do think they are at the centre of this whole Enquiry.

Lord Renwick

42. Do Sir Francis and Sir David think perhaps in Scotland, as we heard earlier from the preceding evidence, that an organisation like CHABOS almost answered the queries and was developed for the reason that perhaps the Enquiry was made in the first place? The evidence we heard, I thought, showed that the recommendations from the Efficiency Scrutiny need not take place, and that the development and evolution of CHABOS throughout the other 52 establishments would be adequate to perform the functions and have the effect in a different way, an inside way, that any recommendations made by the Efficiency Scrutiny Unit would have achieved.

(Sir Francis Graham-Smith) My personal view is very much along those lines—that organisations such as CHABOS emerge from the bottom up, rather than being an imposed organisation which attempts to place 53 diverse institutions under one organiser, which would seem to us to present only another layer of management. I would not, however, want to suggest that a single organisation, CHABOS or its equivalent south of the border, would solve the whole problem because there is such a diversity of establishments to be considered. I believe that we should allow or encourage associations between establishments and universities, the precise formula for which is difficult. There are many such associations informally already, but to suggest that PSREs should be constantly reviewed so that they can be attached to universities raises all sorts of organisational and financial difficulties. Sir David might want to add to that answer.

(Sir David Smith) I think from my experience of working in Scotland that CHABOS is an excellent organisation and we hope it will develop for a country the size of Scotland, with much of its population in the central belt and just one or two centres like Aberdeen which are easily accessible. I agree entirely with you that CHABOS would have been just as well operating in Scotland. South of the border, geographically in a much larger population, such things work less easily. I would add, in terms of analysing the problem, that pressures that have been placed on publicly funded institutions over recent years have been considerable. They are developing all the time their efforts to improve their income from non-governmental sources. It would seem to me to have been more sensible to examine the effects of these pressures, and whether some of them could have been reduced or increased, rather than go into wholesale recommendation here.

43. If I could just say, presumably the technology and structures like Super Janet do join up to universities. May I ask whether the research establishments are joined to Super Janet, and that makes the cross-flow of co-ordination (rather than the overlap) easier?

(Sir Francis Graham-Smith) My Lord Chairman, I think you will find that much of the initiative for developing and using these networks comes from within the establishments. The answer is certainly, yes. The National Physical Laboratory I know has been much involved in this. I think if you go amongst any scientific community you will find that they are naturally adhering and using Super Janet.

Chairman

44. I wonder if I could come back to the proposed models, the two options. I think you have already made it clear that you do not like either very much. One seeks to apportion research establishments to parents on a market sector basis, and the other on a geographic basis. If we could talk about the geographic basis for a moment, would you accept that what is happening in Scotland—with sponsorship of research institutes, research establishments, extension services and much else all by one sponsoring department—is in practice an effective geographical arrangement at the moment for co-ordinating research, development and much else?

(Sir David Smith) I have two kinds of answer to that. I think for Scotland it is very effective. I have worked in Scotland (and perhaps I should say I am President of the Scottish Association of Marine Science and am aware of some of the marine interactions) and I think there is a lot of potential which could be developed still further but is very satisfactory for Scotland. However, there are issues which are very much United Kingdom issues where, if you go down that route of just allowing Scotland to manage the Scottish sector, you have to integrate with the national strategy and not duplicate resources, or be careful about the consequences of duplicating, the very thing that this report is trying to avoid.

Chairman

45. Do I understand you to say that the Scottish system probably works well but *because* it can relate to a United Kingdom research infrastructure which

[Chairman *Contd*]

is not so geographically distinct? The research councils clearly are not dependent on national boundaries.

(Sir David Smith) I think it works well for Scotland; for the United Kingdom I am less convinced that a geographical basis is efficient.

46. The Scottish system is not exportable elsewhere?

(Sir David Smith) My experience of working in Scotland and England is going back to the question of a small country with a dense population in the central belt. You find in Scotland great ease of access to senior civil servants and ministers of a kind which is not possible in England.

47. If I could just pursue this point because I think it is quite important. My instinct is to leave well alone if it is working—do not fix it unless it is broken. Is there a problem? You have come from Scotland recently, given that it operates, slightly anomalously perhaps compared with the rest of the United Kingdom, with the Scottish Office responsible for the full range of funding from science based funds right through to the most applied sector, is it a model which you would wish to see discontinued, or could it continue happily?

(Sir David Smith) I think it could well continue and develop further; but I think there are important areas which have more of a United Kingdom significance. I would certainly consider the marine environment one way. I do not see that it would be efficient to separate the Scottish marine environment and the other marine environments.

Baroness White

48. Might I speak up again for Wales. We have a marine environment too; we also have agricultural problems as you, my Lord Chairman, are very well aware. We have hardly any government research institutions in Wales. On the other hand, we have some very active and successful university departments, including those concerned with the marine environment. Where would we come in either Model 1 or Model 2?

(Sir David Smith) My Lord Chairman, this is why I go back to thinking that the status quo is actually a better solution. Where, in Wales, you have the distinguished Department of Oceanography in Bangor, and you have some good marine work in Swansea, the Natural Environmental Research Council, which stands above this, can integrate the research in Bangor and make sure there is not a duplication with the major oceanographic centre in Southampton.

Chairman

49. Following Lady White's point, and I think this applies to England and Wales equally, the proposals under Model 1 suggest that there should be a fairly arbitrary apportionment of parenthood between either a research council or a Ministry. Again do I understand from what you have said that you would on the whole favour the *status quo* where some of the work is done within the university sector at the moment, some is done by MAFF and some is done by the Welsh Office?

(Sir David Smith) I would not favour the *status quo* in a fossilised sense, my Lord Chairman. I would favour starting with the *status quo* and seeing how this could be improved, without assuming that the solution of privatisation is the only way to improve that.

Lord Craig of Radley

50. I think it would probably be common ground that there is a crucial difference to be drawn between the conduct of a research project and the impartial assessment of its policy implications. I would be very interested in your views on the current Scrutiny Review's attempt to address that problem. Do you think it has been met adequately?

(Sir David Smith) I am afraid my simple answer says no. There is no analysis that I can read of the conduct of research and I have read the report and I cannot remember anything about assessment.

(Sir Francis Graham-Smith) I hesitated, my Lord Chairman, because I do not like to be saying no all the way through and criticising the report, but I am afraid that is the general tenor.

Lord Howie of Troon

51. So you do not think this was a useful exercise?

(Sir Francis Graham-Smith) I am afraid not. It does, however, bring to the fore some of the useful questions, and you may wish to discuss the question about research councils accepting applications for funds, for example. These are questions, we may not agree with what is said in the report, which we do believe should be debated.

Chairman

52. Well, you have mentioned and, just for the sake of completeness, we did ask our previous witnesses what they thought of recommendation 27 and, as I understand it, they were prepared to give that one a fair wind. Are you?

(Sir Francis Graham-Smith) No, my Lord Chairman! We think it is very important to understand what research councils are for. They are meant to sustain research and perhaps to apply research, but they are not there to purchase research and it is, therefore, from our point of view quite wrong for them to try to purchase research from industry and the suggestion seemed to be moving in that direction, that anyone can provide for research for the research councils. There is in fact a fundamental difference between sustaining the national knowledge base and buying particular information for a particular purpose, so although I do not think we should exclude some possible extensions of grants funding beyond the very strictly university surroundings, I think one has to be very cautious about this and we are not very happy with the suggestions of the extensions as they appear in the report.

[Chairman *Contd*]

53. But you have referred to industry. Let me just limit it to the proposal which I think we mentioned to the previous witnesses, that there might be greater freedom, for example, for research councils to support the science base wherever they may find it, and that might be in their own institutes, it might be in universities and of course they support both at the moment, or it might be in other people's research institutes, such as the Scottish Office's. As I understand it, apart from perhaps the money at the margins of the flexibility fund and the like, the Research Councils do not normally fund work in Scottish research institutes, which appears to cause some annoyance, shall I say, north of the border that there is not this freedom to fund in the way that they believe Research Councils can fund elsewhere.

(Sir Francis Graham-Smith) Well, the caution in my reply was largely to do with the possible close associations between the research establishments and universities. I believe the prime job of the research councils is to support research in the universities, but I would not exclude an extension because the universities are, or in many cases are, and often should be, in close collaboration with the research establishments, and I think to make a categoric rule would perhaps be unfortunate.

Baroness Hilton of Eggardon

54. Would you agree that the problem about the purchasing model is that it assumes that the research council or whoever purchasing actually knows what they want in the first place?

(Sir Francis Graham-Smith) Yes.

55. Whereas research should essentially be something which is bottom-up where people have bright ideas at the bottom and they apply for money to fund them?

(Sir Francis Graham-Smith) I think it is fair to say that the remit of the research councils is perhaps a little beyond supporting only bottom-up research. It is quite clear that they are quite properly dividing their resources between bottom-up research and research which has been in some way directed towards a general field. I think that one must be cautious about saying that research councils will only respond and will only look at bottom-up research.

Chairman

56. Could I go back to the linkage with universities? Sir David referred to this earlier and felt that universities, if they were to be encouraged into what I read in the Scrutiny Report as an almost open-bid situation for the government research establishments, are invited to make offers. Do you feel that there are in practice more effective ways to achieve appropriate linkages with the universities?

(Sir David Smith) I think what we have at the moment is a whole range of linkages with the universities, of which total transfer to ownership, as has happened with the Oceanographic Centre at Southampton, is one extreme. The other extreme would be models like so-called case studentships where a university student spends a few months in an institute, and it could be an industry institute, and then there are LINK schemes and a variety of other types of joint research projects. I think it is better to look at the existing situation and to see where this can be improved. Reverting to my former role as Principal of a university, which is mentioned once or twice in this report, if we take the University of Edinburgh and the specific case of the Roslin establishment, there are very good relationships. The Director is a professor of the University, they provide some teaching, students can go there and work, but for the University then to be assigned the responsibility, the whole financial responsibility, I do not think would improve the situation because the aims of the University must be different from the aims of what is now the BBSRC which takes a national view and looks at a national strategy for research, whereas a university tends to look more opportunistically, if I may say so. What it has got which is good it develops, and what is not so good it tends to put on one side, yet what is put on one side is hopefully put somewhere else.

57. As I think we established earlier, the report's original concept was to look at these government research establishments and the research institutes have been brought in, rather to their surprise in some cases, to act as a comparison to see whether there is duplication, but of course within the research institutes, I think I am correct in saying, Sir David, am I not, and within the research councils they do have university departments? Long Ashton Research Station, I believe, is part of a university, is it not?

(Sir David Smith) It is legally part of the University of Bristol, but having, as it happens, been a member of the University of Bristol, I would say it is more a legal situation. There is a certain amount of collaboration, but that degree of collaboration could have happened without it being part of the university and I do not think it is a good model, to be honest.

58. Do you feel that there are any government research establishments which could appropriately be moved into the university sector?

(Sir David Smith) I cannot think of any in my own general field which is agriculture, biology and biomedical.

59. Are there any research establishments which you think the universities would like to make a bid for?

(Sir David Smith) The problem of the university making a bid for a research establishment really concerns the flow of funds into that establishment and the universities look at, for example, what went on in the old days to the Agricultural and Food Research Council where the rationalisations cost £132 million and, is it, 10 to 15 per cent of the Research Council's income now has to be spent on pensions. Universities cannot afford that degree of risk and they have a primary duty of teaching.

[Chairman *Contd*]

Lord Craig of Radley

60. Following up on funding, I would like to turn to the Treasury guidelines. One of the Scrutiny Review recommendations is that the Treasury should disseminate fresh guidance. I wonder if you could help us by giving us any feel for what you believe is wrong with the present guidance?

(Sir David Smith) I personally am not in a very good position because in universities we have somewhat different guidelines. As I compare notes with my colleagues in the government sector, I would say, yes, I do think the Treasury guidelines should be revisited to gain greater efficiency, to be honest.

61. Could you elaborate on that to help?

(Sir David Smith) The restrictions governing the borrowing of money. The successful experience of the majority of universities which are freer to borrow money to put up student residences and act with very shrewd business advice, I think is a good model. I would hate to operate under the annuality that some of my colleagues have to. As I have observed annuality, it is inefficient.

Chairman

62. Would you comment on whether you feel that the Scrutiny Exercise has stimulated a debate in any area which you feel has been productive? You have tended to say that the wrong questions were asked in the first place, but that there are areas which need to be discussed further. Could you identify what those might be?

(Sir Francis Graham-Smith) I fear I would only repeating my former statements in a different form. Perhaps I could just say that the report seems to be about changes in management and ownership, and these issues of management and ownership are inseparable from the issues of mission. The exercise focused on management and ownership is inescapably also addressing the mission of each establishment and conditions under which it is allowed to tackle that mission. I think to us the Scrutiny Report has gone off so much in the wrong direction that it has, if you like, pointed out the necessity of going to the basic mission, and the best way of optimising the resources of the establishments for the sake of science, the quality of life and looking reasonably far into the future. I am afraid those things do not, in a way, stem directly from the report, but the report points out the necessity to go in a different direction.

63. You have made it clear, but let me just confirm that I have got it correct, that you feel clearly what has been missing in this whole exercise is any consideration on the effectiveness of the organisation for the delivery of science?

(Sir Francis Graham-Smith) Yes, and in the long term as well. The Royal Society has been intimately linked with the National Physical Laboratory, at least in the past, and has informally kept in close touch; and we are well aware that the success of the National Physical Laboratory, both nationally and internationally, has depended on its long-term research programme. We are very much concerned that a short-term view of its research programme would ultimately destroy its effectiveness.

64. Perhaps in summary, given you recognise there will be occasions, and this may not be one of them, where it would be appropriate for government to review the efficiency of its departmental research establishments, but given also if they are to do so they must look at the effectiveness of science, would you suggest therefore that in future if such an exercise becomes necessary (and you would hope presumably that it would not be done for a very long time, given the disturbance you have referred to) it should be done on a research establishment by research establishment basis bringing in scientific as well as efficiency review, or what other model would you propose for such an exercise?

(Sir Francis Graham-Smith) I believe that a consultation with the universities, and perhaps with the Royal Societies, would be a good way of starting this exercise. We must also recognise the diversity of the research institutions so that at least group by group, and perhaps not individual by individual, would be better than trying to impose a single solution on the whole thing.

(Dr Collins) My Lord Chairman, if I may add to that. I think we have been very struck by the difference in the way the Scrutiny Exercise has been conducted from the way the OST White Paper consultation was done. The way the White Paper set out what we thought was the long-term strategy for United Kingdom science engineering technology, which was then followed within a year by a document of very different tone which could have equally profound consequences if it were carried through literally, and the failure of the Scrutiny Report to make any serious mention of the White Paper, would seem to be something to avoid in the future.

65. If I could just follow that up. Presumably it was not a surprise to you that the Scrutiny Exercise was embarked upon, because it was, after all, anticipated within the White Paper.

(Dr Collins) It was clear from the White Paper, yes.

(Sir David Smith) I think, my Lord Chairman, the surprise was the speed with which it was carried out, the form of the questioning, the lack of logic as to which institutions were to be included in the scrutiny and which were not, and the fuzziness over whether it should just be government or non-government. That was the surprise.

Baroness White

66. I was surprised that among the papers received by the Committee there were only three university comments on the Scrutiny Committee report. The University of Warwick seemed rather enthusiastic about the report. The others were dubious as to whether the scrutiny committee would cover the university side of things. I am depressed

[Baroness White *Contd*]

by the fact that the scrutiny committee's activity was concentrated on the 53 organisations and did not bring in the universities adequately at all, or examine the relationship which might or might not arise. I do not think it is necessary for our witnesses to carry the university situation further at the moment, but it is really a very unsatisfactory state of affairs when you have a report, such as the one which is before us, which has left so many areas either inadequately considered or not considered at all.

(Sir David Smith) I can only agree with Lady White.

Chairman

67. I think it echoes a remark you made earlier, does it not?

(Sir David Smith) Yes.

Chairman] Could I thank you very much for the patience with which you have answered our questions. We are most grateful to you. We apologise for the speed with which we have had to conduct this Enquiry, but you will be as familiar as we are with the urgency to get this completed. Thank you very much.

Memorandum from the Institution of Professionals, Managers and Specialists

EXECUTIVE SUMMARY

1. The Institution of Professionals, Managers and Specialists (IPMS) is the trade union which represents 90,000 scientific, technical and specialist staff in the Civil Service, related public organisations and an increasing number of private sector companies. This includes the scientific, technical and other specialist staff in the PSREs covered by the Efficiency Scrutiny, with the exception of the Medical Research Council. IPMS covers specialist grades at all levels with members ranging from assistant scientific officer and equivalent to chief executives and directors of PSREs and chief scientists in departments. We welcome this opportunity to set out our views on the Efficiency Scrutiny Report.

2. Although the proposal for an Efficiency Scrutiny formed part of the SET White Paper, it has been driven by the government ideology on privatisation, market testing and reducing public expenditure. Its terms of reference were specifically geared to look at what areas could be picked off for privatisation immediately; if they could not privatise immediately, then could they be rationalised in a form which saved money and prepared them for future privatisation. The Government is also intent on distancing itself as rapidly as possible from the human and financial consequences of the impact of its free market policies and general funding cuts on research. The Efficiency Scrutiny was to be a major vehicle for achieving these underlying objectives.

3. The IPMS is not opposed to an efficiency scrutiny as such. Indeed we saw some advantage in taking an overview of what is required for efficient and effective delivery of the SET White Paper objectives. In that sense it is a missed opportunity.

4. Despite the general bias of its terms of reference and the restricted timescale in which it had to work, the Efficiency Scrutiny Report succeeds in demonstrating that the picture is much more complex than the instigators of the Scrutiny had supposed, and lays bare some of the contradictions in the government's approach. For example, it highlights the conflicts between letting the free market rip with research contracts being placed with the cheapest bidder, and trying to develop a coherent strategy for government science. It acknowledges that competition has its limits and may not always be the best means of securing the best value for money. Collaboration, it recognises, is as important as competition. It emphasises the importance of the link between research establishments and departments and lays stress on the fact that "science and technology are integral to the missions of many departments and that changes should strengthen the effective provision of scientific expertise and advice".

5. The Report also lays bare the underlying tension between the ideal of commercialisation which ultimately implies establishments should be growing, dynamic businesses capable of competing on equal terms with the private sector, and the need to control the PSBR. Having posed the complexities and the dilemmas however, the Scrutiny returns to its original brief and resolves these dilemmas in favour of government market ideology, rather than the effectiveness of public science. As a result there is often a disjunction between the analysis and the conclusions which are drawn in the recommendations.

Was the Scrutiny Justified?

6. In our view the case for conducting the review has not been justified whether in the government's own terms or on the broader basis of the efficiency and effectiveness of public science. £157,000 has been spent directly, and much more indirectly when the time and effort of the staff in the PSREs surveyed are taken into account, on a review which was flawed in concept and in implementation.

Scope and Conduct of the Review

7. The choice of 53 PSREs to be studied was neither logical nor fair. Major areas of the physical sciences were either excluded all together as in Defence, or precluded from detailed consideration by pre-emptive separate reviews and decisions in the case of the DTI laboratories, the Transport Research Laboratory and AEA Technology. Although the team had access to the DTI and TRL reviews they were not able to challenge them. As a result crucial areas of the United Kingdom public science and technology infrastructure covering 50 per cent of the staff and 60 per cent of the costs of the 53 PSREs were included even though they had only recently been reviewed and restructured by the "boundary commission" following the SET White Paper. Moreover, within that area the main focus was on BBSRC and NERC while the MRC was largely excluded.

8. While the Scrutiny Team is to be congratulated on completing the survey of PSREs to time, the timescale was far too short and gave little opportunity to research the situation in depth.

Impact on Efficiency

9. IPMS accepts the need to achieve effectiveness, efficiency and good value for money. There have already been major improvements. Indeed the SET White Paper accepts there is little need for major change. In reality the major purpose of the scrutiny is that through rationalisation and efficiency measures the PSREs should be slimmed down to fit the much reduced funding available. It is the issue of funding which is driving the scrutiny.

10. Many of the recommendations will not aid efficiency and will ensure that more funding is devoted to "overheads" and less "to the delivery of good and effective science".

11. Of the supplementary rationalisation mechanisms to aid efficiency we welcome the recognition in recommendation 13 of the need for a strategic co-ordinated customer view to avoid wasteful competition, and its support for collaboration. We also welcome the practical proposals in recommendations 17, 18 and 20 for enhancing collaboration. Such measures will enable PSREs to respond to the changing environment without the upheaval of large scale re-organisation.

12. We welcome the recognition that the open market for research does not always lead to efficiency or good value for money and welcome the spirit of recommendation 26. Clear criteria should be sensitively drawn up to clarify which areas are suitable for competition and to ensure a "level playing field".

13. There is general concern that contract based research may lead to "short-termism" and an inability to refresh the broad intellectual capital of the PSREs. Recommendation 27 that Research Councils should open up contracts to all "competent suppliers" causes particular concern. The OST must monitor the situation to ensure that the science and engineering base in PSREs is not undermined by too wide an extension of open market principles without adequate safeguards.

14. We are pleased to note that recommendation 32 sees no need to insist on total institutional separation of "contractor" PSREs from the "customer" departments or research councils and we welcome the support it gives to customers and contractors working closely together to take a "long term view of departmental needs and the part to be played in meeting them by PSREs". Correspondingly we would hope that the PSREs will also receive long term support from the department and attention to their needs. This should include the sort of long term financial commitment envisaged by Rothschild.

15. We also welcome the general thrust towards increasing the autonomy of PSREs and ability to plan for the longer term, and the plea for Treasury rules to be relaxed to enable PSREs to expand and raise finance, contained in recommendations 30,34 and 35. But we would strongly oppose their application only to those PSREs destined for privatisation.

Effective Provision of Scientific Expertise and Advice

16. We welcome the Scrutiny Report's recognition that PSREs, and in particular government research establishments, are intimately related to government policy and its implementation and the recognition that Universities, industry and PSREs have very distinctive "missions". In contrast the government seems intent on treating all "suppliers" of scientific services as though they are alike and marginalising the other functions they perform. We would argue, on the contrary, that PSREs, Universities and industry should be concentrating on their core missions and open competition between them should be restricted to the areas where it is appropriate and fair.

17. PSREs are a vital part of the government scientific service. They form an integrated scientific network between and within departments and agencies, not simply performing their specific projects but acting as a flexible, wide ranging, readily available and essential government service of independence, integrity and international reputation, for advice, "customer information" and national and international representation. The more "at arms length" these scientists are, particularly if they are privatised, the more difficult it is to sustain these functions.

18. It is as important in government as it is in industry to have scientists and technologists in senior

management positions both to act as "intelligent customers" for science and technology whether intra and extra mural and to add the scientific dimension to general policy making.

19. On all these counts it is vital that there should be a "critical mass" of SET staff within the government machine. We are pleased to note that the Scrutiny Report takes on board many of these concerns and does recognise the important role which PSREs play in the operation of government science. We particularly welcome recommendation 29 on the exchange of staff between PSREs and departments, and recommendation 32 on the need for departments and PSREs to work closely together on long term needs.

Contributions to Wealth Creation and the Quality of Life

20. Much of the scientific and technical work performed in the public sector whether in RCIs or GREs is done there because the private sector is not interested, it does not make a profit, or doing it in the private sector would raise conflicts of interest. This area of work which includes statutory and regulatory duties therefore has to be supported by public funds or it will not be done at all.

21. Many PSREs particularly in agriculture and industry play an important bridging role between basic research and application and often have the ability to range across the spectrum within individual PSREs. The Scrutiny Report's silence on the decision to privatise the DTI laboratories where this role is important and the absence of comment on the technology transfer role in general, indicate a lack of concern by the Scrutiny on this vital aspect of wealth creation.

Statutory Duties

22. Many statutory and regulatory functions have a substantial scientific and technical component. These need to be carried out within government and in close interaction with departmental policy making. They require long time scales, continuity, independence and integrity par excellence. Privatisation of such services could be highly prejudicial to the public interest.

23. The Scrutiny Report seems to accept these arguments in that it allocates many of these duties to the "core" or "front line" tasks which it suggests should remain "in-house" but again it does not apply this thinking to the proposals to privatise LGC and NPL.

Privatisation

24. The Report sets out the criteria to be used in deciding whether PSREs should be privatised. It finds only two early candidates—ADAS and the Building Research Establishment where it suggests the DoE should carry out a review. Neither of these cases nor those PSREs where decisions to privatise have already been taken stand up on their own criteria. In all these cases we urge that the decision to privatise should be reviewed and the PSREs be retained in the public sector.

25. In the case of the DTI laboratories we also suggest that they be transferred to the OST since they have a value going much wider than DTI who as their owner appears to have no clear mission for them. TRL on the other hand has very close links with the Department of Transport which are highly valued. We hope that the new Minister of Transport will reverse the privatisation decision, but if not then we would advocate that this PSRE also should be transferred to OST.

26. The Report suggests in recommendation 5 that in reviewing the case for privatisation they should distinguish "front line activities" from their essential supports. We would agree with the Report that "front line activities" should stay in government. But the functions are so interdependent that there is much greater value for money, public good, and support for science in policy making to be obtained from keeping the full range of functions together in the public service. Moreover, as the Team themselves acknowledge it is difficult in practice to separate them.

27. We totally oppose recommendation 8 that PSREs should declare themselves open to takeover either in part or as a whole. This is a recipe for fragmentation and contradicts the Report's statements elsewhere about the importance of a clear strategic view as well as jeopardising internal synergies and "critical mass".

28. As far as recommendation 9 is concerned we accept the need for a long term strategy and organisational and funding strategies to suit. While we do not accept that the identification of privatiseable parts can be made for all time, since government needs and priorities may change, we do endorse this recommendation insofar as it attempts to deal with the situation where long term candidates for privatisation such as NEL are so neglected that they are in danger of losing viability all together.

29. In short, on the question of privatisation we agree with the CBI and Royal Society that privatisation offers neither a feasible nor desirable option even if conceived in the narrow terms of reference set by the Scrutiny Team, and certainly not if wider considerations of the public good and good value for money for the taxpayer and the intangible benefits of PSREs to Government in general are taken into account.

Links with Universities

30. We welcome the recommendation that formal links should be developed where they do not already exist. But we have serious reservations about the transfer of ownership to Universities.

31. Firstly the core mission of GREs and to a lesser extent RCIs differ significantly from Universities and the different missions of Universities carries with it distinct forms of organisation and funding which would not be suitable for PSREs. There would also be serious loss of synergies within government and for both government departments and research councils the loss of strategic control of resources, objectives and priorities.

32. Nor would University ownership solve the major funding problems long term. They would still be dependent on the "dual funding" mechanism and departmental commissions on which they already rely. The only advantage would be the freedom from PSBR rules, a problem for which we believe there are alternative answers.

33. On the specific case of NRI and the Greenwich University led consortium there is a major danger that NRI's mission towards the Third World would be lost in the process of such a merger.

The Two Models of Re-organisation

34. IPMS does not accept that the Report has made a convincing case for re-organisation in general or for the specific proposals which it puts forward. There is no perfectly rational structure which will be right for all time particularly in a dynamic area like science and the cost of rationalisation can often outweigh the benefits.

35. In searching for ways to breach the current brigading of PSREs by research councils and departments it concentrates far too much on the minor areas of supposed "overlap" and cross boundary synergies while ignoring the much greater synergies within each current organisational boundary.

36. We welcome the rejection of the Civil Science Agency approach and the assertion of the need for a strategic approach. This, taken together with the acknowledgement that links between departments and GREs are vital, adds weight to our view that the strategic thrust of any rationalisations which do need to be made should be carried by the research councils themselves and by those departments such as MAFF, the DOE and the Scottish Office who have a very clear idea of the mission they wish their GREs and RCIs to perform.

Directors of Rationalisation

37. While this is a preferable alternative to structural upheaval it is difficult to see why these functions cannot be carried out by the DGRC, the CSA and OST.

Cross Departmental Rationalisation

38. Cross departmental rationalisation should form part of the normal perspective, aided by competitive pressures for survival and the mechanisms of Technology Foresight and the Forward Look. An oversight role should be played by the OST.

Treasury Guidelines

39. We agree with the Efficiency Scrutiny Report that the ability of PSREs to maximise their opportunities is heavily constrained by Treasury accounting rules and welcome recommendation 35. However, we totally disagree with the suggestion that PSREs which are to remain public sector organisations should have the emphasis placed on economy and limitation of non-government activities, while PSREs designated as potential privatisation candidates would be encouraged to expand their markets and become as fully commercial as possible. In our view the latter opportunities should be provided for all PSREs.

40. There should be a fundamental overhaul of the public accounting system to bring it into line with current operational requirements and the need to make substantial public investment with the ability to mobilise private finance.

The Role of the OST

41. The OST is responsible for the overall view of the PSREs and the role they should play in the government's science efforts. While the Technology Foresight and Forward Look processes can provide indicative parameters for what is required, the OST must be strengthened to ensure the necessary mechanisms for effective co-ordination and implementation are in place.

42. We agree with the role foreseen for OST in recommendations 13, 14, 19 and 28 and in recommendations 30, 33 and 34 where they need to ensure that PSREs are able to take full advantage of opportunities to expand without PSBR limits imposed by the Treasury. It is particularly urgent that they work with the Treasury to secure the objectives highlighted in paragraphs 38 and 39 above and establish clearer criteria and a level playing field for the operation of the open market for research as indicated in paragraph 12. They also have a responsibility to ensure that the changes made do genuinely strengthen the science and engineering base in PSREs.

43. Finally, we see no reason why the PSREs should not continue with the current diversity of ownership models, particularly as developed within the research council area, nor do we see why the majority of GREs

which are "next steps" agencies should not continue with that form of ownership. There are improvements to be made in increasing effectiveness and efficiency and attracting more funding from the private sector. But, ultimately, efficiency improvements will not be able to bridge the gap between what the PSREs need and what the Treasury is willing to provide. The projected decline in public funding will need to be halted and reversed otherwise the PSREs will not survive in the long term.

44. Nor will the pursuit of the SET White Paper's objectives be achieved without well motivated staff effectively deployed. The incentive to greater efficiency, effectiveness and willingness to adapt, which scientists in PSREs could have would be for their efforts to be rewarded not by privatisation but by the application of public science for the public good and above all to be fully integrated and valued.

Q1. *Has the case for conducting the Efficiency Unit's review been justified?*

1.1 In our view, the case for conducting the Review has not been justified whether in the Government's own terms based on the Scrutiny's terms of reference, or on the broader basis of the efficiency and effectiveness of public science in the government and research council sectors and beyond.

1.2 The Government's case for conducting an Efficiency Scrutiny is set out in the Report in the Summary paragraph 1 and in paragraphs 1.1–1.3 on the remit and terms of reference. The context of the Scrutiny is that the Government has been reducing the departmental funds available for science and technology and will continue to do so in the foreseeable future as indicated in the "Forward Look" (see Annex 1 (*not printed*)). It is also intent on developing an "open market" in publicly funded research contracts. It is also intent on distancing itself as rapidly as possible from the human and financial consequences of these policies. It intends to achieve these objectives by either closing, "privatising" or rationalising the current facilities, and the scrutiny is one of the mechanisms for doing so.

1.3 In the short timescale allotted to them the Efficiency Scrutiny team have succeeded in demonstrating that the issues are complex but have not had the time to discuss the issues in sufficient depth. There is also, in our view, a disjunction between the analysis of the issues and the remedies which are put forward in the recommendations.

1.4 £157,000 has been spent on yet another review which, we would argue, is flawed in concept and in execution. But these are only the direct costs of the scrutiny team. They take no account of the time spent by those being reviewed, answering very detailed questionnaires, helping with visits, and preparing evidence. Many of the areas have only recently previously been reviewed, some more than once. Nor does the cost take into account the increasing feeling of demoralisation among PSRE scientists who have been on the receiving end of review after review, restructuring, closure and redundancy. Yet the Scrutiny says that one of the underlying aims of the Government is "to minimise the costs associated with public sector capabilities and ensure that funding is devoted not to overheads but to the delivery of good and effective science"(paragraph 1).

1.5 The IPMS and other Civil Service unions made clear in their submission to the Efficiency Scrutiny that we did not accept the basic premise on which their Scrutiny was to be based. We did not accept that privatisation and the free market in science necessarily does or can produce "a higher quality service in a way that produces best value for money" for its direct customers or for the tax payer.

1.6 We were not opposed to the concept of an efficiency review as such. Indeed, we felt there was some advantage in taking a broad overview of what was required to obtain efficient and effective delivery of the SET White Paper and other substantive government and departmental objectives, rather than the piecemeal "salami" tactics which had been the form which reviews and decisions had taken in the past 15 years.

1.7 In our view, the Scrutiny should not have begun by looking at particular individual PSREs in isolation and "cherry picking" those which either singly or in groups can be packaged most attractively for the private sector and then dealing with the remainder. It should have started with the requirements and functions of the whole multi-departmental government science machine and how the objectives can be delivered most efficiently and effectively, taking account of the full range of responsibilities within, between, and beyond departments. It should examine the full range of organisational and ownership options, including the *status quo*.

1.8 As the Efficiency Scrutiny Report itself points out the "bottom up" focus of the terms of reference do not take sufficient account of the missions and strategic requirements of government science. At the end of the day, however, the Scrutiny Report has had to follow its terms of reference. Its recommendations predominantly reflect the requirements to privatise, rationalise and commercialise.

1.9 Its recommendations in the area of strategic "top down" requirements of government science policy as a whole are weak and poorly developed, and do not follow through the points made in its analysis of the issues. Nor do they meet the requirements mentioned in the SET White Paper, paragraph 14 and repeated in paragraph 1 of the summary:

"and the Government's recognition that science and technology are integral to the missions of many Departments and that changes should strengthen the effective provision of scientific expertise and advice" (see also Q4.(ii) below).

1.10 In short, therefore, on all grounds whether in the Government's terms or on a wider basis the case for conducting the review has not been fully justified.

Q2. *Are you satisfied with the basis of the choice of the 53 establishments examined by the Scrutiny team? Should any of the 53 have been excluded, and should any others have been included?*

2.1 IPMS is not satisfied with the choice of the 53 establishments examined nor do we consider it had a fair or logical basis. Major areas of the physical sciences were either excluded all together, as in Defence, or precluded from detailed examination by pre-emptive separate reviews, as in the Departments of Transport and Industry. On the other hand the research councils were included, even though they had only recently been reviewed by the "Boundary Commission", but curiously few from the medical research area, even though that had been left untouched by the "Boundary Commission". In some cases suggestions are made concerning laboratories not included in the Scrutiny.

2.2 In our initial submission to the Efficiency Scrutiny we said, in line with our view of the terms of reference, that given the importance of implementing a coherent strategy across departments, agencies and Research Council Institutes (RCIs), and making the best use of resources, it was important that all potential areas were covered. We listed those organisations which appeared to fall within the definition set by the initial scrutiny paper (see Annex 2 (*not printed*)). We argued, for example that the Defence area should be included. Defence is the largest single area of R&D expenditure and as the Levene Review (1) points out and most independent observers suggest (2), ways should be found of integrating its work more closely with civil needs.

2.3 Similar considerations applied to DTI who appeared to have been proceeding independently of the SET White Paper and the rest of the civil service. The attempts to privatise the National Engineering Laboratory, the decision to close Warren Spring Laboratory and the Review of DTI Laboratories which focused only on the privatisation option, all appear to have been pursued without reference either to the broader needs of the DTI, such as those set out below under Q4.(ii), or of the wider government effort. The review of the Transport Research Laboratory also had terms of reference simply referring to the privatisation option and without reference to the implications for the other roles it performs for the Department of Transport or government as a whole.

2.4 This did not mean that all PSREs needed necessarily to be looked at in the same depth but that all needed to be taken into account. For example as far as research councils were concerned they had been thoroughly examined in the context of the SET White Paper, and the "Boundary Commission" thereafter. Many agencies had also been thoroughly examined at various points over the last few years. But the fact that previous studies had taken place should not necessarily preclude the establishment of interrelationships between and within departments and research councils. For example, while we wholeheartedly sympathise with the sentiments in the Levene Review (3) that the research councils should not be burdened with any more reorganisation, it would be wrong to rule out possible options for linkage with RCIs or other bodies within the study if that were the most mutually satisfactory solution in a particular area.

2.5 Suggestions are made for the Metropolitan Police Forensic Science Laboratory although, as the Team admit (Annex K, paragraph 11) it was not part of the Scrutiny and they were not invited to visit it. The coverage of research councils has been particularly eccentric with few being included from MRC and SERC and little said about those who were (see below). As a result, they have often ignored major synergies within existing organisational structures while concentrating on often minor cross boundary overlaps. For example, the amount of actual research done at the Metropolitan Police Laboratory is very small as a proportion of the total work, yet on the basis of overlap, reorganisation with another organisation is suggested. The Scrutiny Team did not include the Explosion and Flame Laboratory of HSE—had they done so, even under the hasty scrutiny conducted on the PSREs, they would not have come to the conclusion that there was "overlap" with the fire research part of BRE.

Q3. *Are you satisfied with the way that the review was conducted?*

3.1 We are not entirely satisfied with the way the review was conducted. Many of the problems arise from the fact that three months was far too short a period to carry out a thorough investigation of this scale and complexity, from the narrow scope of the terms of reference and from the other political constraints which surrounded the review. The Team is, therefore, to be congratulated on carrying out the Scrutiny to such a short timescale and, despite the political constraints, demonstrating the complexities and contradictions in the current system and the fact that there are no simple solutions.

3.2 There are also serious concerns about the balance of the study, including the nature of the sample, as noted under Q2., and the variations in depth with which different PSREs have been covered.

3.3 As the Report points out (paragraph 16) the Scrutiny was carried out under normal efficiency scrutiny

procedures. The normal period for a Scrutiny is three months but the scope of this particular Scrutiny was pretty abnormal and the period of three months far too short to carry out a thorough investigation. In fact the time from the announcement of the Scrutiny (early August notice to Secretaries of State; 18 November to the CCSU after considerable prodding) to publication of the Report (11 July 1994) was between nine and 11 months and if the procedures had been more flexibly applied more time cound have been devoted to examining the PSREs and their functions in more depth.

3.4 The original timetable as announced in November was that the "Scoping Study" would take place in November–December 1993 and the three month scrutiny would begin in January and report on 2 April. The terms of reference for the main study and the study plan and list of establishments to be visited were published early in the new year. In fact, the terms of reference, although barely changed from the initial version, were not published 2 February (4) and the CCSU did not receive the Study Plan containing the details of how the study was to proceed, the timetable and the list of establishments to be visited, until 3 March, ie two months into the scrutiny period (5). The timetable provided is contained in Annex 3 (*not printed*). By this time the date for publication of the report had shifted to 29 April. However the timetable for studying the situation on the ground and for consultation with the CCSU was not relaxed and as a result, the timetable for constructing a meaningful response was compressed.

3.5 The trade unions were consulted at the scoping stage, during the main study and on the "emerging findings", and although the timetable was tight we were given an opportunity at the centre to express our views both on paper and at meetings. For local trade unions representatives, however, it was very different. We had been warned that the team would not have time to meet trade union representatives routinely at every establishment but they would try and meet those who had specific and distinctive issues which they needed to put. In the event the team insisted that all local trade union input should be fed through centrally. This meant that it was distanced from particular visits and therefore less likely to have an impact.

3.6 Correspondingly, the tight schedule meant that in many PSREs there was no time for the team to meet working scientists in the research establishment to obtain their perspective on the issues. The position was described by the President of the Royal Society thus:

> "The contrast between the conduct of the scrutiny exercise and the extensive consultation that preceded and followed the White Paper 'Realising Our Potential' is striking. The customers for, and providers of, the services now provided by the 53 research establishments must be consulted openly about the Scrutiny Report's recommendations before any decisions are taken about whether, or how, to implement them" (6).

3.7 Soon after Sir Michael Atiyah's statement William Waldegrave announced that there would be a further 90 day consultation period once the Scrutiny Report was published and assured everyone that the Government had not made up its mind and consultation was genuine. That assurance is welcome but it is still difficult to consult adequately on or to change the general thrust of a report which has been researched in haste and geared to terms of reference which do not adequately address the missions or content of the work being done.

3.8 The methods and conceptual framework used by the team are identified in paragraphs 1.6–1.9 and elements of it also emerge in more detail in Chapter 2 and several of the Annexes. We do have some points about the typologies used to analyse the work of PSREs but these are dealt with in later sections.

3.9 The Scrutiny team decided to divide the 53 PSREs into two broad sectors "Life Sciences" in which there were 37 PSREs, with 15,711 staff, covering £540,288K (40%) of the total costs; and the "Physical Sciences" in which there were 16 PSREs covering 15,630 staff, and £811,219K (60%) of the total costs.

3.10 The CCSU had said in their submissions at the scoping stage that although we recognised that areas may need to be grouped for analytical and methodological purposes these should not predetermine the outcome or the extent of the range of inter-linkages/linkages considered. The Scrutiny Report makes this point but it is nevertheless the case that there are very few recommendations which cross the physical sciences/life sciences boundary. (The exceptions being the Institute of Hydrology, the British Geological Survey, the Silsoe Research Institute and Proudman Oceanographic Laboratory, all of which are in the research councils NERC and BBSRC). Indeed, it is the Life Sciences sector which receives the main attention in the report as far as both analysis and recommendations are concerned.

3.11 Although we do not know in detail how much time was spent on each area, the impression is that less attention was paid to Physical Sciences. This is understandable since a large part of that area had already been pre-empted by reviews done and decisions already taken. Although the Team have had access to the reviews, (unlike the rest of us, including the scientific community who are now being consulted on the report), they were not, as Sir Peter Levene admitted (7), able to change them or recommend courses of action which conflict with them.

3.12 This is a pity because the lack of attention to AEA, the DTI Laboratories and TRL, taken together with the exclusion of the Ministry of Defence from the scrutiny altogether, means that a crucial area of the United Kingdom Science and Technology infrastructure vital to the United Kingdom manufacturing

base, and arguably one which is in much greater need of attention, has been largely excluded from analysis and debate.

Q4. *Will the proposals in the report:*

— aid efficiency?

— strengthen the effective provision of scientific expertise and advice?

— contribute to wealth creation and to the quality of life?

Explain your answers and, if necessary, note how the above aims could be furthered

4.1 In answering these questions we will take each of the issues in turn, analyse their meaning in the context of the scrutiny and refer to the recommendations. In doing so we cover both those recommendations which directly refer to the subject in hand, and are not covered by more specific questions elsewhere, and the impact of other recommendations less specifically or more indirectly related to the issues raised in the question.

4.2 *Will the Proposals Aid Efficiency?*

4.2.1 First we need to define "efficiency" and for this purpose we take "the aim of achieving best value for money across the board from public expenditure in science and technology" (by paragraph 1). This definition in our view also includes effectiveness, particularly in achieving the second two objectives set out in Q4. Effectiveness, in our view is as important, if not more important than efficiency. There is also the narrower definition taken from the same first paragraph "to minimise the costs associated with public sector capabilities and ensure that funding is devoted not to overheads but to the delivery of good and effective science".

4.2.2 We accept the need to achieve effectiveness, efficiency and good value for money. We also recognise that the context in which the scrutiny takes place is one of severely declining funding, as spelt out in paragraphs 2.27–2.30 (8). But efficiency gains alone are unlikely to bridge the funding gap, and privatisation, even if acceptable on other grounds, is not proven to be any more efficient (9), or any cheaper for the taxpayer. Moreover many of their recommendations will not aid efficiency.

4.2.3 It is also important to recognise that major advances in efficiency and effectiveness have already been made. Indeed Sir Peter Levene and the SET White Paper claimed that the research councils and the government research establishments (GREs) were working well and only minor adjustments were required. The Scrutiny report itself notes that "there has been substantial rationalisation of civil research establishments over the last 10 years or so, ... and duplication between establishments is rare" (paragraph 4). They mention in Chapter 2 that a whole range of government initiatives, including "Next Steps" agencies, financial management initiatives and ROAMEs have been applied to PSREs as to the rest of the civil service and NDPBs. In addition the new mechanisms established by the SET White Paper, such as "Technology Foresight" and the "Forward Look" also need to be given a chance to work (paragraph 2.6).

4.2.4 Thus, apart from the fact that the changes undertaken so far have stayed within departmental or research council boundaries, they appear to identify little general need for further change were it not for the funding issue: "trends in departmental expenditure on R&D/S&T imply a need for further action to ensure that capacity remains in line with demand" (paragraph 2.3.2). In other words further efficiencies must be made to fit the PSREs to the funding available. Indeed, the issue of funding is driving the scrutiny.

4.2.5 We do not find the funding situation (described in more detail in Annex 1 (*not printed*)) either satisfactory or acceptable. We would argue and have done so elsewhere, that science funding must be increased, but in this context it is a political fact which cannot be ignored.

4.2.6 Leaving aside the question of merit the reorganisation and reviews suggested in the recommendations will themselves add to costs. There would be costs not only in terms of those carrying out the measures themselves, and costs associated with closure and redundancy, but costs in time spent away from scientific activity, costs in terms of lost reputation, break up of teams as in the case of WSL, and costs in terms of further deterioration in morale. The costs of making changes can be enormous and major changes should be very carefully analysed to ensure that the expected benefits outweigh the costs. The case of AFRC is particularly salutary in this regard. Since 1980 institutes have been closed and rationalised with the number of institutes cut from 12 to eight, the number of sites cut from 22 to 13, staff cut from 6,300 to 3,700. But restructuring cost £81 million in building projects and £46 million in staff costs. Nor should the cost and time needed to reorganise science provision effectively be ignored, or the impact on morale. It took 12–14 months to reorganise and reassemble new science structures and to get programmes on stream again.

4.2.7 Many of the recommendations will entail costs and ensure that funding is in fact devoted to "overheads" and not "to the delivery of good and effective science". Examples include recommendation

6 on "prior options" exercises for the research councils when there are several other mechanisms already in place, including the Director General of Research Councils, for looking at their structures across the board. Recommendation 10 suggests major reorganisation where the benefits are far from clear (see below paragraphs 7.11 ff). Recommendation 12 suggests extra layers of bureaucracy which if their role is to be effectively carried out (10), will entail substantial extra overhead costs.

4.2.8. It also needs to be remembered that science for the most part is an activity which needs continuity and a long term perspective. Security of funding and freedom from constant contractual and organisational upheaval are required to enable it to flourish. In the words of the Chief Scientific Adviser:

> "In the implementation of the White Paper there must be no excessive unthinking zeal in the interpretation of accountability, evaluation, management, selectivity, exploitability, etc. albeit that each is important. R&D in general, and basic research in particular, is a tender flower which requires tender care and nourishment, sometimes over a long period of time" (11).

4.2.9 For example, many of the regional and global marine environmental studies require the sustained deployment of multi-disciplinary teams over long periods of time. The long-term deterioration of the environment is not a problem that will be solved in a decade or two. Already continual re-organisations, emanating from the operation of NERC's own internal market (supporting peer-reviewed laboratory projects on a five year rolling cycle), as well as changes in ownership and location of institutes and in the structure of NERC's headquarters administrative structure, can have a damaging effect on staff morale and lead to the loss of skilled scientists and continuity in research. The continual reshuffling of management structures is not conducive to the long-term studies essential if the quality of life is to be maintained and the United Kingdom is to exploit marine resources at sustainable levels.

4.2.10 Of the supplementary rationalisation mechanisms recommended by the Scrutiny we welcome the recognition in 13 and its associated paragraphs that open competition, although theoretically supposed to increase efficiency, has its limitations; its stress on the need for a strategic co-ordinated customer view (see also Q7.(ii)) to avoid wasteful competition; and its support for collaboration. We would add that in many areas there may be no realistic possibility of creating intra-United Kingdom competition. Indeed, an insistence on competitive tendering may fragment research effort, impede co-operation on information sharing and undermine the capacity of United Kingdom research to compete internationally. Research capacity once contracted-out or a bid lost to competitors is often lost forever. If the new contractor fails to deliver there may be no alternative "in-house" experts to pick up the pieces, or to bid for the contract next time round. Departments are right to proceed with caution in opening up research areas to contract and its impact both on the department and more widely needs to be carefully monitored.

4.2.11 The NERC British Geological Survey provides an interesting case in point. It conducts long-term strategic geoscience surveying and systematic monitoring linked with the establishment and maintenance of publicly accessible geoscience data bases. The private sector is not suitably constructed to undertake long-term systematic nationwide surveying and monitoring to uniform standards nor to maintain data bases within the public domain on a long-term basis. An example of what can happen when such work is privatised is available from Sweden where they privatised their national geological survey and then had to bail it out at a cost of £20 billion. Although BGS is not currently being put forward for privatisation and the Butler Committee has concluded that the core programme should remain in the public sector, there are still dangers. Core government funding is declining and piecemeal market testing by DTI and DOE has ensured that work is contracted out to separate organisations, thus endangering the national data base.

4.2.12 We also welcome recommendations 17, 18 and 20, many of which are already happening, as ways of enhancing collaboration. In our view the necessary groupings for administrative economies of scale and viability such as common pension schemes, pay and personnel systems, can be achieved through consortia, as is already happening in Scotland through the creation of the Committee of Heads of Agricultural and Biological Organisations (CHABOS). Consortia could also be devised for scientific purposes without necessarily needing to transfer ownership. Such looser linkages would enable the objectives of efficient flexible organisations responding to a changing environment and collaborating or competing as appropriate to be achieved without the upheaval of large scale reorganisation and the creation of extra bureaucratic layers between individual institutes and agencies and their "parent" department or research council.

4.2.13 We do not consider it necessary for Departments and OST to be informed in the amount of detail about the activities of the PSREs as suggested in recommendation 14. As the Scrutiny team itself says elsewhere agencies should have a higher degree of autonomy in exercising their responsibilities. It is unnecessary and wasteful for both departments and the OST to be "second guessing" every detail of management. This does not mean that PSREs should not do their own competition assessments. Although departments and particularly the OST may need to monitor broad

developments on the degree of competition and collaboration it should be sufficient for this to be done in the "Forward Look". Any statistics of that kind would need to be collected on a common format. But within such common formats the detail should be left to PSREs.

4.2.14 As far as recommendation 16 on the "windows of opportunity" when new capital works are considered is concerned we accept the need for care in assessing the need for new investment and the possibility of sharing costs but we have several reservations about the proposal. First, the decision must be based primarily on scientific considerations and the needs of the work and not upon financial considerations alone. An awful warning in this particular context is the decision by the President of the Board of Trade to close the Warren Spring Laboratory (WSL) and to merge it with another part of his empire—AEA Technology—although without prior consultation with them. The decision was made in haste on the basis that he could save £25 million from selling the site on which a new WSL laboratory was due to be built, having sold the old WSL site to Glaxo. In this particular case not only did the full £25 million in savings not materialise but a premier environmental research laboratory was fragmented and much valuable work has been lost. Only half the staff and functions moved to AEA, and they have been dispersed within AEA rather than merged with one particular unit—the NETC as promised. A few staff have been moved to other posts in DTI and the rest have gone on either voluntary or compulsory redundancy.

4.2.15 As far as the specific figure of £2 million is concerned this is far too low and inflexible and takes no account of life cycle costs/savings or of the fact that capital and other costs vary enormously between different PSREs. As the Report itself says "There is no consistent relationship between costs and numbers of staff: much depends on facilities, size of site, the degree of subcontracting, etc." (paragraph 2.9). To review every investment decision over £2 million in AEA Technology for example, would bring the place to a grinding halt.

4.2.16 We agree that if there is to be a "Prior Options" process then it would make sense to include rationalisation in it (recommendation 16). However, as we note above the number and frequency of different reviews needs to be reduced and the reviews themselves should be "rationalised" so that far less administrative burden and disruption is placed on PSREs. Reviewing for efficiency and effectiveness should become a dimension of their normal management procedures and not a constant external intrusion.

4.2.17 As the Report recognises the operation of the Open Market is not always the best way to secure efficiency nor value for money and it makes several proposals designed to modify the "Rothschild" customer-contractor principle. As the CCSU pointed out in its submission to the Efficiency Scrutiny Rothschild did not envisage the customer-contractor principle extending beyond the "applied" area. Levene and Stewart agree and recognise that there is no hard and fast division between different types of research. However, this more sophisticated approach is not always applied when setting targets or assessing progress in opening up areas to competition. It seems to be assumed that all areas of research which are of interest to, or produced within departments, are appropriate to a "contract" relationship.

4.2.18 We therefore accept the spirit of recommendation 26. It is sensible to draw up clear criteria for deciding which types of work should be subject to the customer/contractor principle and which should not and which can be placed outside the particular PSRE, department, research council or public sector as a whole and which must be retained "in-house". Any such guidelines, however, would need to take into account the different types and mixes of PSRE work but there would need to be general principles applied to all to secure a "level playing field". These issues are covered in more detail in the next section and under Q5., Q6. and Q7. It is important that both those who formulate, and those who apply the rules are fully qualified to do so scientifically.

4.2.19 In developing such criteria both the OST and departments should take account of the fact much long-term research is not suited to the customer-contractor principle or needs to have special measures taken to ensure that long-term intellectual expertise is sustained or databases protected. In the Government's response to the House of Lords Science and Technology Committee Report on "Priorities for the Science Base" it agrees that there is concern, in relation to the research councils, that "there is a danger in placing too great a reliance on contract research income for Research Council Institutes, whose primary role is to conduct high quality basic research. Some institutes maintain important national databases, which are widely used for both research and management especially for quality of life issues" (12). However, their response is far from reassuring—"The Research Councils are fully aware of the dangers of over-dependency on contract income, and are expected to ensure that it does not detract from the high quality of their basic research programmes. They are free to charge what the market will bear" (13). They then go on to say that the Efficiency Scrutiny is looking at it. But the Efficiency Scrutiny does not supply detailed guidance on this point. We argue under Q10. that the OST should do so.

4.2.20 On the specific question of research councils recommendation 27 of the Scrutiny Report is particularly unhelpful and likely to make the situation much worse. Again, this point was made by the House of Lords and the Government recognised the dangers saying:

> "the issue of 'opening up' Research Council funding has been a live one for some time, and it can be sensibly addressed now that the new Research Council structure is in place. It follows from the new missions of the Research Councils announced in last year's SET White Paper that the Councils should support research where appropriate for the fulfilment of their objectives, and the DGRC, Sir John Cadogan, will be developing the overall policy on this funding issue with the Councils over the next few months. However, the Government agrees with their Lordships that this consideration must also take into account the importance of maintaining the capacity of the science and engineering base" (14).

Monitoring this situation and intervening if the capacity of the science and engineering base is threatened is another role which OST should fill (see Q10.).

4.2.21 In addition to the issue of where the customer-contractor principle should apply and how far the "open market" should be extended there is also the question of "core" or "seed corn" finance where the customer-contractor principle does apply and ensuring that departments and other customers take some responsibility for the long-term maintenance of the science and engineering base. Under the original "Rothschild principles" in 1972 finance was transferred from research council grants to the "customer" departments, eg MAFF for AFRC, with the intention that customers should sustain the research base in their charge. It said:

> "Customer Departments have a responsibility to sustain, as a safeguard for the future, an adequate research capability in their area of concern, this does not mean that they have a duty to retain the capability of every contractor. But it does place on them a special responsibility in relation to certain contractors whose expertise is outstanding or unique or who occupy a central place in the country's scientific activities, such as Research Councils. For these contractors some certainty of funding is essential. In each case Departments are now endeavouring to provide an orderly succession of commissions, with the financial support planned well in advance, and, when changes in commissioning are inevitable, to give reasonable notice to the contractor" (15).

4.2.22 In many departments this has not happened. Contracts are often very short and can be either adjusted or terminated at very short notice. Also much time is wasted on the transactional costs associated with contracts. Increased competition guarantees that scientists will spend much of their time chasing funds rather than doing science. We had asked the Scrutiny Team to examine the length and type of contracts, the periodicity of agency reviews, and the Treasury accounting rules with a view to easing the ability of contractors to make longer term commitments consistent with the often long timescales of R&D programmes. We are therefore concerned that recommendation 31 may remove such guarantees as there are in the MAFF/BBSRC arrangements, unless the contracts which replace them are sufficiently long term, creating even more dependence on short-term contracts for staff and an insecure base for long-term research. Short-term contracts introduce major uncertainties for both managers and the staff themselves with loss of efficiency on both sides.

4.2.23 Rothschild also accepted that "customer" departments would need to ensure that to be able to sustain their general research capability the "contractors" should receive some finance, not immediately related to a specific programme of work via a surcharge (10 per cent was suggested as appropriate) on the customer's programmes. This promise too has not been honoured in many departments and certainly not to the level of 10 per cent. It is admittedly difficult for contractors to impose such a surcharge on its customers if no one else is doing so, thus rendering themselves "uncompetitive". It is essential that clearer mechanisms and obligations should be introduced to ensure that departments play their full role in funding strategic and basic research relevant to their responsibilities. Possible ways forward are offered in the Scottish Office "Policy for Science and Technology" which suggests a pragmatic approach for supporting long-term research within a more competitive framework. They will continue to provide core funding to sponsored bodies within the "Scottish system" including a "Rothschild" component for seed corn (non-commissioned) research, but they will also provide for "medium-term" contracts awardable by competition for up to 12 years, always reviewable twice within the contract period, and for research programmes, not just projects. The new proposals for a combined Defence, Science and Technology Agency, also recognise the problem they say:

> "while the technology base will largely be maintained by the services provided to individual customers, it has been recognised that there will be a need for 'corporate funding' to ensure that it remains an adequate long-term source of technological knowledge and understanding. A corporate research programme will therefore be created. As a result, the current Applied Research Programme can be focused more clearly on the future equipment programme and will become the contract research programme."

4.2.24 We are pleased to see in recommendation 32, that the Scrutiny Report resists the pressure to insist on total institutional separation of "contractor" PSREs from their "customer" departments or research councils and we welcome the support it gives to customers and contractors working closely

together to take a "long-term view of department needs and the part to be played in meeting them by PSREs". Correspondingly we would hope that the PSREs will also receive long-term support from the department and attention to their needs, as indicated in the supporting paragraph (7.9). This should include the sort of long-term financial commitment envisaged by Rothschild.

4.2.25 We also welcome recommendation 29 which recognises the importance of close links between scientists, PSREs and departments and movement between them to ensure that the "intelligent customer" role is effectively fulfilled in the contracting process (see next section for more detail on this point).

4.2.26 We also welcome recommendation 30 insofar as it enables PSREs to decide for themselves whether and what activities they should subcontract and encourages them to collaborate rather than compete. This will enable them to take decisions on the basis of their own objectives and securing good value for money.

4.2.27 We welcome also recommendation 28 as a move towards a more "level playing field". However this does not address the problem of a "level playing field" within the European Union, particularly the problems created by the Directive 92/50/EEC "*Relating to the Co-ordination of Procedures for the Award of Public Service Contracts*" whereby public authorities procuring services are required to advertise in the EC official Journal contracts worth at least ECU 200,000. The precise impact of the Directive is unclear and the expectation is that because of the complexities in applying the definitions and exclusions in the United Kingdom context, clear ground rules will only be established on a case by case basis in the courts. In general, however, because the United Kingdom has gone further than other Member States in separating, privatising, and contracting-out public research activities, the potential impact of the Directive is greater here than elsewhere.

4.2.28 While we would accept the need for PSREs to develop their internal accounting systems as suggested in recommendation 33 so that they can increase their efficient use of resources and that there should be greater transparency, this must also be accompanied by other measures to secure a level playing field with all competitors including those in the "private sector" (both commercial and non-commercial) and the relaxation of Treasury rules. We therefore also support recommendations 34 and 35. However, we see no reason why the opportunity to become a Trading Fund should be limited to those designated privatisation candidates. (These points are dealt with in more detail under Q9.). Similarly we would endorse the need for a long-term strategy for PSREs as in recommendation 9 but we would not endorse the goal of privatisation (see Q6.). Although it is difficult to see how recommendation 9 can be reconciled with the continuing reviews which appear to be envisaged in recommendations 3 and 6.

4.3 *The Provision of Scientific Expertise and Advice*

4.3.1 We are pleased to see that the Scrutiny Report emphasised in the first paragraph of its summary "that science and technology are intergral to the missions of many Departments and that changes should strengthen the effective provision of scientific expertise and advice" and that thoughout it emphasises the importance of the "demand" side of the equation, whereas the terms of reference and the "market" approach tends to concentrate on the "supplier" side and look at developments from that perspective. William Waldegrave, when Minister of Science, said many times that it does not matter where the science is done so long as it is done. In our view nothing could be further from the truth. As the Scrutiny Report acknowledges the research councils and GREs have different "raisons d'être" as their analysis in Chapter 2 and history in Annex F demonstrates. As the Royal Society says:

> "Issues of management and ownership are inseparable from issues of mission. An exercise focused on management and ownership is inescapably addressing also the mission of each research establishment and the conditions under which it will be allowed to tackle that mission.
>
> "It must be recognised that Research Council Institutes, with their largely responsive and long-term perspectives and investments, differ in important ways from Research Establishments related to Departments other than OST, which tend to have more focused, top-down missions" (16).

4.3.2 Similarly the Universities, which although not part of the scrutiny figure in the recommendations, have a core mission—the provision of skilled graduates and the pursuit of curiosity based research pushing back the frontiers of knowledge, and building the intellectual capital of the nation. Industry, which also figures as the customer of some research and recipient of some grants, as well as the end product of commercial "privatisation", has a different core "mission" still—the need to make a profit on products and services which sell. Although all these types of organisations may overlap to some degree, particularly in the scientific content of their work, they differ in the purpose for which that work it is primarily done. In its search for the "open market" the Government is intent on treating all suppliers as though they were alike and marginalising the other functions which they perform. On the contrary, we would argue that they should be maintaining the primacy of the core activity and introducing competition only at the margins.

Science in Government

4.3.3 The role of science in government is distinct from both Universities and industry. As the Scrutiny itself notes (paragraph 2.1). PSREs "exist for two main reasons: to provide support for the policy, statutory and regulatory activities of Government Departments; and to undertake research aimed more generally at improving wealth creation or enhancing quality of life, thus contributing to the maintenance of a strong science and technology base for the United Kingdom". These basis objectives have remained fairly constant, although organisational arrangements have evolved over time. As the Scrutiny also points out, although we would not necessarily agree with its detailed typologies, research council institutes tend to undertake more long-term strategic research and technology transfer and GREs to be more intimately related to day to day departmental objectives, but there is considerable variation and overlap depending on the departmental and research council missions. Both provide technology transfer and research for the "public good" but their dominant focus differs.

4.3.4 GREs in particular form a vital and integral part of the government scientific machine. They provide scientific services for the "public good", technology transfer services (both of these, together with the role of research councils are dealt with in more detail below), and they are intimately related to government policy and its implementation. They are also a vital source of scientific expertise in government decision-making more generally.

4.3.5 Currently the vast majority of "operational" (17) scientific staff employed by the government are in specialist scientific units or agencies; predominantly in the latter. If these were all to be hived off or privatised there would be few government scientists left outside the staff in OST. There would be very few scientists to act as "intelligent customers" for commissioning external contracts and there would be even fewer scientists and technologists to influence the general government decision-making process in what is an increasingly technically sophisticated age. Thus there would be very few scientific staff to perform the type of strategic co-ordinating role envisaged by the SET White Paper and to keep the scientific dimension alive in government consciousness.

4.3.6 The government's underlying capability to offer independent and impartial advice and to respond rapidly to emergencies such as the outbreak of BSE or the threat to the environment posed by the Braer oil tanker incident where research teams and advice can be marshalled within hours depends on rapid co-ordination across and within departments (18). Few issues, whether identified by scientific discipline or policy orientation fall neatly into departmental compartments. The Efficiency Unit in its recent review of careers also notes that many issues cross departmental boundaries (19). The removal of links in these chains through privatisation will threaten the capability to respond in these situations.

4.3.7 Long-term strategic R&D is necessary to provide the nation with the capability to deal with short-term problems. Looked at from the point of view of an individual laboratory—eg the Proudman Oceanographic Laboratory, recent "emergencies" demanding POL's R&D expertise are the "Towyn" storm surge (MAFF 1990), the "Gulf War" (MOD and DOE 1991) and the "Braer" oil spill (Scottish National Heritage 1993). In each case the Government Department turned to POL for scientific expertise, and this could be provided immediately because of the existence of experienced scientists and technicians, supported by modern technology.

4.3.8 There should be and in many cases is a close link between departmental policy makers and working scientists whether they be in agencies or in-house research units. Martin Holdgate in his Review of the Scientific Civil Service in 1980 described this linkage very well and there is no evidence that it is less important today.

> "... Very commonly policy issues arise with an urgency that does not permit new research. Action on them calls for scientists who are sufficiently generally informed to provide relevant advice quickly. The best ways of ensuring that such people exist are, first, to have a sufficiently strong group of technically informed policy advisers within departments—either in specialists units or 'bedded out' in policy directorates—and, second, to support them by continuing 'strategic' or 'objective basic' research by teams in REs working in fields where it is obvious that recurrent policy questions will arise. It is also crucial for the 'policy advisers' and 'research support' groups to be in close personal contact, for, even if the former have the right expertise and are up to date, their understanding will rarely be so complete as that of the person actually doing original work on the problem" (20).

4.3.9 A crucial representational role, both nationally and internationally, is played by government scientists from GREs and research councils. The United Kingdom Government's scientific reputation for impartiality and integrity which draws heavily on these reserves of scientists is not only important for the government policies being pursued in that context but also helps to promote the general reputation of the United Kingdom in the scientific field, which in turn attracts further work to the United Kingdom. For example, in DOE those research scientists who attend standards and other

international committees, acting as DOE officials in representing the national interest, need to be recognised as experts in their field. To be such an expert not only requires that they have had a sound research career in the topic concerned, but they should be carrying out, or otherwise be intimately involved with current research at the "leading edge". Only with such qualifications can the United Kingdom representative's views carry the necessary weight in the international arena. The more "at arms length" these scientists are, particularly if privatised, the more difficult it is to sustain their depth of knowledge via the interconnections of government science, and the more difficult to sustain the credibility of their contribution or to provide them with the required political ambience (21).

4.3.10 It is also vital that there should be a flow of high calibre scientists and technologists into senior policy making positions both in scientific and more "generalist" roles because of the increasing technical complexity of many political and administrative decisions. Also with the increased trend in University, research council and government research establishments towards competition for contracts, encouraged by United Kingdom Government policy and the impact of the EU public procurement Directive, it is essential that the "customers" in government departments should be well equipped to make a fair and scientifically informed selection from among the "contractor" bids. Some departments have already cut back on their internal scientific expertise and there is strong doubt whether many customer departments have adequate ability to decide on which research should be sponsored, and to monitor and control it.

4.3.11 Statistics show that there are still relatively few scientists and technologists involved in senior policy making positions in the Civil Service. For example, in the senior open structure (Grade 3 and above) statistics for 1994 show that none of the 20 permanent secretaries in charge of departments were scientists and only two had a specialist or professional background of any kind. Within the DoE of the 50 staff at Grade 3 or above only 3 were scientists (22), the chief scientist, the head of the Pollution Inspectorate, and the chief executive of the Building Research Agency. At the DTI, nine of the 70 senior staff were scientists; of these one was chief scientist and four were chief executives of research agencies. Evidence from the recent Efficiency Unit Report on Career Management and Succession Planning paints a similar picture.

4.3.12 Just as research has shown that it is important for innovative and technologically successful firms to have scientists and technologists in senior management positions, so it is equally important in government where general awareness of modern technology and its potential application is crucial to economic success and to the maintenance of "effective demand" for science and technology (23). Without "scientifically literate" senior decision makers, not only will they be inadequately equipped to commission science and technology contracts, they will not necessarily be aware that such expertise is relevant and both funding and general recognition of the need for the science and engineering base will suffer accordingly.

4.3.13 There are three main sources from which such "scientifically literate" senior policy makers can come; from more junior scientists, technologists and engineers within government; through external appointments; and through the generalist "fast stream" entry. None of these channels are currently working effectively.

4.3.14 Although direct external recruitment of specialists at senior levels has a role to play, many are likely to be unfamiliar with the Whitehall machine and are no substitute for scientifically expert insiders. Moreover, those who came in temporarily or permanently from the GREs can tap a huge pool of expertise within the GREs on an *ad hoc* basis. To achieve equivalent coverage and depth of expertise by appointment from external companies or privatised GREs, where commercial confidentiality would be likely to reduce such easy communication, would require a major expansion of HQ policy divisions. There is also a problem in obtaining high quality external entrants because of the continuing and growing disparity in salaries and conditions between the different employment sectors, particularly between the public and private sectors.

4.3.15 There are still relatively few administration "fast stream" entrants to senior policy making positions who have scientific or technical qualifications. In 1990–91 only 17 per cent of Administration Trainee or HEO(D)s passing the final selection board were science or technology graduates (24). This is the same percentage as in 1985.

4.3.16 The most effective source and one which is endorsed by the efficiency scrutiny on succession planning is to ensure that there is a route to the top for all talents within the Civil Service and NDPBs and this should include those, whether scientists or not, who are in agencies and closely in touch with scientific activity in that context.

4.3.17 The Scrutiny Report does take on board many of these concerns and does recognise the important role which PSREs play in the operation of government science. We particularly welcome recommendation 29 on the exchange of staff between PSREs and departments and 32 on the need for departments and PSREs to work closely together on long-term needs.

4.3.18 In Annex H the Report tries to analyse these government functions by categorising them

in terms of their closeness to the core departmental functions. They argue that the "front-line" activities are more "delegate" than "contractor" activities, and thus imply that they should not be subject to the customer contractor principle. They use these categories again in the privatisation and rationalisation context and we will deal with some of their implications there. At this stage, however, we would note that there are problems associated with the analysis and the assumption that the roles can be split. For example, in many cases the individual staff in PSREs will be performing a range of the different functions and there are "synergies" between them. Also the definition of what is "front-line" at any particular time will partly depend on the circumstances and the tasks which government is set. As the efficiency scrutiny on succession planning said:

> "We have avoided the temptation to define activities as core or non-core. It is not sufficient to say that core activities will remain in Civil Service hands, while non-core activities will be contractorised. What is defined as the core would have been very much broader a generation ago than it is today. The boundary defining what has to be done in Government Departments will continue to shift" (25).

4.3.19 In our view therefore the GREs should remain close to the departments, whether as agencies or as integral parts of the department. This is the most cost effective way of providing the services because it facilitates the provision of many of the activities outlined above with flexibility and speed of response and leaves the majority of the staff in close contact with ongoing research whether they are doing it themselves or at the end of the telephone line from those who are. To compartmentalise these various tasks would lead to costly duplication, further adminstrative overhead and less money spent on science. Above all it is vital that there should be a "critical mass" of SET staff within the government machine not only on specifically SET work but also to bring an SET dimension to more general decision making in the Civil Service as outlined above.

4.4 *Contributions to Wealth Creation and the Quality of Life*

4.4.1 Much of the scientific and technical work performed in the public sector whether in RCIs or GREs is done there because the private sector is not interested, it does not make a profit, or doing it in the private sector would raise conflicts of interest. This area of work which includes statutory and regulatory duties (see below) therefore has to be supported by public funds or it will not be done at all.

4.4.2 Much of the SET White Paper and other government statements tend to concentrate on wealth creation rather than the quality of life aspects. But public S&T has a vital part to play in both. As far as wealth creation is concerned, as well as supporting the "science and engineering base" as traditionally construed (ie Universities and research councils) the government has a broader role in providing an infrastructure for technology transfer and for supporting projects in the early pre-competitive stages. Government policy has been focusing too narrowly on "basic research" in Universities or research councils on the one hand and "applied" or "near market" research done in private industry on the other and trying to build direct links between them. This process if carried too far may well undermine the United Kingdom pure science base. As the recent House of Commons Science & Technology Committee Report on Innovation noted:

> "we are concerned that Government policy to encourage innovation is focused too much on the Science Base which cannot provide all that industry, especially engineering based industry, needs without abandoning some of its wider responsibilities. Industry provides its own research base, both in-house and through independent research and technology organisations; many government laboratories also provide services quite distinct from those provided by Universities. These should be fostered and encouraged, just as such diversity is encouraged in other countries. We are especially concerned that current policy toward sources of technical expertise outside the Science Base may concentrate too much on the immediate needs of government departments, and underestimate the industrial importance of successful laboratories, whether Government or privately owned" (26).

Government policy has failed to recognise the vital bridging role which the research infrastructure, much of it in RCIs and GREs, between the two poles of "basic" and "applied" research can perform.

4.4.3 The process of moving from basic research to innovation (defined as realisation into marketable products) can involve a whole number of stages, depending on the nature of the particular innovation in question. It is the later stages of this process such as investment in pilot plant which usually cause the greatest difficulty for United Kingdom industry because they involve high risk and high "up front" costs. The level of support for R&D often declines in these critical stages of the innovation process. Several factors are involved in bridging the gap at this critical point in the process, including the provision of "patient money"; recognition by industry of the potential of the research; and the capacity in terms of both equipment and intellectual resources to take it on to completion.

Technology Transfer and Innovation

4.4.4 Although technology transfer from the science base is generally weak the degree of that weakness varied between industrial sectors and according to the structure of industry. For example, medical research and the pharmaceutical industry have enjoyed a fairly close and well defined relationship, with the existence of an assured market in the form of the NHS. In the defence area, the strong relationship between clearly specified military need, research effort and manufacture did not pose major problems of technology transfer, except that there was a limited take-up of military R&D into civilian application.

4.4.5 A good example of a smooth and highly effective technology transfer lies in the agricultural area in England and Wales where the Agricultural Development and Advisory Service (ADAS) transmitted through free advice to farmers the latest developments in agricultural technology, many of them derived from MAFF's own laboratories or the BBSRC. At the same time there was a close relationship between the customers, the advisers and the researchers. Also the innovations spread effectively because there was no secrecy and very few barriers either motivational or financial to the transmission of new ideas. This success in transmitting innovation was a major factor in producing a highly efficient agriculture sector in the United Kingdom which by 1990 delivered two-thirds of United Kingdom food needs compared to just under half in 1960. In the words of the Priorities Board for Research and Development in Agriculture in June 1990:

> "The agriculture and food industries are important parts of the United Kingdom economy, contributing around £6 billion and £10 billion respectively. The present efficiency of these industries owes much to the successful exploitation over many decades of the results of Government sponsored research and development. It is vital to United Kingdom interests that the agricultural and food industries continue to increase their competitiveness edge and respond to market demands, whilst meeting consumer expectations of greater assurances on food quality and safety, improved animal welfare and enhanced protection of the environment."

4.4.6 The positive lessons of such an arrangement should not be lost. Unfortunately, many of the decisions taken to change that system, including the creation of ADAS as an Agency which gives advice on a fee paying basis, and the plans for its eventual privatisation (see below); and the abrupt withdrawal of "near market" public funding from agricultural research on the assumption that the market will provide for the research if the research is worthwhile, have done so much damage to research in that area and to the transfer continuum between agricultural research and agricultural production which previously existed. Much of the research judged "near market" and therefore no longer financed by government was not taken up by industry. In the June 1990 review the Priorities Board noted that the food industry had shown only a small interest in funding near market R&D—"due in part to the fragmented nature of the industry. In some sectors, most notably eggs and poultry, no mechanism is in place to facilitate the funding process." It continued:

> "Even in those sectors with established mechanisms for funding R&D there is an element of risk that the R&D continuum will break down at the point where publicly funded work ends and industry's near-market R&D begins".

4.4.7 The Centre for the Exploitation of Science and Technology (CEST) has identified other sectors where the industry is fragmented and composed largely of small and medium-sized enterprises (SMEs) so that technology transfer does not operate smoothly. An illustration is the problem of getting environmentally sound new technology adopted by the metal finishing industry which is composed of hundreds of SMFs and represented by no less than six trade associations. Similarly, the construction industry consists of hundreds of SMEs and is represented by a large number of professional bodies, trade associations and contractors' associations and is beset by problems caused in part by poor communication. The recent Latham Report "Constructing the Team" has drawn attention to these problems and to the significant role which BRE plays in the construction industry.

4.4.8 The number of companies undertaking genuinely pre-competitive research are relatively few and tend to be the larger corporations which would normally expect to fund and execute this type of research in house. The SMFs which do need assistance actually require more development oriented and "near market" research. They rarely have the in-house knowledge and resources to be able to form the complex relationships required for pre-competitive collaboration networks such as the LINK programme with the time consuming procedures associated with them. BRE has recently formed the Construction Quality Forum to provide this link and channel for collaborative research within the construction industry.

4.4.9 PSREs whether they are research council institutes or government laboratories are well equipped to perform the bridging roles between basic research and application. They have the ability to assemble the critical mass of scientific and technical personnel, expertise and physical equipment. They also have the ability within single institutes to range from the basic, through strategic or pre-competitive, to "near market" research. CEST in its "Report of the Working Group on Innovation: The

Faraday Programme" in May 1992 recognised that such "intermediate institutions" (they mentioned specifically AEA Technology, the Defence Research Agency, Laboratory of the Government Chemist, the National Physical Laboratory, and Research Council Laboratories), had a major role to play in bridging the gap between research and application.

4.4.10 The SET White Paper accepted the "Faraday principles" and the Government has now accepted that public funds can once again be applied to "near market research", particularly "in cases where the "market" breaks down, eg in generic technologies or where the market is characterised by small firms" (paragraph 2.22). These encouraging signs for more effective technology transfer, however, are marred and possibly rendered largely ineffective by the fact that no extra funding is provided to apply the "Faraday principles". Indeed the DTI funding for its own laboratories and its support of R&D in industry is in dramatic decline (see Annex 1).

4.4.11 The Efficiency Scrutiny's silence on the DTI's decisions to privatise NEL, NPL, LGC, AEA Technology, and the closure of WSL are dealt with in more detail in Q6. But those decisions and the outlook for DTI funding seriously threaten the United Kingdom's ability to innovate and to remain internationally competitive.

4.4.12 The DTI should be playing a major facilitating role in supporting innovation. While we welcome the change to a more proactive approach within DTI as reflected in the SET White Paper and White Paper on Competitiveness (27), its focus on the need to change the culture of industry and the City should not be carried out at the expense of other vehicles for the innovation process which are equally important. The expansion of the DTI Innovation Policy Division, the placing of some SET staff in other policy divisions (although total numbers of SET staff in DTI HQ have been reduced), and the development of Business Links will not be sufficient to the task. Nor will those innovation awareness mechanisms have sufficient support in depth if the DTI PSREs are privatised and the funds provided for them so reduced that they lose "critical mass".

4.4.13 As the House of Commons Science and Technology Committee noted, government research laboratories are valuable parts of the science base and should not be judged only by their ability to meet departmental needs or attract contract research. The DTI has a responsibility to identify and maintain the wider knowledge base that industry requires in Government Laboratories, RTOs and industry itself.

4.4.14 The Government believes that industry should invest more both intramurally and extramurally and the DTI awareness programme should help. The current situation, however, is that large swathes of industry do not support research, as the R&D Scoreboard shows, and in many cases has no clear vision of the research provision required to meet its needs. While we wait for that awareness to be raised core competences of national importance will be lost and will take a long time to rebuild.

4.4.15 Similarly the House of Commons Trade and Industry Committee said:

> "While we believe that the DTI is right to devote additional resources to technology access, we do not accept that this should mean reduced spending on R&D. Moreover, the planned decline in spending on industrial R&D is greater than the planned increase in support for technology access (Table 14). Reduced government support cannot be justified by reference to reduced support by other governments, since United Kingdom Government support for civil R&D is already low relative to that in other industrial countries (except Japan) and industry's own spending is also relatively low. As indicated earlier, improved access to technology is not an alternative to R&D" (28).

They also said, with specific reference to the Efficiency Scrutiny:

> "The DTI and the Office of Public Service and Science should co-operate to ensure that the latter's review of public sector research establishments takes full account of the need to strengthen the United Kingdom's R&D base" (29).

We do not believe the Scrutiny has taken full account of this need.

Quality of Life

4.4.16 Much S&T done in RCIs and GREs is done in the public interest to improve the quality of life such as research on health, safety and environment. Examples include agricultural work at the Institute of Grassland and Environmental Research where the work on clover in grasslands is designed to fix nitrogen from the atmosphere and work on organic farming methods and the natural control of predators to reduce the need for pesticides. Work of this sort will not be financed by industry, indeed many agro-chemical companies would be determined to resist it. The squeezing of public funds for these projects or the privatisation of the facilities which do the research will not be replaced by commercial investment. Similarly the privatisation of ADAS could lead to a situation where, being forced to charge commercial prices for its services, farmers will turn to commercial agro-chemical

companies who would provide free advice but this would be unlikely to be in favour of environmentally friendly farming. Even the current regime in ADAS carries dangers because being forced to charge to cover its costs and thus losing "business" it is having to retrench and thus reduce even further the service it can provide.

4.4.17 Many examples can also be found in the area of food safety and there is a need to retain "centres of capability" to respond to food safety scares which arise on a regular basis. Recent examples of this response capability are:

(i) BSE in cattle;

(ii) lead in imported feed stuffs for animals which posed a public health problem;

(iii) patulin in apple juice;

(iv) toxins in peanut butter;

(v) dioxins in milk;

(vi) hormones in meat.

All of these recent examples of food scare problems required resources in MAFF and AFRC Laboratories to be quickly diveted to investigate and contain the problem.

4.4.18 Moreover, this research and rapid response is best managed in an integrated public research framework. Animal disease and welfare control policy with monitoring of the effectiveness of control measures co-ordinated by the MAFF Animal Health Centre at Tolworth requires a readily accessible laboratory back-up. The laboratory back-up for the Veterinary Field Service exists in the Veterinary Investigation Service, so far as front-end diagnosis is concerned. CVL has the facility to scale up investigation into new diseases, and develop new methodologies to improve the effectiveness and efficiency of handling existing problems.

4.4.19 Another area where there would be likely to be a direct clash of interest between the public good and privatisation is transport, a case we deal with in more detail in Q6. Suffice it to say here that, as in the case of agriculture research transport safety research has played a major part in achieving the dramatic reduction in road accidents. The fear, therefore, is not simply that future safety research will be prejudiced if privatised but that the Government may be planning a major switch of funds from issues of safety, economy and environmental quality in favour of other concerns such as motorway tolling technology.

4.4.20 In the words of the President of the Royal Society:

> "Again we should remind ourselves that many of these (services) were taken over by the State because (as perceived by the electorate at the time) the privately-run services were inadequate or unsatisfactory. The arguments in favour would have varied but would have included the advantages of unification, public safety and long-term planning" (30).

Q5. *How will the proposals in the Report affect the Statutory duties of the research establishments?*

5.1 Statutory and regulatory functions are among the most long-standing and crucial roles of government, and many have a substantial scientific and technical component. These need to be carried out within government and in close interaction with departmental policy making. Such functions require long time scales, continuity, independence and integrity par excellence. As the President of the Royal Society points out, regulatory independence becomes increasingly important as more areas of previously state provision, eg water, energy, and scientific services themselves are privatised.

> "The more services are privatised, the greater the need for vigilance and control in the public interest and this will lead to more regulations rather than less. By privatising and deregulating at the same time the Government is in danger of abdicating its social responsibilities" (31).

5.2 If establishments undertaking regulatory work, such as the Laboratory of the Government Chemist, Health and Safety Executive and Agencies of MAFF and SOAFD involved in disease monitoring, were themselves to be privatised, a real danger emerges of private companies regulating their own activities and those of competitors. Alternatively, if a private company undertaking regulatory work ran into financial difficulties the prospects are either of a decline in the quality and coverage of the service provided or of an injection of public funding, in which case the government would be providing finance without the degree of control which currently exists. Other areas of regulatory research, for example, relating to the environment, although vitally important to quality of life require a long-term open-ended commitment and would be unlikely to find any market at all in the private sector. It is not an exaggeration to state that public safety could be at risk. It is also important to retain statutory and regulatory functions "in-house" as the basis for EU standard setting. United Kingdom regulators need to be up to date in protecting United Kingdom interests. They need the scientific expertise and advice so that they can be "informed regulatory policy makers" in touch with both the industry and latest scientific developments.

Independence and Integrity

5.3 Closely related is the issue of independence and integrity. As the KPMG study of TRL said:

> "The main competitive weakness of the industry consortia in bidding for DOT business is the degree to which their research is perceived to be influenced by the requirements of their members. For example, although MIRA is clearly independent of the commercial interests of any particular company in its membership, it is open to question whether MIRA research results would generally be perceived as independent of the interests of the motor industry as a whole. This would disadvantage MIRA where regulatory and standards work is concerned" (32).

5.4 Other examples include advice to farmers on pollution currently provided by MAFF and the work of the Intervention Board in the regulation of livestock products which could quite easily be turned to the advantage of particular interests. The Laboratory of the Government Chemist has been informed that if privatised it would lose work for HM Customs and Excise on analysis of drugs because of perceived threats to its independence.

5.5 In construction, clashes of interest already arise between building developers and those responsible for ensuring that buildings are constructed to comply with requirements for fire safety for their occupants, whether work-force or members of the public. The Fire Research Station, part of BRE, as an independent government body, is often asked to act as an informal arbiter which it does by drawing from a deep well of knowlege built up over the years. A privatised body, dependent on commissions from customers, will not keep its reputation for impartiality intact for long. Everyone, researcher, developer, regulator and the public will lose as a result.

5.6 Similarly, the BRE's government customers know that the advice they are given is independent of any underlying commercial interest and also that the views expressed in international standards committees, where researchers act as United Kingdom official and represent the national interest, are free of commercial taint. Examples can be given where committee representatives from private companies have sought to influence the deliberations of committees to ensure that their product or services (eg testing) are not adversely affected by committee decisions—or indeed are even enhanced.

5.7 NPL provides another good example of these features. There it is the practical, physical standards, ie the hardware, with the people who made them and use them, which is the basis of the government's ability to:

— pronounce and legislate on technical matters;

— test compliance with legislation;

— assess suitability of equipment for national purposes;

— arbitrate on issues between British citizens;

— defend British interests in disputes with other countries.

At the national standards level of measurement science, the apparatus is of no value unless its builder, evaluator and user have complete control of it and of its history. The builder, evaluator and user, if not one and the same, must work closely together. These conditions are necessary to ensure the integrity of the standard of measurement provided by the apparatus. As in a court of law, someone has to vouch personally for the accuracy of a measurement made with his apparatus. This person, the metrologist, has to be a person of integrity, the laboratory in which the metrologist works has to have a reputation for independence and integrity in providing the conditions for the integrity of its standards.

5.8 Integrity matters in metrology as in other sciences—eg calls for the experimenter to give the "minuses" as well as the "pluses" of his work. A business culture as recently experienced in NPL has already brought pressures counter to integrity; someone was asked by his manager to delete a "minus" on the grounds that it "does (the standard) down". At a lower level such pressures can be countered by eg NAMAS accreditation, but at national laboratory level it is essential to maintain a reputation for integrity and this is best demonstrated by independence of inappropriate pressures.

5.9 At the international level the apparatus built and maintained at the NPL provides a basis for the United Kingdom Government's independence of action. For this NPL's measurement-standard apparatus must be independent of that in other countries although meeting international agreements, and on inland United Kingdom issues it is clear that NPL must be impartial. It is also part of the international agreements, particularly the "Convention du Metre", that countries will maintain enough independent measurement standards to assess the accuracy with which each can be realised in practice from its definition. This provides integrity to the international system of measurement, which underpins international trade, on which Britain relies.

5.10 A typical problem affecting national interests and requiring high-level metrological support is in defining the international boundary in the North Sea oil and gas fields. The boundary is liable to be uncertain to a few metres, but its practical delineation from the paper definition may decide who gets substantial

revenue. Expert metrological help is needed to gain a better estimate. Differences in the origins of various countries surveying co-ordinate systems can lead to claim and counter claim. Typically this is resolved using the American Global Positioning System (GPS) or similar satellite system which employs transportable versions of the primary standards of time and frequency, the caesium clock.

5.11 To obtain precise positioning, survey ships carry caesium clocks. At present in a dispute the government is supported by NPL's calibration and advice. NPL Time and Frequency staff advise regularly on national land and sea needs through attending the inter-departmental Land and Hydrographic Survey Committee (LHSC) which has worldwide concerns and combines both civil and military aspects. Further NPL can independently report on the functioning of the GPS since this system is continuously monitored for international time comparisons.

5.12 This advice to government would be lost on privatisation. Advice would not be on a regular "within government" basis but would have to be "brought in" by consultancy contract if a particular problem arose, and if the department with the problem knew where to go. NPL has advised MOD informally, eg on where to seek competent consultants. That advice would be less reliable if NPL too were primarily consultants. Further, recent experience in NPL shows that arranging formal contracts with MOD for example can take many months longer than the time to the deadline to use the advice. In this context it is interesting to note that another participant in LHSC, Ordnance Survey, was considered for privatisation but the proposal was rejected.

5.13 The Efficiency Scrutiny team do appear to have taken some of these arguments on board, at least by implication. Although its brief analysis of the S&T activities in Annex H does not mention statutory and regulatory duties in its "front-line operational" definition they form an important aspect of the duties mentioned there. Similarly in quoting the HSE customer checklist in Annex P in paragraph 7.2 and recommendation 26 would seem to suggest again by implication that certain features of government responsibilities should be performed "in house". Thus one can assume, although again it is not explicit, that these tasks would be part of their definition of the "core" activities.

5.14 However, as in the case of the recommendation on BRE (see Q6.), any suggestion that such "core" activities should be split from the rest which can then be either subcontracted or privatised carries dangers. In particular it ignores the internal "synergies" between various areas of the PSRE's work. To take the example of NPL again there is synergy between the six "measurement" Divisions, including materials and IT standards and NAMAS as exemplified by:

— The main SI units of measurement are inter-related, and for work at the highest levels of accuracy on each, access is needed to the others.

— The common thread of standards and regulatory work associated with standards runs through all Divisions, and all derive benefit from and support NPL, including achieving economies of scale in the central oveheads.

— NPL is big enough to provide the necessary continuity and stability in the standards work of each Division.

— The wide spread of technologies and of expertise permits cross-disciplinary work, eg the *ad-hoc* inter-divisional working group on high-temperature superconductors, which included the materials division; the inter-divisional fibre-optics working group. Also work on basic standards, particularly high-stability frequency standards is about to be "brigaded" by NMSPU to reflect interest in three divisions and four groups stimulated under GRS funding.

— The purchase of expensive equipment, eg the NPL's hydrogen maser, is justified partly through its importance to fundamental measurement in the adjacent metrology divisions, aside from its importance to the NPL timescale and frequency work. The same is true of central computing support, etc.

— NAMAS, while different from the other divisions, acts as a route to devolve NPL standards work to other accredited laboratories, benefits from NPL's reputation for impartiality and makes use of the experience of NPL staff for assessments and advice, eg on reasonable levels of accuracy to certify in accredited labs. Likewise NPL benefits from NAMAS in identifying new industrial requirements for standards.

— Continuity is a form of synergy, it is beneficial to have all the standards in one place—as at NPL—and to keep them there. Under a tendered NMS regime there are pitfalls in assuming the keeping of standards could readily be moved from one contractor to another. All national users would need to be informed of the change, as to which standard was the national one at what time. This would require great care if the time standard itself were changed.

5.15 An example of synergy between Government work and work undertaken for the private sector can be cited from the work of the Fire Research Station, BRE. Work is currently being undertaken to assess the usefulness of equipping certain retail premises with automatic sprinkler systems for the information of

the regulatory arm of DOE. Simultaneously several retailers are asking FRS to carry out work on assessing the hazards of their particular company's products when on display in areas open to the public, and if sprinkler systems can be used to reduce the hazard and allow more flexible use of buildings. Because of the work undertaken for DOE, the scientists involved can also undertake the private sector work; their independence of private influence and known confidentiality also encourages private sector clients to agree to their results providing additional information for DOE.

5.16 Compartmentalisation therefore threatens the quality and integrity of the service provided, the maintenance of a "critical mass" capable of carrying out the task and continuity of the database. The loss of such synergies also is likely to provide less value for money or efficiency. "Synergies" and overlaps within PSREs are as, if not more, vital than those across their boundaries on which the Scrutiny seems to concentrate. The proposals for privatisation of LGC and NPL could seriously prejudice these "core" government regulation activities (see below).

Q6. *How suitable are the Report's proposals for privatisation?*

6.1 In dealing with the Scrutiny Report's proposals for privatisation we divide the issue into four parts:

— the criteria for privatisation,

— the privatisations which were already determined before the review was published,

— the early candidates for further privatisation

— the process for identifying future candidates.

6.2 *Privatisation Criteria*

6.2.1 The Report sets out the criteria which should be used for deciding whether PSREs are candidates for early privatisation in Annex J. These are:

(a) the extent to which the activities undertaken could be carried out in principle in the private sector;

(b) the extent to which the resulting private sector organisation should be permitted control of its own destiny;

(c) how far the organisation is in shape to thrive in the private sector.

They say in paragraph 3.4 that they have taken account of previous privatisations and previous reviews in compiling their criteria and that there has been full transparency with the DTI and DoT reviews. It would therefore seem appropriate to use these also to fill out what is meant by the criteria (33). The TRL consultancy report is the only one which has been put fully into the public domain and this goes into more detail on criteria.

6.2.2 The Scrutiny also mentions some of the types of organisation considered "private". To the list of those normally considered as "private", eg trade sale to another company, are added "go-co", and more surprisingly—although "private" on a Treasury definition—Universities. There are others, and variations of these, but for purposes of the analysis these will suffice.

6.2.3 In Table A (*printed overleaf*) we set out the criteria and the different broad types of "privatisation" and the degree to which, on the basis of current reviews and on state of knowledge of the various establishments, the different types of privatisation would meet the criteria. The criteria listed in Table A refer to areas which have passed the first hurdle (a) and might be considered "in principle" privatisable, and therefore relevant to categories (b) and (c).

6.2.4 As far as criterion (a) is concerned we have already covered in Q4. and Q5. the functions which the PSREs perform which are integral to government science and essential for wealth creation and the quality of life, and which we consider should remain within the public sector if they are to be effectively performed and give good value for money to the taxpayer. Moreover, as the Scrutiny Report says, even if they were analytically separable from other functions, "it is not always an easy matter ... to disentangle these from the other activities, which often either underpin or complement them" (paragraph 5).

6.2.5 Assuming that some elements could theoretically be privatised in principle we move on to look at the other criteria in (b) and (c). Some of the prime criteria defining "privatisation" in this context are that there should be "transfer of control and risk to the private sector" and that public sector involvement in the management of the body should cease on privatisation—ie a "clean break"; that the government can exercise their customer choices without having to consider the consequences in terms of collapse or shrinkage of the contractor and possible consequential redundancies; and that there should be alternative sources of supply and cost effective delivery.

6.2.6 A major underlying concern, as the Report points out is that "PSREs overall rely on public funds for over 80 per cent of their funding" (paragraph 2.11) and the decline in Government funding

Table A Impact of Privatisation

Criteria	*Type of Privatisation*			
	Trade Sale	*"Go-Co"*	*Non-Profit Company*	*University*
(b) *Government objectives:*				
As "owner"				
1. "Clean break"	Yes	Partly	Partly	Partly
2. Maximise proceeds	Partly	No	No	No
3. Protect employees	Partly	Partly	Partly	Partly
As "customer"				
4. Impartial expert advice	No	Partly	Yes	Yes
5. Stable source and quality of supply	No	Partly	Partly	Partly
6. Alternative supply	Partly	Yes	Partly	Yes
7. Cost effective delivery	?	?	?	?
(c) *Ability to survive: beyond privatisation*				
8. "Effective demand", revenue stream and potential for growth	Partly	Partly	Partly	Partly
9. Access to new markets	Yes	Partly	Partly	Partly
10. Commercial type operating methods	Yes	Partly	Partly	Partly

described in Annex 1, means that PSREs may go into a "cycle of decline" unless they are free to raise business elsewhere. As the KPMG study of TRL says:

> "In our view, retention of TRL in the public sector would risk it being unable to respond adequately to changes in its market and run the considerable risk of TRL going into a cycle of cumulative decline. Privatisation, by removing some of the public sector constraints on its operations, enabling TRL to exploit fully its intellectual property and to develop a more commercial approach will make it better able to respond to its changing environment" (34).

6.2.7 Thus the criteria of a revenue stream and potential for growth are crucial. However, since the public funding is set to decline, why is there any more chance of survival if they are privatised? The private sector, for reasons already given, show no propensity to support "public good" research, and if they do, this potentially conflicts with another criterion—impartiality. Indeed, the lesson of previous privatisations is that all have had to be launched with substantial government guarantees of support, thus nullifying the "clean break" criterion and in several cases, in order to survive at all they have had to transform their character, so that the criterion of a "stable source and quality of supply" has been infringed.

6.2.8 Thus the National Maritime Institute (DTI) was privatised in 1982 amid grave fears about its viability and shored-up with initial guarantees and memoranda of understanding. It is now called British Maritime Technology Ltd (BMT) with an annual budget of £20 million and a staff of 400 but has a quite different character and mission from the old NMI. The Hydraulics Research Station (HR) which was established to provide a national centre of excellence in civil engineering hydraulics was privatised in 1982 and is now run as a company limited by guarantee with profits ploughed back into a trust which holds all the assets. It currently has an annual budget of £12 million and 330 staff. Both organisations have managed to survive beyond the period of initial guarantees but, HR has contracted rather than expanded from its original size. HR have already made 35 staff redundant in 1993 and they are faced with further difficult times ahead as it faces increased competition from the Water Research Centre. The WRC privatised in 1989 when the water authorities were privatised, is cutting 20 per cent of its staff as the five year guarantee of contract work from the Water Utilities comes to an end and the water companies are cutting back on research. In so doing, the privatised water companies are acting in the same way as the privatised electricity industry—hence no one is doing the necessary research. The privatised BT and British Gas are also now performing and commissioning much less R&D than they were before privatisation, as the R&D Scoreboard indicates.

6.2.9 Examples of the importance of maintaining a stable source of quality of supply include areas where long term data bases are important. Our NERC Institute of Hydrology members have pointed out that they have already lost several long term studies under funding pressures, only to find several years later that the missing data would have been extremely valuable. Similarly, the British Geological Survey members point out that BGS currently successfully mixes public sector research and private sector contracts. The maintenance of the national geological data base and expertise is based on the core programme of data collection and interpretation. This expertise is used to advise Government,

but is also utilised by the private sector. Much of the private sector work (both nationally and internationally) is based on the experience gained by being a national survey. Without the multi-disciplinary core programme, a valuable national asset would be lost. The hiving off of BGS to the private sector, or division into little pieces in university departments would cut off nearly all geoscientists from Government. BGS needs to strengthen its links with Government, not weaken them. BGS suffers from the absence of sound geological advice within departments. Moreover, BGS gains much of its work by being a multi-disciplinary geological organisation, to hive sections off to the private sector and/or university departments would destroy the potential for its many multi-disciplinary studies. As far as privatisation is concerned, Sweden provides a salutory lesson. They privatised their national geological survey only to find it went bankrupt and they had to bail it out at a cost of £20 million.

6.2.10 If one were to forget the type of services supplied by the PSRE and focus simply on maximising proceeds and making a "clean break" then a trade sale would appear to be a possible solution. But as the Levene Report says (35), many GREs would be unable to generate sufficient profits to attract investors or fund future capital programmes. Also as the TRL report notes in relation to that laboratory, there is the possibility that a number of potential purchasers would be unacceptable because of vested interests which would threaten the perceived impartiality of the research. There is also the problem encountered by the Atomic Weapons Establishment (AWE) that a private company would not receive the same co-operation or information sharing from other Government and public agencies because of less trust than between public organisations (36). There may not be sufficient bidders for a total research establishment or the capital costs may be too high. In such cases the privatisation may entail fragmentation or "asset stripping" in order to make it profitable. As the TRL Study points out, fragmentation could lead to insufficient "critical mass" for viability.

6.2.11 Faced with these problems it is not surprising that the Scrutiny Report concludes that there are few early candidates for privatisation or that they seize on the "technical" solution of University ownership. They admit that the University option would not necessarily meet the efficiency or commercial objectives but it might make scientific sense.

> "The underlying rationale here would have less to do with the introduction of commercial disciplines and opportunities and more to do with synergy. The main criterion in this case would be commonality of interest and expertise, though funding stream considerations would also come into play" (Annex J, paragraph 8).

As we see under Q7., however, the scientific synergies are not always obvious and the missions very different.

6.3 *Privatisations in the Pipeline*

6.3.1 Although the Report is sceptical about new privatisation initiatives at least for now, it fails to do anything to hinder the almost 50 per cent of the field which is already designated for privatisation in some form or another. AEA Technology (including the transferred part of WSL) is aiming for privatisation of its consultancy arm; the President of the Board of Trade has announced that NEL and LGC are to be privatised and NPL to be a government owned/contractor operated company (go-co); and the Minister of Transport has decided that TRL will be privatised and by trade sale (the most damaging form of privatisation) despite the advice of his consultants. As a result the DTI and DOT will have little or no "in-house" research expertise at their disposal, and the Government as a whole will be denuded of the vast majority of its research expertise in the physical sciences. Indeed if the proposal to privatise BRE is carried through it will leave HSE as the civil department having an in-house capability in the physical sciences. This is a situation which should cause major concern.

6.3.2 In the case of AEA which is already a Trading Fund and operates at arm's length from government, the rush to privatise the "commercial" arm of AEA Technology and separate it from a government owned decommissioning authority requires careful review from several angles. Firstly, it will remove from government a major pool of expertise on nuclear and other energy matters other than those relating to decommissioning.

6.3.3 There is a risk of early business failure for the privatised part of AEA, which would cause extra cost and difficulty for the Government. This is because increasing profit projections for Commercial Division rely on exploitation of monopoly situations that currently exist, for example in the areas of decommissioning and waste management. Without the guarantee of long term Government contracts after flotation, the future of the Division would be at risk. In addition many of the potentially commercial activities assigned to Commercial Division risk failure since they are based on synergies with part of Government Division that would no longer be available to them. They would be unable on their own to demonstrate profitability at a sufficient level in the early stages and, under private sector criteria, would be closed down. Even if it does survive it is likely to have to change its character to do so—doing consultancy rather than R&D and potentially moving out of the nuclear field all together.

6.3.4 In the case of TRL and the DTI laboratories reviewed, they perform important "core" functions

which should stay within Government. In the case of the DTI laboratories, especially LGC and NPL, they perform scientific services which are well within the core statutory and regulatory functions and both they and NEL perform much "public good" research that will either not find support in the private sector or should not be done there. However, it is clear that the President of the Board of Trade sees little role for them in DTI since he sees DTI's primary mission as being to raise "awareness" of innovation in industry. The laboratories would provide valuable support in depth for his "business links" but they do not necessarily need to reside in DTI in order to provide that. DTI staff should also ideally be providing the scientifically literate input into senior policy making in DTI but a President who can decide not to replace his Chief Scientific Adviser clearly does not wholly appreciate that role either.

6.3.5 Whilst we welcome the statement in the Government's response to the House of Commons Select Committee report on Innovation that:

> "The DTI's laboratories are an important national resource. Each of them plays a significant role in ensuring the competitiveness of British industry and in meeting the needs of Government Departments. They have a unique asset in the expertise of their staff, which is respected internationally."

and the promise that:

> "The proposed changes in the status of the laboratories will not reduce the need for consultation on programmes of work. The Department is, therefore, reviewing the way in which it manages such programmes to ensure that the arrangements are appropriate for future circumstances, and that they will continue to allow the laboratories to contribute to the health of industry on a broad front, as well as to meet the Government's needs" (37).

We nevertheless feel that time is running out. The National Engineering Laboratory is already admitted by its director to be below the "critical mass" for viability.

6.3.6 We would therefore recommend that before any more damage is done to the science and engineering base in DTI they should be transferred to the OST so that they can provide a central resource of expertise and scientifically qualified staff to fill senior positions in OST and the DTI from there; and that the decisions to privatise should be revoked forthwith.

6.3.7 In the case of TRL, the consultants made much of the fact that TRL needed to be privatised because of the potential "spiral of decline" resulting from a squeeze on total government funds available for transport research and the growing use of competitive tendering. If it was to be privatised the KPMG study recommended a non profit making company limited by guarantee because it carried less chance of fragmentation and was more likely to retain the confidence of others in its independence and integrity. However, it would need government guarantees of contracts or support for some time thus negating the principle of "clean break". The continued provision of expert advice and continuity as a centre of excellence would depend on TRL's staff remaining with the company and this in turn depended on seeking a form of ownership which could retain their confidence and a non-profit distributing company, perhaps with some management buy-out elements, would be more likely to do so than a trade sale.

6.3.8 The KPMG study points out that TRL is very closely interwoven with the Department of Transport. For 60 years TRL has been the main research arm of the Department of Transport. The Agency Framework Document puts it this way in paragraph 2.1:

> "It is essential for the safe and efficient operation of the United Kingdom transport system that there is a close link between scientific research and transport policy. TRL currently plays a crucial role in achieving this as the primary source of impartial and authoritative research and scientific advice to the Department of Transport."

This means in our view that TRL would not pass hurdle (a) above established by the Scrutiny Team.

6.3.9 One of the crucial roles which PSREs, particularly GREs perform is as "intelligent customer", a role which Levene and Stewart have described thus:

> "The informed customer should identify whether research needs to be carried out, have a knowledge of the organisations capable of carrying out the work, assess the merits of alternative contractors and evaluate the end result" (38).

They note that the range of expertise required is unlikely to be found in one person and that the function needs to be properly resourced. Establishing such a resource is more necessary where privatisation and contracting-out has taken place, and more expertise is required which could previously have been obtained via the in-house research establishment. These costs will be substantial if the job is to be done properly. For example the KPMG Report notes how heavily dependent DOT is on TRL for "intelligent customer" services.

6.3.10 In our view TRL meets very few of the other criteria under (b) and (c) either. We have already noted that a "clean break" would not be possible and there is no real potential for growth outside the public sector unless it changes its character (39). The government would not easily find alternative sources for all areas of expertise—some would need to be found overseas. KPMG notes that "using overseas laboratories would entail logistical dificulties" (40), and, we would add, would not necessarily be considered by the taxpayer as providing overall good value for money, nor would it help the United Kingdom science base.

6.3.11 In the case of TRL too therefore we believe there is a strong case for revoking the decision to privatise, and particularly the decision to privatise by trade sale. As the House of Commons Transport Select Committee said after its investigation:

> "We cannot recommend the privatisation of TRL to the House until we have received much more convincing evidence from the Department that the laboratory's independence and expertise will not thereby be sacrificed" (41).

6.3.12 We hope that the new Minister will take the opportunity to review the position. It would be preferable for TRL to stay close to the Department but if the new Minister continues the same policy as his predecessor then we would recommend that as in the case of the DTI laboratories the OST should take over responsibility for this laboratory too.

6.4 *Early Candidates*

6.4.1 Although the Efficiency Study recommends that ADAS should now be privatised, there is little supporting evidence in the report to support this recommendation. Whilst ADAS does offer a full range of commercial services it also retains a large dependency (approximately 60 per cent) on Government funded "public good" research and Statutory Order advisory services, including environmental, pollution and animal welfare services. The question of ADAS privatisation is being addressed in a separate review of ownership options that is reporting direct to the Agriculture Minister. IPMS believes that it is not appropriate for the complex issues associated with ADAS privatisation to be dealt with in a superficial manner through the Efficiency Scrutiny and we therefore make no further comments on this specific case.

6.4.2 IPMS wholly opposes the suggestion in recommendation 2 that the "frontline functions" in DOE could be separated from the rest, and the latter brigaded with other privatisation candidates—TRL and/or NEL. We have already explained in paragraphs 4.3.1–4.3.16 why we think it is important to sustain close relationships between GREs and their parent departments. Sir Peter Levene describes the relationship between GREs and departments thus:

> "Departments see value in such in-house contractors who can develop specialised skills and facilities dedicated to the demands of their customer-owner, can be encouraged to give particular S&T programmes continuity of resources and direction, and can be called on at short notice to give priority to unexpected issues" (42).

But whereas Martin Holdgate (see paragraph 4.3.8) regarded this relationship as an advantage, Sir Peter Levene disapproves because he wishes to see full institutional separation of customer and contractor.

6.4.3 Since the Scrutiny Report rejects the argument for the need for full institutional separation elsewhere in the report, and gives no other supporting arguments for splitting the functions in this way, it is mystifying why they should make recommendation 2.

6.4.4 A better estimate of the "core" work at BRE which would have to be undertaken by the department is 56 per cent rather than the 36 per cent quoted by the Scrutiny Team—paragraph 3.6. As we state in paragraph 5.14, the activities cannot be simply split into two areas. Apart from the internal "synergies" between the two activities, in many cases it is the same staff who are undertaking both the "core" work and the "non-core" work for other customers, including other Government Departments. For example, the case from Fire Research quoted above in connection with paragraph 5.15, it is the very same team of people who do both the work for DoE and for the private sector, to the benefit of both.

6.4.5 Moreover, "non-core" often precedes "core" work, or *vice versa*. In some subject areas/capabilities support has moved from"core" to "non-core" several times during the course of the programme. For example:

— The "core" work which resulted in the proposals for energy conserving controls for artificial lighting in buildings and which have been adopted as part of the Building Regulations were preceded by "non-core" work on controls supported by the Department of Energy.

— Similarly, work on heating controls undertaken for various private contractors provided the background to the work in support of the Building Regulations for heating controls in buildings.

— Work by BRE for the cladding industry on potential conflicts between the durability and fire performance requirements of cladding systems enabled BRE to respond quickly to a Ministerial request for definitive guidance on overcladding system for blocks of flats as a result of a fire at Knowsley.

— In the reverse direction, the BREAM schemes for the environmental assessment of buildings which are fully supported financially by industry was only possible because of the "core" work carried out for Government in the past. BREAM is unique and is seen by Government, BRE and the industry as a major influence in making the Construction industry aware of environmental issues.

In summary, BREs programme is a dynamic blend of "core" and "non-core" research which would suffer irretrievable damage if recommendation 2 is taken forward by the DOE.

6.5 *Identification of Future Candidates for Privatisation*

6.5.1 The Report suggests in recommendation 5 that in reviewing the case for privatisation in the "Prior Options" process they should identify "frontline" activities and their essential supports. We would agree with the Report that such activities should stay in Government, or be reproduced there if privatisation, despite our objections, does take place. There is a particular need, as Levene and others have pointed out, to strengthen the "informed customer" role. There is also a case in DOE and DOT to strengthen the general S&T expertise in HQ so that they are not so totally dependent on their PSREs. But as we explained in Q4., there is much greater value for money, public good and support for science in policy making to be obtained from keeping the full range of functions in the public service.

6.5.2 The Report also suggests that departments should analyse the propensity for separating privatisable elements from the "frontline" and "immediate support". We have already noted that the Team itself believes this is difficult to do (see paragraph 4.3.18 above). Our members in TRL agree. As they said in evidence to the KPMG consultants:

> "The proposal to privatise TRL is based on the premise that the DOT can obtain research services from any of a large number of competing organisations, with consequent benefits in reduced costs. It is assumed that impartial advice can be obtained from whatever organisation carries out the research work, so that there is no need to retain in-house a body of researchers.
>
> "We dispute the above assumption. There is a crucial difference between conducting a research project and assessing the significance of the results.
>
> "There are many organisations capable of conducting research projects: consultants, University departments, institutes, market research companies etc. can carry out work efficiently to a carefully prepared brief. Their reports give an accurate account of what has been done and what results have been obtained. But the organisations would not expect to advise on the basis of the original brief, the significance of the results to policy or the relationship with results from other studies. Many of these areas might have an impact on the commercial interests of the organisation concerned: it would not feel obliged to supply information or advice which might damage those interests.
>
> "TRL's current status within the Civil Service enables it to supply such advice, free from commercial or other pressures. Privatisation would introduce such pressures, which could affect TRL's reputation for impartiality."

6.5.3 As far as recommendation 6 is concerned, as we have said in paragraphs 4.18 and 4.14, while we accept the need for reviews of efficiency and effectiveness and to review the scope for rationalisation and privatisation, constant and fragmented reviews by a variety of different bodies with their own agendas, rarely scientific in either purpose or method, is highly damaging to the pursuit of a long term exercise like research. The current five year cycle used for "Next Steps" reviews seems far too short a cycle particularly to review such major structural issues as privatisation and rationalisation. Moreover, as far as the third "prior option" is concerned, since the report was written the OPSS has in the latest White Paper on the Civil Service (43) further refined the criteria for contracting out, bringing it closer to recommendation 30 and lessening the justification for review of that aspect.

6.5.4 We welcome recommendation 7 but totally oppose recommendation 8. This seems to us a recipe for "cherry picking" the profitable bits and for fragmentation. We are particularly concerned about paragraphs 3.6(c) and 3.8, which seem to be an open invitation for the crudest form of "trade sale" approach. It also seems to contradict the Scrutiny's statements elsewhere about the importance of a clear strategic view as well as sacrificing internal synergies and retention of "critical mass" of the PSREs. For example if subject specific areas were removed it would render the PSRE less able to conduct multi-disciplinary research.

6.5.5 As far as recommendation 9 is concerned we accept the need for a long term strategy and organisational and funding arrangements to suit. But we do not accept that the identification of

privatisable parts can be made for all time, since government needs and priorities may change (see paragraph 4.3.18, above). However, we do endorse this recommendation insofar as it attempts to deal with the situation where long term candidates for privatisation such as NEL should not be allowed to die of neglect (44). On the other hand, we totally disagree with paragraph 7.16 which says that "PSREs which are to remain public sector organisations should have the emphasis placed on economy and limitation of non-government activities, while PSREs designated as potential privatisation candidates would be encouraged to expand their markets and become as fully commercial as possible. In our view the latter conditions should be provided for all PSREs (see Q9. below).

6.5.6 In conclusion on the question of privatisation the IPMS concurs with the CBI and the Royal Society (45) that privatisation offers neither a feasible or desirable option even if conceived in the narrow terms of reference set by the scrutiny team, and certainly not if wider considerations of the public good and good value for money for the tax payer and the intangible benefits of PSREs to Government in general are taken into account. A possible exception to this, however, might be the technical "privatisation" option of a link with Universities, to which we now turn.

Q7. *What are the advantages and disadvantages of the following proposals in the report?*

— *Nos. 3 and 4)* *transfer of PSREs to Universities or closer formal links between PSREs and Universities;*

— *(No. 10)* *the two models for organisational structures;*

— *(No. 38)* *the Directors of Rationalisation.*

7.1 *Links with Universities*

7.1.1 Linkages between research undertaken in PSREs and in Universites are nothing new. There is an overlap of basic, strategic and applied or near market elements and both include finance from public and private sources. Some areas of research are contracted to both Government and University sectors. For example, the Horticulture Development Council allocates funding to HRI and University research teams. Where interest and expertise is spread across both sectors, it makes sense to explore the scope for establishing closer links in an effort to maximise quality and effectiveness whilst reducing overheads. In Scotland the Scottish Office supports early and close collaboration between its sponsored bodies and local Universities. Three research establishments in Aberdeen supported by the Scottish Office serve as the focal point for three research centres involving a consortium of two Universities, five research institutes and the Scottish Agricultural College. This networking is seen as a vital feature of Departmental policy and an important means of enhancing the nucleus of key British scientists.

7.1.2 Among RCIs, POL already has strong links with Universities through its research projects, particularly Aston, Bangor, Edinburgh, Lancaster, Newcastle, Nottingham and Sheffield, and is formally affiliated to Liverpool. These links feed on the complementary nature of research in the different organisations. Some POL staff have honorary positions in Universities. University lectures are given on BSc and MSc courses and PhD students are supervised in collaboration with various Universities. In the GREs, BRE has professors on its staff and have a special section to develop links. DFS in MAFF has close links with the University of East Anglia, Cambridge University and others. The Annexes to the Scrutiny show the wide range of such links for most PSREs.

7.1.3 Collaboration between PSREs and Universities offers many advantages. For PSREs it provides additional research facilities. For example, PSREs can generate many "what if" questions which may not justify major capital expenditure on equipment and facilities. Universities may have these facilities, and collaborative studies may solve the scientific question without large-scale expenditure by the PSRE. However, the control of collaborative studies has to be carefully planned and agreed. Control should be retained by scientists within the PSRE generating the problem to ensure that the direction of research is maintained. Poor control of Government research contracts to Universities can lead to ineffective use of the funding and a failure to address the real problem to be solved whilst carrying out more "interesting" research.

7.1.4 Links with Universities are also important for the cross fertilisation of ideas. It is essential for all scientists to maintain contact with colleagues. Scientists in PSREs must be aware of developments within university research departments, and academics should have an appreciation of science in national and international policies. But this requires links with many Universities and may be damaged by an exclusive relationship with one.We therefore welcome recommendation 4.

7.2 *Transfer to Universities*

7.2.1 However, we have more serious reservations about the transfer of ownership to Universities. Although it is tempting to see it as a sanctuary from the pressures of the Government squeeze on funding PSREs, and a means of achieving freedom from the rigid Treasury attitude to the PSBR, we would urge very careful, detailed examination of the option before rushing down that route.

7.2.2 Firstly, as we pointed out in paragraphs 4.3.1 and 4.3.2, the core mission of Universities is

very different from GREs and, although less so, from Research Councils. GREs would lose the advantage of close links with the department and Government and *vice versa*, as spelled out in Q4.

7.2.3 The basic concepts of scientific research and its application have widely different interpretations within Universities and PSREs. The former are dedicated to carrying out research as an end in itself, whilst PSREs are concerned with the application of research to solve specific problems which contribute to the policies and responsibilities of their parent ministry. Integral with these differences are other differences in both funding and staff structures. Universities depend upon innovation to attract funding and academic staff, the majority of whom are on short-term contracts; many PSREs carry out research to satisfy statutory duties which require long-term funding and experienced permanent staff who require a grading and career structure within which they can develop scientific expertise and be rewarded for any increase in responsibilities, particularly in the the provision of advice to parent departments which is used in the formulation of national and international policies.

7.2.4 Given that the University's primary mission is teaching and research associated with it, project management may be less professional, continuous, and is more geared to the academic interests of those involved than to the "customer". Moreover, the bulk of research is undertaken by students or those on short-term contracts, again often with their own individual agendas and offering little continuity. As KPMG point out this often makes it difficult to commission further work which builds on previous work undertaken and may mean that questions arising in the months after the conclusion of a particular project cannot be answered because key staff have moved on (46). As our members in POL point out:

> Universities are unlikely to support long-term monitoring, which underpins studies of the environment (POL houses the Permanent Service for Mean Sea Level (PSMSL) and the British Oceanographic Data Centre, and is responsible for operating the United Kingdom national tide gauge network. The PSMSL data bank has been used by all international scientists studying past and future sea level change). Such monitoring work which is the "bread and butter" science of many PSREs and has to be carried out with a high level of scientific integrity and control which is best provided by a well-structured PSRE.

7.2.5 Moreover, quality control of research facilities and procedures is becoming more rigorous. NAMAS accreditation of laboratories is demanding higher standards, which Universities may be unable to meet. There may be mutual benefits in sharing spare land and good laboratory facilities between PSREs and Universities, but they can share costs and co-locate to realise some of those benefits without having to merge or transfer ownership. For example, NERC is already co-operating with the University of Southampton where the Southampton Oceanography Centre will be established at a cost of £49 million.

7.2.6 Research councils already have experience in managing large-scale and multi-site projects on a long-term basis. For example, the British Geological Survey is already the size of a large University. They are already able to share resources both within and between organisations. Moreover, they are organised on a pluralistic basis with a variety of forms of ownership of institutes and most PSREs are inter-disciplinary in approach. These features would not match well with University structures.

7.2.7 More serious, however, is the fact that University ownership would not solve the major funding problem. They would still be largely dependent on government funding under the "dual funding" and departmental funding mechanisms. The only advantage would be freedom from PSBR rules, to which we believe there are alternative answers (see Q9.). Moreover, there would be serious disadvantages such as the loss of the "synergies" within government described in Q4. and for both departments and research councils the loss of strategic overall control and mission the importance of which the scrutiny team so rightly stress elsewhere in their report.

7.2.8 Turning to the specific case of NRI and Greenwich University, the idea began as a useful convergence between the Director's desire to pre-empt the efficiency scrutiny with the worthy objective of trying to keep NRI together in the face of future cuts in funding from ODA, and the fledgling Greenwich University's desire to achieve the basis for research respectability, and find premises to expand in close geographical proximity.

7.2.9 The plans have now expanded to include a consortium based at Greenwich, Edinburgh and Wye College. Although this would give a broader and more relevant base than Greenwich alone, and Wye are not putting resources into the project, although they hope to benefit from association with the MRI reputation, it is of concern that the new consortium-backed contract research company which would emerge from these proposals will have to consider "how far the business should concern itself with developed as opposed to NRIs traditional developing country markets". If the NRI were to shift its emphasis in that way it would be a major change of mission and the basis on which the majority of the scientific staff joined the institution and view the public purpose of their work, not to speak of the loss this might be of a valuable resource for the developing world is a major cause for concern. It should also be noted that ownership by the consortium would leave the ODA itelf with little expert

backup to policy making. As can be seen from p. 27, none of the senior officials in ODA have a scientific background.

7.2.10 As our NRI members said in their submission to the Efficiency Scrutiny:

> "NRI's valuable knowledge of Third World countries must not be lost. Once this knowledge base is dissipated it is unlikely ever to be regenerated as a central focus in the future.
>
> "NRI name and reputation: It is important to maintain NRI as an identifiable and viable entity, for the benefit of the end-users of the outputs of the work—the customers in developing countries. Despite changes over the years NRI is still held in high esteem, as is the British Government's Overseas Aid Programme. Further changes may have an adverse effect on this and a loss of respect overseas for Britain's commitment to Development Aid."

7.2.11 In our view the objectives of maximising external income in the face of ODA cuts in funding and fully utilising the Chatham site could be achieved without splitting NRI and without the need for a separate company. A single marketing division/research directorate within NRI could interface with ODA and outside customers and provide services to the University of Greenwich, the University of Edinburgh, Wye College and other possible interested organisations.

7.3 *The Two Models for Organisational Structures*

7.3.1 The terms of reference say that where early privatisation is not feasible or desirable the potential for rationalisation should be identified and recommendations for implementing them be made.

7.3.2 The Report makes it clear that its case for rationalisation rests primarily on what they call "overcapacity" (paragraph 4.3) ie overcapacity in relation to the funding available. As we have already pointed out we don't accept this premise since the Treasury has created the funding crisis and if Treasury rules were changed that hypothetical spare capacity could be more effectively utilised. The Scrutiny Team found very little duplication, not surprisingly given the wholesale rationalisation which had already taken place during the 1980s. However, they did find some overlaps, although even these may not be genuine overlaps when the context and purpose are taken into account (47). Overlap can mean healthy competition and can provide choice to the customer. Indeed, it is basic to the processes of scientific evaluation that experiments should be repeatable in different contexts.

7.3.3 The Scrutiny Team provide no convincing evidence that plural research sites and facilities are inherently less economic than highly centralised ones. In the Marine area, for example, a geographic spread of marine laboratories has been considered to be necessary for studying marine environments characteristic of different areas because moving small research vessels and providing temporary facilities at remote sites is difficult and expensive. Even in the terrestrial field, eg terrestrial ecology and geological surveys, it has been found cost effective to set up local laboratories rather than having a central one. In terms of organisation it would appear to be doubtful that combining remote laboratories under one central management would be more cost effective than the present system in which co-ordination of research is controlled by inter-departmental co-ordinating committees as well as the InterAgency Committee for Marine Science and Technology. This Committee could oversee any rationalisation needed in the Marine sector. The Marine Science Community Programmes, eg North Sea Project and BOFS, involving both PSREs and Universities are considered to have been particularly successful and this kind of strategic research is now becoming increasingly common.

7.3.4 Although these functions of competition and replication can often be supplied outside the United Kingdom, and in many situations competition within the United Kingdom may be wasteful, and in others the scale of experiment or experimentation required makes replication impossible, at the very least we need to look beneath the surface of apparent "overlap" before rationalising. There is no perfectly rational structure for laboratories which will be right for all time, least of all in a dynamic area of change such as science. Also as we have already mentioned (paragraph 4.2.6 above) the heavy costs of rationalisation also have to be borne in mind.

7.3.5 There is of course the vital issue of viability. There is a certain "critical mass" of staff and projects required to enable a research establishment to function, to deploy its resources flexibly to meet emergency situations and to withstand the vagaries of the market place. Many "next steps" agencies are too small to be viable and competitive. Many are saddled with personnel management and other administrative overheads deriving from Government insistence on a degree of devolution and autonomy which they cannot reasonably support. The grouping of agencies together, their absorption back into the department, or loose consortia for pay, pension and other purposes are some of the solutions which might be appropriate in particular cases. Some such solutions are recommended by the Report (see above) and we have already discussed in detail under Q4. their implications for efficiency.

7.3.6 There were, however, other motives for suggesting reorganisation, mostly raised by the Levene/Stewart report:

— separating "customers" and "contractors";

— to increase the ability to look across departmental and RC boundaries for synergies;

— to increase the scope for privatisation.

7.3.7 Separating the "customer" and "contractor" was one of the major underlying objectives in setting up the scrutiny, although as the Report says the main target was the GREs where Levene and Stewart felt that departments were dragging their feet. Indeed they said that the research councils "appear to have managed (the conflict between customer and supplier roles) reasonably well in the past" and that "ownership of Institutes (is) a by-product of the Councils' concern to ensure that high priority work is carried out" (paragraph 5.8). It is therefore particularly ironic that in their proposals for reorganisation the scrutiny team have felt obliged to cross over into he BBSRC and NERC. There is a great danger in this aspect as in other parts of the report that solutions designed for GREs are carried over into the research council context without taking account of their particular needs.

7.3.8 We do however, welcome the rejection of the Central Science Agency approach and welcome the assertion of the need for a strategic approach (paragraph 5.13). This, taken together, with the acknowledgement that links between departments and GREs are very important adds weight to our view that the strategic thrust and any rationalisations which do need to be made should be carrried out by the research councils themselves and by those departments such as MAFF, the DoE and the Scottish Office who have a very clear idea of the mission they wish their GREs and RCIs to perform.

7.3.9 While there is a case for encouraging inter-departmental synergies, collaboration and rationalisation the Report suggests other mechanisms for achieving those objectives, eg recommendations 18 and 20, and it does not require a deliberate cross-cutting of ownership such as is suggested in recommendation 10 to do so. As far as the preparation for privatisation is concerned for reasons given under Q6. we do not accept that this is a legitimate target and therefore doesn't justify the reorganisation recommendation. The major objective of change should be efficiency and effectiveness, not privatisation.

7.3.10 Recommendation 11 would be redundant since we do not see the need for recommendation 10. We have already commented on the creation of extra bureaucracy involved in recommendation 12.

7.3.11 While we do not accept that there is a need for organisational change along the lines set out in recommendation 10 for the reasons given above, we have had some comments from members about the problems associated with the models suggested and these are provided for information contained in Annex 4 (*not printed*).

7.4 *Directors of Rationalisation*

7.4.1 The Report poses as an alternative to structural change the appointment of two directors of rationalisation to cover (a) marine and non-marine environment and (b) food, agriculture, biotechnology and biological sciences (recommendations 12 and 38). While such an alternative would be preferable to the structural upheaval recommended in 10 and 11 as we have noted in paragraph 4.2.7, above it does, if the job is to be done properly, require costly extra layers of bureaucracy. Moreover, it is difficult to see in the research council area why supplements to the Chief Executives and the DGRC are required. Similarly departments could use their own agency mechanisms such as the "Fraser figure" (see paragraph 5.4 of the Scrutiny Report). The question of overlapping and rationalisation across boundaries is covered in Q8. below.

Q8. *The report notes (paragraph 4.6) that rationalisation hitherto "has tended to take place on a departmental or individual research council basis" and suggests that this tendency be discontinued. How appropriate are cross-departmental and/or department/research council rationalisations?*

8.1 We have argued that departments and research councils provide the best ownership and strategic framework for PSREs to operate in and that GREs, research councils and Universities have distinctive core missions. But for the sake of efficiency and adaptability to changing scientific, political, market and organisational circumstances it is essential that PSREs should be ready to adapt and should not stick rigidly to their own boundaries. The case of WSL is a salutary warning. There synergies in terms of scientific content and customer market focus could well have pointed to a merger with BRE but the ownership and control rested with DTI who for their own reasons did a quick and much less appropriate deal within their own bailiwick.

8.2 The major oversight role should be played by the OST, aided by the new SET White paper mechanisms of "Technology Foresight" and the "Forward Look", see below Q.10. These combined with the very real competitive pressures for survival should be enough to ensure a wider view. Any such cross boundary measures will need to operate with consent and with thorough investigation of the suitability of the proposals from all angles. We would also support the suggestion in recommendation 19 that positive incentives should be provided for PSRE chief executives and staff.

Q9. *The report notes (paragraph 3.16) that Treasury guidelines place obstacles in the way of privatisation and limit the scope for selling services outside government. To what extent is this the case? Will the situation alter if PSREs are transferred to or linked with Universities? Should the guidelines be altered, and, if so, how?*

9.1 As we have said before many of the problems of public funding and being able to seek business from elsewhere arise because of the Government's own policy and Treasury rules, including the tension between the encouragement to seek business outside the Government and the refusal to fund such expansion because of its impact on the PSBR (Report Summary, paragraph 9 and paragraph 7.13).

9.2 A major impediment to long-term planning and viability is the Treasury annual accounting system, whether it is for departments and agencies under the annual supply estimate, or public corporations and trading funds operating under the annual External Financing Limits. PSREs are prevented from both carrying over significant funds for future self-investment or from borrowing from the private sector for investment. Underlying this are the more fundamental problems of the control over the PSBR and the definition of what to include in it and the Treasury's inability to distinguish between funds for investment, which will give a return over time, and current spending or transfer payments. The impact of Treasury practices, particularly in this latter aspect of course go far wider than PSRE funding and to the heart of the issue of private finance for public purposes and funding a pluralistic "mixed economy". A practical and non-ideological solution is long overdue.

9.3 There are other detailed rules which can often hamper operations or contribute to an "unlevel" playing field. Some modifications to the rules have been made over recent years but these have been different for different types of organisation and finance. (For example, the research councils are allowed to charge what the market will bear for their services, while the GREs are limited to full economic cost (48). They are also far too modest to meet current needs for effective operation in an increasingly competitive atmosphere.

9.4 We therefore agree with the Efficiency Scrutiny Report that the ability of PSREs to maximise their opportunities is heavily constrained by Treasury accounting rules and welcome recommendation 35. As we have noted in paragraph 6.5.5, we do not agree with the Scrutiny Report that only those PSREs who are destined for privatisation should be given greater freedom. This freedom should apply to all. As the Transport Select Committee report on TRL said:

> "TRL's public sector status, we were told, in any case constrains it from bidding for contracts from the private sector. We are not convinced by these arguments. TRL's difficulties while an Agency are the result of the application of the Treasury's public sector financial rules and market testing practices, which the Government could relax if it wished. The Government's case is also not helped by the consultant's suggestion that, in order to ensure a smooth transfer of the TRL into the private sector, the department would have to offer it guarantees of future contracts. Such special treatment for a private sector body is difficult to justify. It also represents a fundamental inconsistency in the Government's position, since it is precisely the unwillingness of the Department of Transport to provide equivalent guarantees, for the TRL while it is an Agency which has been advanced as one of the main reasons for privatisation" (49).

9.5 Some improvement in this situation would be achieved if PSREs transferred to Universities because of the Treasury's arbitrary definition as to what is "private" and falls outside the PSBR. But as we have pointed out in paragraphs 7.1.1–7.2.9, there are also many disadvantages associated with transfer of ownership to Universities.

9.6 The problem of Treasury rules needs, therefore, to be tackled in the more direct manner indicated above, namely the modification of many of the more detailed Treasury constraints on more "commercial" modes of operation, transparency and equity in how the rules apply to different types of organisation and funding, and a fundamental overhaul of the public accounting system to bring it into line with current operational requirements and the need to make substantial public investment with the ability to use private finance.

Q10. *What should be the role of the Office of Science and Technology in the light of the review?*

10.1 As the Scrutiny Report notes (paragraph 2.6) the Scrutiny took place before the new measures set out in the SET White Paper could be implemented, including the "Technology Foresight" and "Forward Look" processes and various other mechanisms to give the OST an enhanced role in handling cross-departmental issues. While the "Technology Foresight" and "Forward Look" processes will provide a necessary indicative framework for SET "supply" and "demand" in the future this will not be sufficient to secure effective implementation of a national strategy within government or research councils.

10.2 The SET White Paper has established certain other mechanisms for securing co-ordination between research councils, primarily through the DGRC, and between departments, through the Cabinet Committee

on Science and Technology which will be responsible for keeping under review the department's performance in relation to the "Forward Look". They say departments will be expected to demonstrate:

— adequate systems for consulting those with an interest in the outputs of their research and development programmes, especially industry, and for reflecting the results in their contributions to the "Forward Look";

— success in achieving research objectives in conformity with the "Forward Look", for example in improving the quality of life, increasing the extent of collaboration with industry and securing commercial exploitation of research results (paragraph 5.6).

10.3 The OST, which is in the best position to take an overall view, must be strengthened to ensure that the appropriate mechanisms are in place. Ideally this should be possible without taking the drastic step of divesting civil departments of their PSREs as originally advocated by Levene. However, our proposal that the DTI PSREs should transfer to OST would help in creating a stronger OST, in the traditional sense of staff and financial resources.

10.4 It is also vital that as originally recommended by Levene, OST should be at the heart of government spending plans on science.

> "OST should be responsible for working with spending departments and ensuring that government priorities are reflected in their S&T spending plans.
>
> "The CSA should take the lead in advising Government and the principal Cabinet committees on overall spending priorities for S&T and on the balance of spending across departments before a final public expenditure settlement" (50).

10.5 We agree with the role foreseen for the OST in recommendations 13, 14 and in the modified form we advocate, recommendations 19 and 28. Of crucial importance, however, is their potential role (recommendations 30, 33, 34) in ensuring that the PSREs are able to take full advantage of opportunities to expand without the PSBR limits imposed by the Treasury. It is particularly urgent that in conjunction with the Treasury they produce a financial regime which encourages PSREs to flourish while remaining within the public sector and which solves the topical conundrum of ensuring both private and public finance for the public sector. They also need to clarify the market rules to provide a level playing field to all, while setting clear and consistent criteria concerning which research is to be financed by core departmental funds, and which to be open to competition as advocated in paragraph 4.2.19 above. The OST also needs to assess how far it is good value for money to allow public sector organisations particularly those within the same sector to compete against each other for contracts, and to ensure that alternative streams of funding are in place where PSREs are not allowed to compete.

10.6 Overall OST should have a role which supports and promotes the aims and objectives of the SET White Paper, and sets the strategic framework while minimising the potential for tactical interference with how this is done. It is also crucial that they carefully monitor the impact of any changes which emerge from the Scrutiny, as well as the general changes set out in the SET White Paper, to ensure that "short termism" does not rule, as many fear will happen, that competition ensures that the good drives out the bad and not *vice versa*, and that the long-term comprehensive science and technology base in PSREs is sustained.

Q11. *Are there any other proposals which you feel the review should have made?*

11.1 We see no reason why the PSREs should not continue with the current diversity of ownership models, particularly as developed within the research council area. Nor do we see why the majority of GREs which are "next steps" agencies should not continue with that form of ownership. Reviews which have been allowed to consider the *status quo* as an option (51), have confirmed that the option is a sound one. The latest review to do so is the Forensic Science Service where the Home Secretary announced that "The Government has decided that the Service should remain as an executive agency for the present, and move to trading fund status when appropriate. This will allow the agency to continue to build on the progress it has made so far".

11.2 Although, as indicated above, trading fund status is not appropriate for all research needs, it can satisfy the desire expressed by some of the Government's advisers for an arms length relationship which is more directly comparable with private sector arrangements whilst maintaining accountability and the benefits of the agency's activities within the public domain. We would not deny that in some cases a more commercial approach may help to give greater emphasis to consumer satisfaction and value for money. The Defence Research Agency which now has a trading fund is making great strides towards increased customer satisfaction and efficiency. Similarly the KPMG Study says of TRL:

> "DoT customers without exception depicted TRL's strengths as outweighing its weaknesses. Indeed, it is clear that the department is, in general, very satisfied with the quality of TRL research and its responsiveness to customer needs, based on a good understanding of the department's requirements for research."

11.3 There are improvements to be made still in increasing competitiveness, attracting money from non-government sources (the potential for doing this being very limited in some cases) and improving efficiency and we have suggested ways in which this might be done. However, there is no intrinsic impediment to agencies being capable of meeting the needs of government, the public and other customers. The main impediments to increasing competitiveness, efficiency and effectiveness are not the departments who "own" the agencies, but the Treasury and others who are placing unrealistic targets on agencies and limitations on their ability to meet them.

11.4 It is impossible to ignore the issue of funding. As we noted in paragraphs 4.2.2 and 4.2.5, the crisis in departmental funding (described in Annex 1) is driving the Scrutiny. That was the context in which it took place and the Scrutiny Team recognised its major role (paragraphs 2.27–22.30). It was not in the terms of reference of the Scrutiny Team to suggest how to improve funding, simply to reduce expenditure to accommodate it. But that does not prevent us from suggesting that the funding must be increased otherwise the PSREs, whether still in the public sector or in privatised form, will not survive in the long term.

11.5 The efficiency scrutiny also says hardly a word about the scientists who are doing the work, the impact of the "market philosophy" on the roles and workload of scientists in PSREs, the impact of contract transactions on the ability to focus on the science, and the impact on terms and conditions (eg short-term contracts) and on morale. The pursuit of the Government's SET White Paper objectives will not be achieved without well-motivated staff effectively deployed. As we pointed out in our submission to the SET White Paper in 1992 (52), and in our subsequent meeting with William Waldegrave, scientists in the PSREs have been undergoing constant cuts, restructuring and upheaval for the past 15 years and their morale is at rock bottom. The two recommendations in the Scrutiny Report which directly refer to staff (recommendations 19 and 29), are accepted, and in the case of the latter welcomed by IPMS. However, the biggest incentives to efficiency and effectiveness and willingness to adapt which scientists in the PSREs could have would be for their efforts to be appreciated and rewarded, not by privatisation but by benefit to the "public good", to science and to further investment in scientific resources both human and capital. Above all they need to be fully integrated and valued.

11.6 As the Government recently said in its response to the inquiry into innovation:

> "However, the Government agrees strongly with the Committee's central point (306) that the United Kingdom tends to undervalue science and engineering skills. As the Government has emphasised in both White Papers, those with engineering and scientific qualifications have crucial roles to play in development and adapting new technology in all sectors of the economy. Industry at large seriously risks missing opportunities if it fails to encourage the acquisition of world-class skills.
>
> Engineering and science qualifications can and should open up rewarding and fulfilling careers to young people. They will be encouraged to take those topics only if United Kingdom firms better utilise and reward the related skills at all levels and in a range of posts. In particular, too small a proportion of those who reach the top in business, or the "establishment" at large, have a science or engineering background; this is likely to be a factor influencing young people's subject choices. It is also important to improve management skills among practising scientists and engineers, for example by giving them broader and earlier responsibility. Again, action must rest primarily with companies, but professional bodies and Universities also have a role to play and this is discussed further below (paragraphs 75–78)" (53).

Perhaps the Government as the major single employer of scientists should be giving a lead!

NOTES AND REFERENCES

(1) Sir Peter Levene and Professor W D P Stewart. *Review of Allocation, Management and Use of Government Expenditure on Science and Technology*, paras. 1.54 and 1.55. HMSO: May 1993.

(2) The most recent example being the House of Lords Select Committee on Science and Technology Third Report on the Defence Research Agency, July 1994. London: HMSO.

(3) As above, para. 1.53.

(4) Cabinet Office News Release. Multidepartmental Scrutiny of PSREs. OPSS 16/94, 2 February 1994.

(5) The CCSU officially complained to the Head of the Efficiency Unit, John Oughton, about the delay in releasing the details. He replied that we received it at the same time as it was published. It is difficult to believe, however, given the timetable of the Scrutiny, that a working document had not been available internally for some time.

(6) Quoted from a statement published by the Royal Society on 16 March 1994 entitled "*Scrutiny Exercise*".

(7) Sir Peter Levene in oral hearing on the Efficiency Scrutiny, House of Commons Science and Technology Committee, 13 July 1994.

(8) The situation is even worse than the Efficiency Scrutiny suggests. See IPMS Evidence to House of Commons Science and Technology Committee in *The Forward Look of Government-funded Science, Engineering and Technology*, 1994, pp. 53–61. London: HMSO, 20 July 1994. See also Annex I.

(9) This can be demonstrated by the fact that two-thirds of in-house public sector bids have beaten the private sector competition where "in-house" bids have been allowed to compete.

(10) Not the one person plus secretarial support envisaged by the Leader of the Scrutiny team. Mrs Lynda Kyle in oral evidence to the House of Commons Science and Technology Committee, 13 July 1994.

(11) Professor W D P Stewart. *Times Higher Education Supplement*, 30 July 1993.

(12) Government Response to the Second Report of the House of Lords Select Committee on Science and Technology, 1993–94. *Priorities for the Science Base*, July 1994, p. 19. London: HMSO, Cm 2636.

(13) Ibid.

(14) Ibid., p. 20.

(15) *Framework for Government Research and Development*, July 1972, para. 16. London: HMSO, Cmnd 5046.

(16) Royal Society, 16 March 1994, op. cit.

(17) The word "operational" is used to distinguish those scientists who predominantly work in research or scientific services and their management from those who are engaged primarily in policy making, representation or as "customers" whether this is scientific policy making, eg in chief scientist units, as part of broader multi-disciplinary policy units or in general administration or policy making posts.

(18) In the *Braer* incident, for example, there was involvement across a whole range of government departments, NDPBs, and through intimate intergovernmental research contacts with Norway. Research effort and scientific facilities were marshalled from the following departments and NDPBs: Marine Laboratory, Aberdeen (SOAFD), Scottish Natural Heritage, Joint Nature Conservation Committee, Macaulay Institute, DTI, and MOD Meteorological Office. Any major environmental incident involves large scale and varied collaboration. It can be marshalled more rapidly and more cheaply where the resources are already part of a normal integrated web of easy communication and interchange of expertise. Another example is explosions in aircraft, where the DRA have expertise covering the whole range of requirements from explosives to aeronautics within the same organisation.

(19) Efficiency Unit, Cabinet Office, Career Management and Succession Planning Study, November 1993.

(20) Review of the Scientific Civil Service 1980. Report of a Working Group of the Management Committee for the Science Group (CSD), September 1980, para. 3.28. London: HMSO, Cmnd 8032.

(21) As Sir Hermann Bondi pointed out at a recent meeting on "Scientific Expertise in European Public Policy Debate", London School of Economics 14–15 September 1994, it is very important for scientific "experts" to be fully integrated into the policy process and to understand the political dimension. Expertise cannot be brought out of the cupboard on demand and expected to give appropriate advice.

(22) "Scientists" as referred to here means those with a scientific/technical work background; an additional few may have science-based qualifications through the route indicated in para. 4.40.

Source for Figure 1: Senior Open Structure List, May 1994.

Source for Figure 2: Efficiency Unit, November 1993, op. cit., Graph 20, p. 101.

(23) See, for example, ESRC funded research project on "The Role of Scientists and Engineering in the Process of Technical Change", reported in ESRC Innovation Update: Three 1993.

(24) The Civil Service Commission Annual Report no longer publishes the subject backgrounds of "fast stream" entrants.

(25) Cabinet Office Career Management Study, op. cit., para. 2.17.

(26) House of Commons Science and Technology Committee. *The Routes through which the Science Base is Translated into Innovative and Competitive Technology*. Press Notice, para. 13.

(27) *Competitiveness: Helping Business to Win*. London: HMSO, Cm 2563.

(28) House of Commons Trade and Industry Committee Report. *The Competitiveness of Manufacturing Industry*, May 1994, para. 345. London: HMSO.

(29) Ibid., para. 342.

(30) Sir Michael Atiyah, President of the Society Anniversary Address. 30 November 1993.

(31) Ibid.

(32) KPMG Corporate Finance. Department of Transport's Privatisation of the Transport Research Laboratory, December 1993, para. 2.3.15. Released to Trade Unions on 24 February 1994.

(33) KPMG Study of TRL, op. cit., para. 1.1.

(34) Ibid., para. 1.4.1.

(35) Levene and Stewart, op. cit., pp. 71–72.

(36) Members at AWE have found since it became a "go-co" owned by Hunting-Brae, a private consortium composed of AEA Technology and Brown & Root, other government establishments and personnel both in the United Kingdom and abroad have been less willing to communicate openly with them.

(37) Government Response to the First Report of the House of Commons Select Committe on Science and Technology, 1993–94 Session. *The Routes through which the Science Base is Translated into Innovative and Competitive Technology*, September 1994, para. 60. London: HMSO, Cm 2659.

(38) Levene and Stewart, op. cit., p. 37.

(39) KPMG TRL, op. cit., para. 3.2.1.

(40) KPMG TRL, op. cit., para. 1.3.2.

(41) House of Commons Transport Committee, 2nd Report. *Privatisation and Deregulation of Department of Transport Agency Work*, March 1994.

(42) Levene and Stewart, op. cit., para. 57.

(43) Civil Service White Paper.

(44) NEL was established in 1949 with the aim of providing an R&D service to United Kingdom industry and government and became an Executive Agency in 1990. It occupies a unique position as a provider of technological, and in particular engineering, support for British industry. It combines research and market orientated activities on a broad front. Government funding is necessary to underpin key areas of the Laboratory's work and we therefore believe that keeping NEL in the public sector is the best way of maintaining its independent expertise.

Since becoming an Agency the prime objective of NEL has been to prepare for privatisation despite unsuccessful previous attempts. NEL has attempted to adopt a commercial approach to business without first defining what that business should be. There has been no vision of what sort of organisation NEL wishes to become and of what kinds of engineering research and market technologies should be the core focus. This lack of a "mission" for NEL combined with various organisational defects (see below), has resulted in a lack of strategic research and to the carrying out of fee paying work on an *ad hoc* basis. This in turn has had devastating consequences for areas of NEL's previous expertise. Between 1989 and 1994 its staff have been reduced from 580 to 365 and it is due to decline further.

For example, the Scottish Calibration Centre was formerly a unique and extensive calibration facility whose services were widely used by United Kingdom industry and by overseas customers. This service could never have been deemed properly "commercial" since the service arose as a side activity to metrological research and development carried out by a multidisciplinary team of over 45 staff. The breaking up and dispersal of this integrated research team during NEL reorganisation and staff cuts has led to the closure of the calibration facility. The support that it formerly provided to the United Kingdom machine tool and engineering industry can no longer be provided by NEL. It is likely that United Kindgom industry will now have to seek these very specialist services from providers abroad.

(45) Thus in commenting on the SET White Paper:

> "The CBI has also suggested that government laboratories, which provide a unique and well-regarded national asset, should continue in the public sector" (CBI News, March 1994, p. 21),

and the Royal Society in the Statement by Sir Michael Atiyah, 16 March 1994, op. cit.:

> "Most, if not all, government research establishments undertake work that is in the public domain and for the public interest. Perceptions of their integrity, crucial to their effectiveness, rest on their having no sectoral or financial interest in the results of their work. Such establishments must therefore continue to be in public ownership; to derive the bulk of their income from public sources; and to be constituted at arm's length from the executive of the day."

(46) The KPMG TRL Study, op. cit., said:

University research has the following main weaknesses:

- project management: although many Universities are improving their ability to meet research customer requirements and timetables, it is undoubtedly still the case that many university departments give priority to their own research programmes. Research may be undertaken and supervised by academics who have more interest in their own reputation and research interests than simply offering a research service to customers. Having said this, we are aware that several Universities have taken active steps to separate their research and consultancy services from mainstream university research in order to improve the degree of customer focus, often by establishing spin-off companies which employ professional research managers;
- continuity: the bulk of research undertaken by Universities for outside customers is, in practice, done by research students and/or research staff on short-term contracts. This means that it is unlikely that the staff who actually conducted a particular piece of research will remain there for long after projects end. This both makes it difficult to commission further work which builds on previous work undertaken, and may mean that questions arising in the months after the conclusion of a particular project cannot be answered because key staff have moved on.

(47) For example, a better amd more detailed Scrutiny which included HSE Laboratories would have shown the following:

> HSE Buxton Laboratories have a principal role to provide advice to HSE to ensure the safety of workers. They are thus concerned with the hazards that may arise in work places, especially those in the chemical process industry and allied works. Of the dangers which arise, fire is only a part, and there are only a very few members of staff working full-time on this aspect.
>
> BRE's Fire Research, on the other hand, has about half the country's fire research effort concentrated in it. It's principal role is to give advice to DoE so that Building Regulations properly ensure public safety. It is thus concerned with a wide range of buildings and other areas of fire and fire-related safety.
>
> Informal links are already in place between the two establishments.

(48) Cmnd 2636, July 1994, op. cit., p. 19.

(49) Transport Committee Report, March 1994, op. cit., p. (xiv).

(50) Levene and Stewart, op. cit., paras. 1.9 and 1.10.

(51) The Government has insisted that in many cases the *status quo* is ruled out for consideration.

Examples include the DTI Laboratory reviews, the TRL review, and the current "Ownership Study" of NRI by the ODA.

(52) IPMS. Contribution to the 1993 White Paper on Science and Technology, November 1992. Unpublished but enclosed with this submission (*not printed*).

(53) Government response on innovation, September 1994, op. cit., paras. 64–65.

Examination of witnesses

Dr VALERIE ELLIS, Assistant General Secretary, Mr JOHN BEECH, Building Research Establishment, Mr WARREN JACKSON, Laboratory of the Government Chemist, Mr NIGEL TITCHEN, Institute of Grassland and Environmental Research, and Dr BRENDA THOMPSON, Directorate of Fisheries Research, Institution of Professionals, Managers and Specialists, called in and examined.

Chairman

68. Welcome, Dr Ellis. I know that you were present throughout the earlier sessions so I will not repeat what I said earlier about the speed at which we are operating. I do thank you for the very helpful evidence, very full evidence I might say, which you submitted in writing. No doubt we will be wishing to ask a number of questions on it. Would you, first, like to introduce your team.

(Dr Ellis) On my left is Nigel Titchen a scientist in the BBSRC at the Institute of Grassland and Environmental Research, but he is also the Chairman of our Science Group which covers science interests within the Institution. Dr Brenda Thompson is from the Lowestoft Fisheries Research Station within the Ministry of Agriculture Fisheries and Food and she is active in our local branch there. John Beech is in the Building Research Establishment in the DoE and is actually within a few days of retiring, but has been very active both on our Science Group and in his union branch and does a lot of international representational work and other representational work for BRE. Then lastly there is Mr Warren Jackson who is in the Laboratory of the Government Chemist and who is also active in both our Science Group Assistant Scientific Officer Panel, and in his branch at LGC. I am Assistant General Secretary, a full-time official, but not a scientist.

69. You are well known to the Committee. Is there anything you would like to say by way of preliminary observation before we launch into the questions we have for you?

(Dr Ellis) I do not think so because I think our evidence was fairly full and I know you are pressed for time.

70. Well, let us start at the inception of the report, trailed, as we said earlier, in the White Paper. Do you, first of all, feel that the Government was either entitled or wise to undertake this Scrutiny?

(Dr Ellis) As the others have said, they were obviously entitled to undertake the Scrutiny and it was trailed in the White Paper and, as we have said in our evidence, we think it would have presented, if it had had the proper scope and if the terms of reference had been framed differently, a useful opportunity to look at PSREs across the board and possibly at the interface with universities as well and with industry in the light of the White Paper and the White Paper's objectives. It possibly would have been better to wait until the Technology Foresight exercise had got properly under way because at least then that might have helped define the sort of areas that we might be looking at and the possible cross-boundary synergies that we might expect to find and I think it is particularly unfortunate that they have preempted that. Their definition of "environment", is an example. I forget whether they actually said it in this report, but they certainly said it in their "emerging findings", was that environment was an important emerging area. But in fact "environment" covers a huge range and obviously research establishments encourage it to cover a wide range of research because it is the most fashionable subject at the moment and therefore a lot of their research proposals are geared in that direction anyway. Even so, the team totally ignored the "hard science" side of environment. The Building Research Establishment, for example, does very important work in the environmental sphere on building regulations and there are town planning implications and so forth. They looked at environment in a very limited fashion and I think if they had waited a little or done a more in-depth analysis, these sort of things would have become apparent. I think therefore that it has been a largely wasted exercise, but it should have been a useful one with the right terms of reference.

71. You have referred already to your reservations about the terms of reference which of course refer to privatisation. It seemed to be a solution before the exercise had been undertaken. Would you like to comment on that?

(Dr Ellis) Well, absolutely. We thought they started off with the definite purpose of identifying establishments or maybe areas which could be privatised, in other words, which would be profitable or which would be attractive to the private sector to take off their hands. I think the whole efficiency exercise was clearly designed, including the privatisation element of it, to deal with the huge problem of funding which they are facing. They are cutting funds, and the Forward Look makes it very clear that they are going to continue to cut funds in the future particularly from the departments. The "science vote" itself has stayed relatively stable and the Minister for Science has to be congratulated for that, but the huge amount which should be coming from departments is being radically reduced and that does have to be dealt with as a fact of life. They have chosen the wrong way to try and deal with it, but that clearly was the major motivating factor and

[Chairman *Contd*]

privatisation was both seen as a way of trying to get research done on private money, but also as a way to get rid of the obligations that they have in terms of redundancy payments and the sort of rationalisation costs that we have been talking about earlier and to get those removed from the public sector borrowing requirement.

72. So do you imagine that when we interview the Minister, as we will do later, that he will be disappointed that in the event privatisation does not appear to be an option, apart from the case of ADAS and part of the Building Research Establishment?

(Dr Ellis) Yes, I think clearly they will be disappointed and I think that the Scrutiny team has had a desperate problem trying to meet its underlying objectives. Its attention to the ADAS case is pitiful. It really only scratches the surface of what ADAS does and it does not seem to be particularly clear which parts of ADAS are actually research and which parts are not so scientifically related. As we have said in our written submission, we really do not feel able to comment on the wisdom of privatising ADAS from the research that is in the document, but there is a review going on and we certainly do oppose the privatisation of ADAS, but it would be difficult to draw a conclusion either way from this document. BRE, again we think that in searching for a candidate, they have actually hit upon one of the worst choices because of its close integration with the departmental policy and we certainly think there is no case there. However the other problem is that, as they say in part of their introduction, 50 per cent of the territory they are covering is already targeted for privatisation and is already on its way and those cases are even more serious. They include the Transport Research Laboratory, the National Physical Laboratory, LGC, NEL, the Warren Springs Laboratory as part of the Atomic Energy Authority whose commercial division in turn is on its way to privatisation. Those cases have barely had their surfaces scratched in this document. They had access to the consultancy reviews which no one else has had access to, at least in the case of the DTI ones, but that case has not been examined rigorously at all and so although we are delighted that they have found only two more potential early candidates, we think that they ought to have looked at those cases in detail and that the previous decisions that have already been made by Ministers should be subject to review and hopefully overturned. So we are already in a very desperate situation as far as privatisation is concerned and nearly 50 per cent of the area under review was already earmarked. Our other fear is that the Efficiency Scrutiny clearly has not produced enough, or I would not think has produced enough, to satisfy Ministers and the temptation will be for them to say, "Well, everybody is saying that it has been done too quickly, that it is not a very thorough study. We entirely agree. We will ignore it and go on and do precisely what we intended to do in the first place". That is another great fear that we have and we would not be surprised if that is what they did.

73. I want to move on from privatisation proposals to rationalisation, as they have described in the proposals. The second part of the terms of reference referred to the option, where privatisation proved not to be feasible or desirable, to identify a potential for rationalisation, and that is of course what the bulk of the report is involved in. Would you, first of all, accept that there might from time to time, and I am not necessarily saying on this occasion, be a need to rationalise or to alter the structure of the research establishments and their parenthood?

(Dr Ellis) Yes, and as the previous people giving evidence have said, much has already been done, not all of it wise and not all of it welcome from our point of view or necessarily right, but quite a lot has already been done. As both the White Paper and the Scrutiny say, and the Levene green document which was published in parallel with the White Paper also, a lot of rationalisation has taken place. Indeed although they said there were only minor adjustments to be made. What the Scrutiny team have presented are not minor adjustments, they are major ones. Clearly, there must be constant review, not in the sense of huge external intrusions, but departments and research councils, and PRSEs themselves and the OST on the broader front, clearly do need to keep the boundaries under review, and potential collaborations (and potential amalgamations of facilities in particular perhaps). But they should be done primarily on scientifically sensible lines and in terms of priorities changing—whether they are purely scientific priorities in the case of research that is relatively remote from government policies, or whether it is government priorities such as the ones set out in the White Paper and the ones that will be revealed potentially through technology foresight and the forward look processes. Clearly, there must be continuing readiness to adapt and to change, but that should be, as earlier speakers have said this morning, on the basis of consensus as far as possible, and operating on an evolutionary basis, and primarily within the organisations as they exist at the moment even if there may be a minor redrawing of the boundaries. The missions of three areas, the research councils, the government research establishments and the universities, are quite different. One would not expect an enormous amount of amalgamation to go on between them. They are fairly coherent in their missions as they stand.

74. It is possible to imagine, is it not, particularly if government, as a customer of the research (which it clearly is in many respects), changes its ideas as to what it sees as its own role; presumably its function as a customer of the research is bound to change and this could be quite radical. Members of this subcommittee have recently undertaken a review of the Defence Research Agency and this is clearly an organisation not subject, of course, to this Scrutiny but where change is a massive reality at the moment. Presumably it is right, where such massive changes have been made, to look even at interdepartmental linkages or at linkages with universities or research institutes if that would appear to be appropriate.

[Chairman *Contd*]

Can you envisage that such changes occasionally might be an appropriate option to at least consider?

(Dr Ellis) Yes, certainly. As you know, we have said we thought the Defence Research Agency should have been within this survey, being such a crucial and huge part of the government research establishments. Clearly, particularly as it tries to become more supportive of civil objectives as well as military ones, there is the need to diversify into civil applications. Your Committee is well aware of a previous study on DRA. It competes with contracts in the same area as many of the PSREs that are included in the Scrutiny. There is to be further rationalisation under the defence costs study, with other defence PSREs merging with the DRA to form the Defence Science and Technology Agency, which will make it an even bigger part of the government research estate. It should have been part of the Scrutiny, and clearly there are collaborations, competition and relationships between it and the civil research establishments. There should be more and they may in certain cases involve some dual purpose laboratories or new laboratories set up maybe independently, as they are doing with the Rutherford Appleton and Daresbury laboratories where they are going to stand alone, independently under the OST. Ownerships can and do change. As you know, in our own evidence we have suggested that in the case of the DTI research establishments (because we do believe the DTI does not know what is research establishments are really for in the way it sees its mission at the moment) they should be transferred to the OST because those research establishments do carry out scientific work which is important well beyond the DTI. There are differences between departments. In the case of the Ministry of Agriculture, the Scottish Office and the Department of the Environment, they are very clear about what they want their research establishments to do. It seems to us quite right that in these cases they should be in the driving seats as far as efficiencies and rationalisations are concerned and defining where suitable cross-boundaries rationalisations could take place.

Lord Craig of Radley

75. I sense in one way you are being critical of the Scrutiny Review as being rather too all-embracing, where you would prefer to see changes approached on an evolutionary rather than a revolutionary basis. That seems to lie rather at odds with your view that the Defence Research Agency should have been swept up in the Scrutiny Review, which seems to me would have made it an even more revolutionary look at government funded research establishments. Could you help us with what appears to be a slight dichotomy in your approach, being critical of the review because it is too revolutionary and rather see it as evolutionary but, at the same thinking that the Scrutiny Review did not actually see enough of the research establishments to make a sensible job of what they went about?

(Dr Ellis) I do not think they conflict. What I said earlier was that we did think it was quite sensible to have *a* review. We certainly would prefer an overall look by comparison with what has sometimes been happening, which is just a chop here and a chop there, and a cherry-picking approach which does not take an overall look at what the needs are across the board. We think there is a need to look across the board, and that is why we would have liked to have seen the Defence Research Agency in there. It is not necessary to look at all of those areas in the same depth, but at least they ought to be in the arena. As people have said earlier, originally, certainly as far as the White Paper trailing of the Scrutiny was concerned, it was focusing particularly on the role of the government research establishments. We would not have minded that (certainly the defence area should have been in that) but that would need to take account of the relationships with other institutes, and maybe universities, but done in the context of an overall government strategy as laid out in the White Paper. It is very important to look at the whole, but that does not mean you come up with revolutionary solutions.

(Mr Beech) May I say that one of the faults we see with the way the Scrutiny was done was the necessarily superficial nature of the investigations. They had 53 PSREs to look at and they did it in almost as many days. You could not really expect a sensible conclusion to come from such an investigation, I would have thought. I would endorse what Dr Ellis has said, that they should have had a clear idea of what the overall objective was, and what the field was they were looking at, and they should have selected representative parts of it and carried out proper studies that took account of all these factors. That is not to say you can necessarily generalise on those areas throughout the whole of the area of interest, but at least you would have recommendations which were firmly based on a proper investigation, and not half-baked recommendations which derived from utterly shallow investigations.

76. Clearly one of your criticisms is that the period for the review was far too short?

(Mr Beech) Clearly.

Baroness White

77. Might I follow that up by asking, do you distinguish between the defence exercise, for which you could I think rationally suggest that the defence exercise was something on its own, but you would feel very strongly that the DTI and the transport propositions certainly should have been brought within the scope of any proposed examination of the totality of government and other scientific related endeavours?

(Dr Ellis) Certainly we think that they should have been thoroughly examined from scratch and they should not have basically accepted what was already decided. In the case of defence, we do have many reservations about the rationalisations which have been going on there, but they have gone on within a concept of what they expect defence to provide and it has been done in terms of the mission of the Ministry of Defence. Now although, as I have said earlier, we think it is very important that they

[Baroness White *Contd*]

should also be looking at civil applications and the whole question of dual use technologies and so forth, it is interesting that they have accepted that that is a coherent area where the Department and the Research Agency are very, very closely intertwined. They have not, or Sir Peter Levene has not attempted to make them integrate with anybody else and yet with the rest of their Scrutiny, which has excluded the Defence Research Agency, they have tried desperately to remove the research establishments from Departmental control. They seem to be operating a totally different philosophy within the two sectors although, as it happens, the Efficiency Scrutiny has at the end of the day emphasised the importance of the departmental link, although they have ignored it again in some of their recommendations.

78. But surely is it not so that presumably they withdrew from DTI and Transport because Ministers had already looked at it and, therefore, it did not need to be examined again at all at the present time?

(Dr Ellis) Well, they did not say that because they were included and this has enabled them to say, and I know they have said this presumably for political reasons and in one sense it is helpful, that 50 per cent of the area they were looking at is already on its way to privatisation. Therefore, one of the major underlying objectives has actually been achieved, but it has not had anything to do with their Scrutiny because they did not actually look at them *ab initio*. They read and took account of what was happening in those areas, but, as I think Sir Peter Levene made clear to the House of Commons in its hearing on 13 July, in fact there was no way they could change those decisions which have already been made and they do not attempt to do so.

Baroness White] This is the point I was trying to emphasise, and I have also read the House of Commons Report.

Chairman

79. Can I take you back to an observation you made about the choice of privatisation. You did mention that BRE seemed to be particularly inappropriate. I do not know whether Mr Beech would like to comment on that.

(Mr Beech) Yes, I would. They attempt to draw a distinction between those activities of the BRE which are concerned with policy issues of the Government and those which are not and they imply that the latter can easily be hived off and sold off to private interests. Now, this seems to make the simple assumption that you can divide the staff of BRE into those who are concerned with policy and those who are not and this is simply untrue. Most people, like myself, are concerned with both types of issue and when I use the word "policy", I am not using it very precisely, but I am talking about all of those types of regulatory policy and other issues with which the Government is concerned and which form one of the reasons for them wishing to have the Building Research Establishment to advise them on scientific and technical matters. In my own case, for example, I would represent BRE in the Department on many international and national committees and from my activities in those committees, I would decide what sort of research is needed in BRE to back up the interests of the United Kingdom, the British Standards Institution and so on, so I have both roles, and many of my colleagues are in the same position. If this sort of policy were then pursued, whereby you then tried to divide people into sheep and goats within BRE, it simply would not work. It simply would not work because instead of having scientists working in BRE who are doing this representational role related to the regulatory policy and other issues, you would need to recruit vast numbers of people into the headquarters to do this very same thing. It certainly would not lead to any increase in efficiency and all that would be achieved would be to satisfy the dogmatic requirement to show that you have flogged off some parts of BRE, thereby gravely damaging its effectiveness in the process, so the whole thing is deeply flawed and, in my view, is totally arcane.

Baroness Hilton of Eggardon

80. The same argument would apply to the Transport Research Laboratory.

(Mr Beech) They would apply entirely to the Transport Research Laboratory.

Lord Howie of Troon

81. I am wondering if you are aware of any demand within the construction industry for the BRE to be privatised?

(Mr Beech) I think your Lordships will be aware that a submission has been made by the Construction Industry Council which does a more effective job of rubbishing these proposals than we could possibly do. They state very clearly that they do not wish it to be privatised. They state very clearly that they wish it to be retained as a national source of advice, expertise and so on and advice to government, to industry and indeed to individuals who are concerned with matters concerning building and construction.

82. So the people who mainly rely on BRE like it the way it is?

(Mr Beech) Very much so.

Chairman

83. Could I move on to the two models which are short-listed from a number of other options and perhaps we could look in particular at their relevance to some of the institutes which are represented in your team today. Are there, for example, any advantages that you see in either model, or any improvements over the *status quo*, perhaps I should say?

(Dr Ellis) Not really, no, because we think they have unnecessarily sought to go over the boundaries and because we see very clear missions involved in research councils on the one hand and government departments and government research establishments on the other and distinct from universities as

[Chairman *Contd*]

well. They have mixed them up, which they have clearly deliberately done, but quite often, we think, on spurious scientific grounds. I mentioned earlier about the environmental aspect, and certainly some of our members who are from the NERC have said that actually to split marine and terrestrial environment does not actually make scientific sense in the case of certain research projects or objectives that are on-going. The Efficiency Scrutiny has conducted minimal and superficial examination of the issue. I certainly would not criticise the team who have done a very difficult job to the best of their ability. But they were heavily loaded with certain types of scientists and they have very much concentrated, as we have said, on the agricultural and natural environment areas as though they saw those as soft targets that the Government could tackle, whereas there are much harder targets that they could have tackled, as we said in our evidence, so we think the whole basis was faulty. As you will have noticed from our evidence, we have been a bit careful treading on to the ground of which options we prefer because there clearly are some that might be slightly more advantageous for some of the research establishments or for some research councils if they wish to empire-build, but I think our general view has been that the underlying reason is so flawed that we would not wish to choose any of them as our favoured option, but maybe my colleagues could give you a bit more detail.

(Mr Titchen) If I could come in, my Lord Chairman, I think the costs would have to be looked at and, as I am sure you are very aware, the predecessor to the BBSRC, the AFRC, when it restructured itself between 1983 and 1992, that cost £81 million in building costs and £45 million in staffing costs, which is not an inconsiderable quantity of money. Now, the scientists accepted that because they felt that they had a clearly defined mission and that there would be a stability to enable them to carry out their research after that. The pack now appears to be being shuffled once again and the efficiency gains in terms of the delivery of the science are somewhat difficult to gauge, particularly for the scientists at the bench. I think looking at those models one sees further turmoil, further upsetting to the individual scientists who are trying to provide the research that this country requires, and that will be very costly to this country for no real gain in terms of efficiency.

‹START›‹?no›84.‹/?›I want to know if I could take a specific example in the past of a reorganisation within the agricultural sector. The old Agriculture and Food Research Council's institutes in horticulture were amalgamated with some of the Government's experimental horticulture stations. It appears from the evidence we have had from the National Farmers' Union and others that they are well satisfied with this merger. Dr Ellis referred earlier to the danger of mixing up organisations with different missions. She said that research institutes had a different mission from government research establishments. In this case, would you comment as to whether in fact it has proved a satisfactory model for combining the two types of organisation?

(Mr Titchen) It is certainly a very specific example in terms that the horticultural industry was able to set up this collaborative venture between government and private finance. It is now in a very healthy position as I understand, and is attracting research funding from a wide range of providers. However, to return to my previous point, it is now uncertain as to where it would be directed in the new scenario and which model it would fit into. Again the uncertainty has returned to that particular area.

84. Only because the Scrutiny Exercise wishes to change it from MAFF to BBSRC. As I understand it the consumers, the horticulturalists, tend to say, "Here is an example of an organisation which has now got a sponsor government department, MAFF, and we're all happy with it". It does arise from bringing together these two different organisations in what is a successful model. I would like to come back to Dr Ellis and ask, given that precedent, whether she feels in practice it is always such a disaster to try and bring under one management these disparate organisations?

(Dr Ellis) I do not think it is a disaster in principle; but I think, as in that case, if you have got a couple of establishments, which although they might have been under different owners their mission was fairly clearly directing them in one direction (which in that case was to keep the horticultural customers supplied). I am not sure enough of the detail in that particular instance as to whether they were the only customers, because there are a range of customers in all situations, including the public, and sometimes the customers do not necessarily coincide in the interests they have. I would not rule out the possibility that there can be satisfactory mergers. That was done before the Scrutiny, and done for obvious reasons at the time.

(Mr Titchen) It is a very specific example to extrapolate that to the wide range of GREs that the Scrutiny was covering, which I think would be a dangerous thing to do. Yes, I agree that it does work in certain cases.

85. You have made it very clear that you feel the terms of reference were flawed, that the timing of the report was flawed, that the recommendations therefore are inevitably flawed, and that you feel this has caused an unnecessary perturbation. Do you have any good word for it in any respect?

(Dr Ellis) Yes, we have nodded at least in the direction of some of the individual recommendations. The ones we have particularly not approved of are in the area of privatisation, and we have tried to show that, even on the government's own criteria, privatisation does not make much sense, either on the broad criterion of good value for money or even on the narrower criterion of efficiency that they present. There are several much more evolutionary and incremental recommendations they make which are sensible, like the need to look at Treasury rules and the whole basis of financing to enable research

[Chairman *Contd*]

establishments to develop in the way the Government is asking them to, to be outward-looking and innovative, and not to be so dependent on government funding. Clearly that is something we have to do and they are already addressing themselves to it. These recommendations do make sense in terms of carrying that process through, although we disagree (as we say in our evidence) with trying to separate out the sheep and the goats—those they want to be commercially successful, who are the candidates for privatisation, and those that stay in the public sector and, therefore, should be restricted, as they say in the report. The spirit behind some of the recommendations, we think, is sensible, and are the sorts of things the Scrutiny should have been about. We do not think it has been a total waste of time; we think it has been misdirected and could have been a much more useful review and, therefore, we do regret the direct resources which have been wasted in it and everybody's work being disrupted directly by it or the worry which has been caused by it. We do think it has begun to show the complexities of the situation. It has, I think, demonstrated even with its own limited terms of reference (and it has to be very careful how it says it) to Sir Peter Levene and those who instigated it, "It is not as simple as you thought; there are complexities and there are these relationships". Even though it has not gone into enough depth, and we could pull apart many of the recommendations in detail, the good parts should be built on and not neglected altogether.

86. You have specifically welcomed Recommendation 35, which refers to an area Lord Craig has been asking previous witnesses about, and I will ask his question for him as he is not going to ask it himself. I think it is important to establish that you would welcome a relaxation of the present Treasury rules. Would you elaborate, therefore, on why you favour Recommendation 35?

(Dr Ellis) I am afraid I cannot be much more helpful than the previous people who have answered this one. Certainly the annuality factor, the fact that all government spending is done on the annual spending round, does make it very difficult to plan ahead, particularly where you have got pretty hefty capital investment which is required and you are dealing with long-term research. That is an important limitation. They have modified that in certain areas. They have allowed GREs and research councils to carry over a little bit of surplus from year to year, but there is very little capacity to raise serious money without damaging the public sector borrowing requirement. That then comes into the much broader issue, which is the same in the Post Office privatisation/commercialisation, and the same in the railways, that under the present government's policy and under the current Treasury definitions of public expenditure, it does not differentiate between current transfer payments and long-term investments, that whole area must be looked at. Under the current rules and the current government's philosophy, in order to raise serious money you have to privatise, and with that privatisation you lose all the other benefits and synergies and the value for money you get from retaining those activities within either their research councils or government departments. As my colleague was saying earlier, if you are going to do the job properly you have to re-create those facilities within the department. Only a very small percentage (about 10 per cent. across the board) of government scientists are actually in the departmental headquarters and policy divisions; the huge majority are in research establishments, whether they are independent agencies or whether they are still within the department. To actually remove those through privatisation, or remove substantial parts of them, would severely damage the capacity of government. Another of our long-term fears is that the removal of that capacity would not be noticed by the government because already the mandarins in the Civil Service are not scientifically aware, the vast majority of them have not got a scientific background even in terms of their degree subject, and informed customers, in the very broadest sense, are simply not found anywhere else in government. They are only in the research establishments and then the few scientists who are currently in headquarters. To actually remove that critical mass of science from government would be hugely damaging, and not just damaging to the public sector research establishments, but damaging to industry, damaging to universities, damaging to anybody who depends on public sector support for science and research and development.

Chairman] Dr Ellis, I am afraid we are running out of time and it is important that we stick to our timetable. I fear that there may have been other points you would have wished to make to us. You have, nevertheless, given us a very full written report and if there are further points as a result of the discussion we have had today which you would like to make to us, do please put them in writing to us again. Could I thank you and your colleagues for the patience with which you have answered our questions and I ask for your tolerance at the speed with which we have had to deal with this inquiry and again we all know why that is. Thank you very much indeed.

WEDNESDAY 19 OCTOBER 1994

Present:

Craig of Radley, L.
Hilton of Eggardon, B.
Howie of Troon, L.
Redesdale, L.
Renwick, L.
Selborne, E. (Chairman)
White, B.

Memorandum from the Natural Environment Research Council

Note: The views expressed in this memorandum are those of the Natural Environment Research Council (NERC).

EXECUTIVE SUMMARY

NERC is contributing to the OST response to the Scrutiny which will synthesise Research Council views; the views expressed here are those of the NERC Council. Eight NERC institutes were included in the Multi-Departmental Scrutiny of Public Sector Research Establishments. These were: the British Geological Survey (BGS); the Dunstaffnage Marine Laboratory (DML); the Institute of Freshwater Ecology (IFE); the Institute of Hydrology (IH); the Institute of Terrestrial Ecology (ITE); the Institute of Virology and Environmental Microbiology (IVEM); the Plymouth Marine Laboratory (PML); and the Proudman Oceanographic Laboratory (POL). NERC Council welcomes a number of the conclusions of the Scrutiny; however, it has reservations in relation to the way in which this was conducted and the choice of establishments examined. In relation to R&D, NERC is concerned that many of the proposals in the Report will not aid efficiency, nor strengthen the effective provision and quality of scientific expertise and advice, nor improve the contribution to wealth creation and quality of life. Indeed, NERC considers that the models for organisational structures and transfers put forward in the report would lead to fragmentation and weakening of the environmental science base in the United Kingdom.

Q1. *Has the case for conducting the Efficiency Unit's Review been justified?*

1. The case for the review, as reflected in the Science, Engineering and Technology White Paper (WP) and the terms of reference (ToR) for the Scrutiny, was based on the notions:

(i) that many of the services currently provided by Government Research Establishments (GREs) could be carried out in the private sector and that privatisation was a realistic prospect for a number of establishments (WP, paragraph 5.12);

(ii) that for those establishments that had to remain in the public sector there was scope for rationalisation and that revisions to their organisation and management could provide better value for money (ToR).

2. The initial focus as outlined in the White Paper appeared to be on GREs and the scope for extending and accelerating the operation of market forces in relation to the S&T which Government Departments commission in support of their policy, statutory, regulatory and procurement responsibilities (WP, paragraph 5.9). In the event the review also encompassed a part of the science base, through the inclusion of Research Council Institutes (RCIs) alongside the GREs.

3. There are fundamental differences in the primary roles of GREs and RCIs. Although they carry out some R&D, the GREs are primarily concerned with the provision of scientific and technical services and advice to underpin Departmental policy. The primary role of the RCIs relates to the science base missions of the Research Councils. The NERC institutes undertake high quality research, survey and monitoring which is long-term and large scale in nature, and aimed at the provision of impartial, interdisciplinary knowledge of the environment. They are the custodians of many United Kingdom and international environmental databases and also provide infrastructure support for science base research and training in the Universities. Although NERC institutes are, together with Universities and other private sector suppliers, part of the broader supply base for Departmental research requirements, this contract work only represents a part of their activity and is underpinned crucially by their main science base activities.

4. Whilst the case for extending the review to RCIs may have been justified, Council notes that:

— The review indicates neither the feasibility nor desirability for privatisation of any of the RCIs. This is unsurprising in view of the basic missions of the RCIs.

— Most of the recommendations concerning links with Universities and rationalisation pick up on effective practices already well embedded in Research Council mechanisms.

— The emphasis on the limited areas of GRE/RCI interface and on rationalisation between GREs and

RCIs, with their very different missions, seems to have confused the recommendations on organisation and ownership models, particularly in the marine science area.

Q2. *Are you satisfied with the choice and the basis of the choice of the 53 establishments examined?*

5. It follows from the above comments that NERC had reservations in relation to the choice of establishments examined. RCIs with their very different missions to GREs should have been excluded. Alternatively, if there was a real concern about overlaps and minimising the costs of overheads associated with the delivery of good and effective science funded from the public sector, then all establishments receiving significant public sector research funding, including university departments, units, centres, etc. and executive agencies such as the Meteorological Office, should have been included.

6. As it stands, the review does not provide a balanced picture of research establishments in receipt of significant public sector funding. Moreover, there is little attempt to explore points of overlap, duplication, etc. in the national research effort funded by Government. Whilst recommending transfers to the University sector, no assessment has been made of the effectiveness of those research establishments already in this part of the "private" sector, or of University departments to which transfers might be made.

Q3. *Are you satisfied with the way that the Review was conducted?*

7. The scope of the work undertaken by the team, spanning some 90 interviews and visits as well as studying and analysing documentation sought from the establishments reviewed, was enormous. We would question whether it was really possible in the time allowed for the team to adhere fully to the "normal efficiency scrutiny procedures" (paragraph 1.6) of seeing what actually happens on the ground, and for full interaction and discussion on the work being done by the establishments. Only a few hours was spent at any one NERC laboratory.

8. Directors of NERC institutes were required to present written information on finance, manpower, capital facilities, etc. Little of this is analysed in the report and there was little, if any, discussion based on this evidence during the team's brief institute visits. Furthermore, there was little attempt to review what science was being done and why. Whilst the team did not have the expertise themselves to undertake a scientific review, their conclusions and recommendations, if implemented, would potentially have a significant impact on the science base.

9. Concern was expressed by those visited that more emphasis should have been given to the scientific mission and research content of the establishments. Had more attention been paid to this aspect, a clearer understanding of the different roles of research organisations in the different sectors would have been obtained.

Q4. *Will the proposals in the Report (a) aid efficiency, (b) strengthen the effective provision of scientific expertise and advice, (c) contribute to wealth creation and to the quality of life?*

(a) Aid Efficiency

10. The Scrutiny does not attempt any cost-benefit analysis of the proposed models of ownership or rationalisation. To propose change simply on grounds of rationalisation, customer-contractor relationships or regional interest is to consider only a small part of the cost-benefit equation. The costs of relocation and/or rationalisation are very large. The gains in terms of scientific output and value for money would have to be demonstrably substantial to compensate for such a drain on R&D budgets.

11. Rationalisation reduces choice and competition. Model 1 is an example of this and could, in the longer term, lead to reduced efficiency and effectiveness.

12. The timing of the Scrutiny has not allowed full account to be taken of the significant post-White Paper changes in the Research Council system. Many of these will lead to increased efficiency and effectiveness. Furthermore, significant restructuring has taken place in NERC since 1 April 1994 with the abolition of the Swindon-based Science Directorates, thus devolving more responsibility to the institutes, and the establishment of two new institute groupings (the Centre for Ecology and Hydrology and the Centre for Coastal and Marine Sciences). These changes, which are acknowledged only in a footnote on p. 129 of the Report, will lead to rationalisation, where appropriate, and to clarification of customer-contractor relationships within NERC. Rationalisation within NERC will take account of its regional customer base.

(b) Impact on Provision of Scientific Expertise and Advice

13. NERC considers that both of the report's preferred options for new organisational/ownership models will weaken rather than strengthen the effective provision of scientific expertise and advice on environmental issues.

— The dismantling of the very effective (and greatly admired overseas) United Kingdom capacity

for integrated environmental R&D and advice that is present in NERC would reduce efficiency significantly.

— Effective environmental advice requires strategic, interdisciplinary science. The development and management of areas of science such as global change, land-ocean interactions, ocean-atmosphere interactions, climate processes and impacts, coastal zone processes, integrated studies of pollution effects, could potentially be jeopardised by fragmentation of the United Kingdom environmental science capability.

— With specific respect to marine sciences, the team has failed to understand the need. It chooses to consider that the only aspect of national concern worthy of comment is fisheries (see p. 130 of the Report). This is a total mis-representation of the worth of marine sciences to the United Kingdom. Marine science and technology produces benefits in at least eight sectors, including climate prediction, national defence, shipping, communications, coastal defences, marine pollution, and offshore energy and mineral extraction, as well as fisheries. Any recommendation based on the misunderstanding that only fisheries is important will lead to inefficiency and seriously weaken the country's ability to undertake and apply marine science to wider wealth creation and quality of life issues important to the United Kingdom.

14. Under the change of ownership models the report envisages a transfer to the new owner of gross running costs and some capital provision but that "customer" funding would remain with the present customer. Even with this apparent safeguard, NERC would be concerned that, in the face of reducing Government funding, a Departmental owner would be forced to protect the scientific service requirements related to immediate policy needs. The candidates for rationalisation in the streamlining process expected to be achieved through the groupings of GREs and RCIs would therefore fall on the science base aspects of the work, thus leading to a significant weakening of the underpinning science base needed in the longer term. Moreover, the changes proposed would also impact upon NERC—as ability to plan and act strategically across the whole of the environmental science base; by ownership of its institutes, NERC can ensure harmonisation of long-term plans for infrastructure and science programmes.

(c) Wealth Creation and Quality of Life

15. The report's proposal (paragraph 7.16) that establishments that remain in the public sector should have a limitation placed on their non-Government activities is shortsighted and appears at variance with the White Paper emphasis on meeting the needs of users. Unless Government is prepared to act as a proxy for the wide range of potential users of NERC research and fund establishment programmes accordingly, this proposal will severely impede the contribution of NERC research institutes to wealth creation and quality of life.

Q5. *How will the proposals in the Report affect the statutory duties of the research establishments?*

16. NERC establishments do not have statutory duties. However, NERC has a statutory responsibility under the Conservation of Seals Act 1970 to provide information and advice to Government on the status of United Kingdom seal stocks. Information to meet this responsibility is obtained through research and survey supported at the NERC Sea Mammal Research Unit. This Unit was not referred to in the review. It is assumed therefore that it would remain under NERC ownership under either of the proposed Models. NERC is currently looking at options for transferring SMRU to a University.

Q6. *How suitable are the Report's proposals for privatisation?*

17. NERC supports the view that none of its research institutes is a suitable candidate for privatisation. The nature of their core research, survey and monitoring programmes and their role in providing impartial, long-term, large scale interdisciplinary strategic knowledge about the environment, make them inappropriate for privatisation.

18. NERC is active in developing links with Universities and the private sector in general but considers that there are very real dangers in the report's proposal that Departments and Research Councils should publicly declare themselves open to approaches from private sector firms and Universities wishing to discuss the potential for taking on some or all of the activities of individual research establishments.

19. NERC supports the principle of such transfers where this is in the best interests of the science and its application, but considers that a public declaration of openness would be seen as an invitation to asset-strip commercially responsive activities of interest to the business sector and leading edge basic research of interest to the University sector. The success of the NERC institutes lies in their high quality, multidisciplinarity and multifunctionality. Piecemeal destruction of this would severely damage their capacity to pursue their mission of long-term high quality strategic environmental research, survey and monitoring applicable to a wide customer base. Their lead role in planning and facilitating United Kingdom contributions to international science programmes, their public service functions of curation of national collections, custody

of many United Kingdom and international environmental databases and provision of information would also suffer.

Q7. *What are the advantages and disadvantages of (a) the transfer of PSREs to Universities or closer formal links between PSREs and Universities; (b) the two models for organisational structures; (c) the directors of rationalisation?*

(a) University Transfers/Links

20. NERC has a strong track record of linkage between the work carried out in its research institutes and Universities. This includes the development of joint ventures (including the new Southampton Oceanography Centre, Community Research Programmes (CRPs) and Special Topics), the involvement of institute scientists in undergraduate teaching and postgraduate training, and formal networking with specific Universities to maximise the joint use of facilities and expertise. Some specific examples of formal links between NERC institutes and Universities are: those between BGS and Leicester; between ITE Merlewood, IFE and Lancaster; between IH and Reading; a joint programme on molecular ecology, including joint appointments, between ITE Banchory and Aberdeen; the development of a Marine Sciences Network linking the new Centre for Coastal and Marine Sciences, and in particular PML, with Warwick, East Anglia, UCW Bangor, Plymouth and Bristol with discussions in hand to extend this network to include Universities in Scotland; and a new link with Leicester whereby it will be the employer and joint funder of the new Head of the NERC Isotope Geosciences Laboratory at Keyworth. The further development of all such links with Universities is a strategic objective of NERC.

21. NERC accepts that there are cases where full transfers can be justified on scientific and efficiency grounds. For example, in 1987 part of the NERC Institute of Marine Biochemistry was transferred into the University of Stirling as the Unit of Aquatic Biochemistry; in 1990 the Bangor Station of ITE was relocated and housed in UCW Bangor; and in 1995 the Institute of Oceanographic Sciences Deacon Laboratory and the NERC Research Vessel Services will transfer to the Southampton Oceanography Centre under the management of the University; and options to transfer the Sea Mammal Research Unit to a University are currently under review. Such transfers are expensive, however, and unlikely to be appropriate for those establishments involved in large scale, long-term, strategic research, survey and monitoring, where continuity and specialist infrastructure support are important. Here the development of collaborative and co-operative links between research establishments and Universities is the best way forward.

22. Full transfer of a research establishment to a University might satisfy the definition of "privatisation" but there are no grounds for assuming that it would improve prospects for "selling services". Transfers of research establishments in whole or in coherent subgroups will generally involve groups of scientists of at least Departmental size in University terms. It can only lead to creation of more University Research Institutes/Centres/Units, whose efficacy has not been examined by the Scrutiny or any other central review of R&D organisation in the United Kingdom.

(b) Models 1 and 2

Model 1

23. NERC sees major disadvantages of this Model. It generates an organisational barrier between research establishments involved in onshore and marine environmental work just at a time of increasing concern over the processes operating across this important environmental interface and when the need for an integrated approach is perceived as essential. The split ownership of the environmental science base research establishments would hinder the implementation of high priority strategic research across environmental interfaces, such as NERC's recently started LOIS (land ocean interactions) and ACSOE (atmospheric chemistry in the oceanic environment) CRPs. Ownership enables direction of the research effort, the development of appropriate collaborative links, and the provision of support for the wider community within such flagship projects. At the very least split ownership will increase the bureaucracy involved in setting up complex interdisciplinary programmes and confuse the two missions (R&D versus S&T) which will reduce efficiency and co-ordination. At worst it will positively discourage interdisciplinarity.

24. The Scrutiny team acknowledge these disadvantages, at least in part, (Annex O, p. 130 "Cons") but appears to consider that the additional advantage cited for this Model, "that it would remove the awkwardness of Research Councils providing significant amounts of S&T to Government Departments", as opposed to a Model which retains the totality of the environment mission (Model 3 (a)), outweighs them. NERC believes that this is not the case and signals a lack of understanding of the importance of interdisciplinary research on the environment and the management effort that is still needed to bring it about. It also ignores the fact that NERC (and other Research Council) laboratories are well used to acting as contractors to Departments for their R&D needs; there is no reason to suppose that under suitable arrangements the Councils could not respond equally well to wider departmental S&T requirements. The formation of larger groupings is already in hand within NERC through the establishment of the new Centres. The other—"pros" cited for this model, that it would reduce overlap and increase strategic focus, are not considered valid because NERC does not believe that there is substantial overlap in the marine area and

the increased strategic focus referred to (ie fisheries) is, as stated above, only one of the applications of the marine sciences.

25. It should be noted that Model 1 shows an internal inconsistency in its treatment of the ownership of basic research. It is proposed that the agricultural research establishments dealing with basic research should transfer to the Research Council system, mainly under the ownership of BBSRC. Yet the marine research establishments dealing with basic research are proposed for transfer to Departmental (Scottish Office) ownership.

Model 2

26. NERC sees the following major disadvantages of this option. It generates an organisational barrier at the England-Scotland border. This is neither an environmental interface nor one justified on scientific arguments or distinct supplier/user communities. As currently framed this option would separate ecological research in Scotland from NERC's hydrological, freshwater biological, atmospheric, geological and marine capability at a time when, as already noted, environmental problems increasingly demand multi-disciplinarity. Similar arguments to those advanced above on the development of interdisciplinary research apply, in this case in relation to the treatment of the United Kingdom as an entity for environmental research. Environmental processes are no respecters of political boundaries, even if policy responsibilities are split. For example in order to understand events in the North Sea there is a need to know about processes in the North Channel around Scotland. This option is unlikely to lead to sensible rationalisation; indeed it is likely to introduce new costs associated with duplicative management and co-ordination structures, and may well lead to duplication of scientific effort either side of the Border.

27. The first and second "Cons" advanced by the Scrutiny team themselves for this model (Annex O, p. 132) indicate that new mechanisms would need to be introduced to get over the scientific awkwardness of a geographical divide. They appear to cancel out the team's own third and fourth "Pros" on p. 131. The "Pro" of local sharing of facilities is not substantiated; any cost saving could well be cancelled out by the new co-ordination mechanisms needed and duplication between countries. This model would also reduce NERC options for rationalising within the new Centres and does not address the main overlap issues in the agricultural area.

(c) Directors of Rationalisation

28. NERC sees no advantage in using public funds to provide for two new Directors of Rationalisation and their teams, thus creating an additional tier of bureaucracy. Even in the absence of change in organisational structures, existing Chief Executives and Directors of research establishments have remits to ensure that rationalisation opportunities are seized between their organisations, as well as within them. The NERC will actively be examining such issues and has made substantial progress in this area in recent years.

Q8. *How appropriate are cross-departmental and/or department/research council rationalisations?*

29. Rationalisation should take place within missions—not just scientific missions but also organisational missions, that is the purpose for which the science is being carried out.

30. The appropriateness of rationalisation between establishments across Departments or Departments/-Research Councils will depend on whether there is significant coincidence of missions and markets. The fact that scientific skills and activities may overlap is not sufficient reason for rationalisation if the missions, and thus the application of these skills and activities, are different.

31. Concordats being developed between Departments and Research Councils will further co-ordination mechanisms. Co-ordination of environmental research, survey and monitoring activities across Departments and Departments/Research Councils is also fostered by two Inter Agency Committees—on Marine Science and Technology and on Global Environment Change. These existing mechanisms have not been commented on in the report, yet they were established specifically to bring together the main players in Government research in their respective areas with a view to co-ordination and the development of collaboration wherever this was appropriate.

32. Co-ordination in the provision of major special analytical and field facilities needed to support environmental science is likely to be more appropriate than rationalisation of actual research establishments. Within NERC this is already achieved through the central provision of specialist analytical services and other facilities such as airborne remote sensing and research vessels for use by the whole environmental science community. The establishment of the Environmental Change Network, managed by NERC but supported by a consortium of nine agencies including six Departments, is an example of co-ordination across Research Councils and several Departments and Agencies.

Q9. *Do Treasury guidelines place obstacles in the way of privatisation and limit the scope for selling services outside government? Will the situation alter if PSREs are transferred to or linked with Universities? Should the guidelines be altered and if so how?*

33. This is not a big issue for NERC. Institutes are to some extent inhibited from competing with and being seen to be in direct competition with the private sector. Universities are already deemed to be private sector and therefore suffer no such inhibitions, so transfers or links to Universities could, in principle, help the situation. Earlier comments about the scientific and organisational appropriateness of such transfers and about asset stripping are, however, relevant.

Q10. *What should be the role of the Office of Science and Technology in the light of the Review?*

34. OST already has mechanisms in place, through the Director General of Research Councils, to encourage change and rationalisation within the Research Council system where appropriate.

Q11. *Are there any other proposals which the Review should have made?*

35. One option considered by the Scrutiny was to create a single body for integrating United Kingdom environmental research. This option (proposed under Models 3(a) and 3(c) in Annex O) appears to have been discounted without argument of the case against it. NERC, as the lead United Kingdom body for environmental research, survey, long-term monitoring and training, would support a full cost-benefit analysis of the "environment research agency" option before any decisions to rationalise/transfer ownership were made: the objective should be to optimise the science contribution to the United Kingdom. It would be important in any such development to maintain the distinction between long-term basic and strategic science and scientific and technical services and advice to meet Departmental policy needs.

36. A further option which was not considered is to maintain the status quo in the environmental sciences area on the basis that it supplies the United Kingdom with what it needs in terms of R&D.

Examination of witnesses

Professor J R Krebs FRS, Chief Executive, and Dr R K G Paul, Director, Policy and Communications Division, the Natural Environment Research Council, called in and examined.

Chairman

88. Good afternoon, Professor Krebs and Dr Paul, we are grateful to you for joining us this afternoon. You will understand that we are working under some pressure of timing, partly as a consequence of the parliamentary timetable and partly because of the timing of the Scrutiny exercise itself. I am sorry we are not really able to give you as much time as perhaps we would have wished but I hope that we can cover much of the ground in the time available. You have given us written evidence which has been helpful, and some of us benefitted from a talk that you, Professor Krebs, gave at the Royal Society in July when the Royal Society organised a discussion day on this Scrutiny exercise, but of course that was before the document was published. We can now perhaps discuss some of the issues which have been raised in the Scrutiny document itself. Is there anything further you would like to add to the written evidence at this stage before we launch into some of the questions?

(Professor Krebs) No, I do not think there is. I think we have said what we needed to say in the written evidence.

89. Perhaps if I could start then. You make it clear that you do have some very strong reservations, both on the manner in which this exercise was conducted and the content of it.

(Professor Krebs) Yes.

90. Bearing that in mind, I would ask the first question of those which we listed as possible questions that we might put to you. What would be your overall line or what advice will you be giving the Minister, as no doubt you will, before the end of the month as to your overall view of this Efficiency Report?

(Professor Krebs) I think I would say, first of all, that there are many comments and recommendations in the Report that one could welcome. The Research Councils and NERC in particular, with which of course I am involved, adapt and evolve our systems as we see fit in relation to fulfilling our mission. So my advice to the Minister would be to recognise that the Research Councils are in a position of rapid evolutionary change and modification of their institute structures and that they would welcome, and indeed are already carrying forward, many of the recommendations in the Scrutiny Report. I am thinking, for example, of links with universities, of increased competition for funds, possibilities of rationalisation within the existing structures. I think I would also say that no option should be adopted without a full cost benefit analysis. As I have made clear in the written submission I see as one of the difficulties with the report that it does not contain a full cost benefit analysis of options that are suggested. Those, I think, would be my principal points on advice.

91. This exercise would have been no surprise to you because it was trailed in the White Paper "Realising our Potential".

[Chairman *Contd*]

(Professor Krebs) Yes.

92. Nevertheless, that did suggest that the exercise was likely to be limited to the Government research establishments as opposed to your institutions and other Research Council institutes. Do you think it appropriate that the Research Council institutes were brought into this Scrutiny?

(Professor Krebs) Yes, my Lord Chairman. You quite rightly point out that the White Paper, in paragraph 5.9 where the Scrutiny Report is trailed, refers particularly to the research establishments that are carrying out work to underpin what the Scrutiny Report calls S&T, scientific and technical advice to Government departments to underpin policy. It also refers to the associated Research Council Institute activity. I think one of the points that is not really brought out in the Scrutiny Report is that the principal linkages of the Research Council Institutes, and the NERC Institutes in particular, are with the university sector rather than with the research establishment sector. We have, for example, a very large programme in NERC of joint research activity between the institutes and universities, our so-called Community Research Programmes, which is explicitly set out to fund basic and strategic research through linkages between the institutes and universities. I think the final portfolio of the 53 establishments included is very different from the profile one might have expected from Chapter 5.9 of the White Paper.

93. Do I understand from that that you do not think it was appropriate for your Research Council institutes to be put into this exercise?

(Professor Krebs) I think if one was going to carry out a review of the R&D base of the United Kingdom as a whole, if one really wanted to assess the value for money, the overlap and synergies, one would not pick out this small group of establishments and look at them in isolation. If one's aim were to do that one would look at the universities and all the Research Council establishments. In the case of NERC, as we know, some of the establishments were included and others were not. For example, the Institute of Oceanographic Sciences Deacon Laboratory was not included whereas our other marine institutes were. The British Antarctic Survey was not included. The Scrutiny looks at a very small piece of the whole field of research and development in the science base in the United Kingdom and for that reason I find it hard to understand the full rationale behind the choice of the 53 establishments.

94. We understand that the exercise was conducted in order to determine first of all whether Government resources were being efficiently used, I think that means in the main cost effectively used, but secondly also to determine to what extent different parenthood or different linkages might be appropriate. I suppose it was expected that not only might privatisation be an option in some cases, indeed this is in the Terms of Reference, but in some cases it might be appropriate to move either GREs into the Research Council sector or into universities or perhaps move the other way.

(Professor Krebs) Yes.

95. Do you think this is a valid exercise? Can you imagine a situation in which, for example, a GRE might more happily come into your ambit?

(Professor Krebs) I think, my Lord Chairman, it is worth bearing in mind the distinction between R&D and S&T in the terms of the report. One has to bear in mind that Research Council institutes tend to have the function of providing basic or strategic or applied research as opposed to scientific and technical services to underpin policy. Bearing that in mind there clearly are situations in which the R&D of the Research Council institute maps closely on to the policy—underpinning S&T work. Just to give you one example from the NERC area: the Hadley Centre, which is associated with the Met Office, provides the Government with predictions of global climate change. Research that underpins the models that the Hadley Centre use is carried out by the NERC community in universities and particularly by our Centre for Global Atmospheric Modelling at Reading. There is a close relationship there: it already works as a very integrated synergistic relationship. Whether one would benefit by some organisational or structural change would be a matter for cost benefit analysis. I think one can say with great confidence, having visited both the Hadley Centre and our centre in Reading, that they work very closely with one another. If you say: "What do you do on a day to day basis with the other" they can give you a very good answer, they do have a good relationship.

96. I think the central issue that we are trying to wrestle with is that it is easy to imagine a situation in which scientists, customers and others might agree on a reorganisation, and that it is appropriate from time to time that structures should be looked at in order to determine whether there is value for money and effective science, and whether the customers' interests have been properly represented. A lot of written evidence we have had criticises the nature of this exercise because of its very limited brief. I think really we must satisfy ourselves that Research Councils such as your own Research Council, or for that matter Government research establishments for which you cannot speak, are likely to investigate from time to time such options as might be appropriate or does it need a Scrutiny exercise like this to stir you up?

(Professor Krebs) I would point to the record of my own Council and the BBSRC. Of course Tom Blundell can speak for the BBSRC himself, but if you look at what NERC has undertaken in the last few years in terms of site rationalisation, for example, the British Geological Survey has closed a number of sites as we perceived that they had completed their purpose. In terms of structural organisation, as you well know we have undertaken a major joint project with Southampton University relocating the Institute of Oceanographic Sciences from Godalming in Surrey to Southampton and our research vessel service from Barry in South Wales to the same centre putting them together with the University of Southampton. There is an example of a major change that we are steering through at the moment. We have on our table at the moment a

[Chairman *Contd*]

plan, on which we have not finally reached a decision but we are close, for relocating the Sea Mammal Research Unit in the University of St Andrews. Our attitude is one of looking at what we need for providing the United Kingdom with the best value for money in terms of environmental science. If we perceive that can be achieved in a new model we are willing to undertake those changes but they can be very costly. The Southampton Centre is going to cost £50 million, so one does not undertake change lightly, one undertakes it after very careful analysis of the pros and cons. I believe our record speaks for itself and in the future we will continue to take that approach. What we do not want to do is undertake rationalisation or structural change purely for the sake of doing it. We do not want to undertake it in a way that would erode our capability to support scientific research, so if we do undertake changes, and they are going to be costly, and our cost benefit analysis tells us it is going to impair our ability to support science then we would be looking for additional resources to undertake them.

Lord Craig of Radley

97. Just to follow up on that point about cost. Quite clearly, as you have indicated in your evidence, there have been considerable upfront costs in your reorganisation.

(Professor Krebs) Yes.

98. You talk about a cost benefit analysis, have you any feel for what further costs might be involved in carrying out the Scrutiny review's recommendations on the basis of your previous experience?

(Professor Krebs) I think, my Lord, I can give you a per capita figure. That is, if you relocate somebody from one institute to another or move somebody from an institute to a university the standard figure is £30,000 per individual. That gives you an estimate in that direction. If you make somebody redundant generally the redundancy bill we count as about £60,000. If you build a new building then of course the sky is the limit. The Southampton Centre is a very large venture and will involve several hundred scientists but even if one imagined a more modest relocation of a small unit like the Sea Mammal Research Unit, which has 20 or 30 staff, even for that the building costs, which if our negotiations are taken forward will in fact be carried by the University of St Andrews, would be in the order of £600,000 to £800,000. It is a very, very costly exercise and one has to be really convinced that there is scientific benefit, and it is not some hoped for benefit in the year 2010, that you can measure it on a reasonable timescale. In the case of Southampton, that was undertaken by my predecessors and I cannot speak for them. In the case of the Sea Mammal Research Unit we have looked at it very closely and are continuing to look at it very closely before reaching a conclusion to make a change.

Lord Renwick

99. On the same point, my Lord Chairman, really Professor Krebs in his previous answer mentioned that magic phrase "value for money". I would like him, if he could, to expand on that. The report says that part of the general remit for the review is a high quality service in a way that best represents value for money. In your written evidence you say that the Scrutiny does not attempt any cost benefit analysis.

(Professor Krebs) Yes.

100. Could you expand on that? Value for money is a very subjective term, it is very easy in my mind to determine what something costs, but how do we determine the value and who is best at determining the value?

(Professor Krebs) Yes. If I may, through you, my Lord Chairman, I think the first element of any cost benefit analysis is to identify the currency: what is it? It is a maximisation or optimisation process. What is the currency you are trying to optimise, is it scientific papers per pound, is it patents per pound of investment or what? So that would be stage one, to identify the currency. Once you have got the currency you can start to stack up the costs and benefits, but you also have to recognise the constraints. You may have an ideal solution if you were starting from a *tabula rasa*, but we all recognise that we have to evolve from where we are now and that may severely constrain any optimisation in an ideal world. The reason I say that the Scrutiny Report does not carry out the cost benefit analysis is they do not define currency—which was your question—what is one trying to optimise. I would say from a scientific perspective one is trying to optimise the productivity of output of United Kingdom science for the investment per pound of taxpayers' money. The question then is how is the productivity measured, and you come into the whole area of output indicators. Excellent science, relevant science, and I can say that yes, those things mixed together. You have to define the currency and you have to define how you are going to measure the elements that go into the equation and you have to define the constraints. I believe none of that was really articulated in the report. There were a few pros and cons in the annexes but they were very much odd things picked out here and there and not really a full analysis. I am not claiming that I could now rehearse in front of you how I would do the analysis for the whole of the UK science base but I could explain how we are doing it in the case of the Sea Mammal Research Unit, which is to draw up a table starting with what do we want to get out of the Unit, what are the scientific objectives that relate to our mission, will those objectives be enhanced or diminished by a transfer to St Andrews, over what timescale, and what will the costs in pounds be? Therefore we can weigh up what will be enhanced, A, B, C, D and E and how much it is worth to enhance that. Then one gets into an area of slightly subjective judgment and one comes to a corporate decision in the Council as to whether it is worth doing.

Chairman

101. Would that be a model that you would have liked to have seen the Scrutiny exercise adopt on a wider brief?

(Professor Krebs) Certainly I think I would have

[Chairman *Contd*]

liked them to have adopted a model of that kind. They may not have been able to go into the full detail that we do, particularly given the timescale under which they operated, but at least to have an attempt or at least to say for those who are going to follow it up "This is the kind of analysis you should do". I do not know whether Dr Paul would like to add anything to this?

(Dr Paul) Thank you, my Lord Chairman. I think that the other thing that would have been in our sort of template for this sort of analysis would be to see if user needs were going to be met by whatever changes were proposed.

Lord Howie of Troon

102. Reading your written evidence I get the impression that you are not very impressed by this review. You are critical of the choice of subjects under examination and you do not seem to be very keen on the manner in which the review was conducted if I read your evidence correctly. Nevertheless, you have told us that you agree with some of the recommendations which presumably means that you disagree with some of the other ones although you have not told us that.

(Professor Krebs) Yes.

103. Do you think that the recommendations that you like are better supported by the arguments in the review than the ones that you do not like, or is it just the case that you would have liked these recommendations anyway whether the review had been held or not?

(Professor Krebs) I think, my Lord, I would say that most of the recommendations that are ones that we would support are recommendations that are in line with our own strategy.

104. Yes.

(Professor Krebs) I think the Scrutiny has done a useful job in making us think hard about how we operate in relation to our institutes and even if nothing else can be said that is a very positive outcome. It was, as a matter of fact, the case that we had begun to develop a lot of these thoughts before the Scrutiny Report came out and perhaps one effect of the report is to focus our minds on how we are going to implement these and begin to set ourselves timescales. To take one example, the issue of how to open up research funds more widely between the institutes and universities is one that we have been discussing over the last six months in NERC in considerable detail and Scrutiny points to that as an area that they would like to see us taking forward. The issue of forming links with universities, we are doing that all the time and again it is something we would wish to develop further and the Scrutiny Report helped us focus our thoughts on doing it sooner rather than later. I think your analysis is largely correct, the areas that I am saying I support, which is about 80 per cent of the report, are things that we would either have wished to have done or were indeed already doing before the report came along. That is not to diminish the value of putting it down on paper and saying that, yes, this needs to be thought through.

105. So that even if you do not like the report any ally is better than none?

(Professor Krebs) I think it has made some worthwhile points.

Chairman

106. I wonder if I could turn specifically to the two models which are seen as the best options, Model 1 and Model 2. In your evidence you set out very clearly that you have strong reservations against both. Perhaps you can just confirm that one of the issues on Model 1 that you do not like is that your marine research establishments would end up within a department, namely the Scottish Office. Would you like to comment further on why you think that is incorrect?

(Professor Krebs) Yes, my Lord Chairman. Perhaps I could just start off by reminding you that in one of the annexes the Scrutiny justifies Model 1, which is marine institutes associated with the Scottish Office, on the grounds that fisheries activity in the United Kingdom is focused in Scotland. Our issue with that particular argument is that in terms of marine research in the United Kingdom fisheries are a relatively small component of it. The users of marine research are much wider than fisheries, and in fact in percentage terms the fisheries industry will be a small user of marine research. The other users would include the Government policy related to global climate change (the Montreal Protocol): the oceans, covering 70 per cent of the earth's surface, are a major factor in climatic change, according to some people's views the major factor, the driving factor. In relation to minerals exploitation obviously it does not need to be rehearsed that the United Kingdom hydrocarbon industry depends very much on understanding processes on the ocean floor and the NERC marine activities play a crucial part in that. In relation to, for example, telecommunications and cable laying there is another major area of marine activity. In the institutes that are particularly referred to in the Scrutiny, which are institutes concerned with coastal marine activity, the important players there in terms of users are people like the Ministry of Agriculture concerned with coastal defence, the Ministry of Defence concerned with modelling of tidal systems, and conservationists, water authorities concerned with marine pollution and clean up of sewage effluent. It is a very wide user community far removed from fisheries. A regional authority does not necessarily share these wider issues, and I would question the willingness of that authority to support marine research across a wider area, which could severely undermine the United Kingdom's marine research capability.

107. Given the wide range of customers for marine sciences does existing collaboration at the present work? Presumably the Scottish Office with their fishery research establishment and MAFF with their research establishment at Lowestoft and you with your marine science establishments, you all have to have some linkages, do you not, at the moment? Is there a case for putting them altogether under you, for example, rather than the Scottish Office?

[Chairman *Contd*]

(Professor Krebs) I think there is a case for looking at the infrastructure. We have a research vessels fleet, so does MAFF and so does the Scottish Office. I think there would be a case, and it is certainly something I am trying to look at, for viewing the research vessel fleet not just as a UK but also a European facility. I think that would be an area where one would wish to look for possibilities of rationalisation or sharing of resources. In terms of the research activity, I think the bulk of the MAFF activity is S&T to underpin fisheries policy, whereas the bulk of our activity is very much at the R&D end. One might wish to look and see if there are areas where MAFF is undertaking R&D which could be more effectively carried out under the NERC umbrella but that is an issue on which one would want to, to go back to an earlier phrase, carry out cost benefit analysis.

108. I would like to take you on to Model 2, unless anybody wants anything on Model 1? Model 2 has got a geographical organisational structure and again you feel for some reason that science does not respect national boundaries. Would you like to comment further on that?

(Professor Krebs) On environmental science, my Lord Chairman, clearly environmental issues are not only national but trans-national: I do not see a logic for looking at atmospheric pollution in Edinburgh in a different way from looking at atmospheric pollution in Birmingham. We happen to have, in the Institute of Terrestrial Ecology, a major centre under Professor David Fowler for the study of air quality in one of our Scottish bases. I do not really see any logic for saying that is a Scottish regional issue, it is a UK national issue and indeed a European and worldwide issue. I do not really see any basis scientifically for a regional sub-division.

109. And yet we have got this, have we not, at the moment? We have acknowledged the Scottish Office are one of the science funding ministries, that they are in fact providing a continuity of science within the Scottish institutes through basic, strategic and applied, and they have good links with the extension service, at least in some industries. Is it feasible to continue this regional model in the light of what you have just told us?

(Professor Krebs) My Lord Chairman, in the SARIs, of which I have some knowledge from my time as a member of the AFRC Council, I accept that there are certain particular Scottish agricultural issues to do, for example, with upland systems, to do with the difference between the emphasis of agriculture in Scotland and in lowland Britain, that might justify having a separate research organisation tied into agriculture. I would still raise the question about the degree of duplication of effort between SARIs and the AFRC institutes. I think in agriculture in particular there may be some local issues that could be effectively addressed on a regional basis in relation to the Scottish Office policy needs. In the environment I see that as a less sustainable position.

110. I think a number of the institutes in Scotland, funded at the moment by the Scottish Office, would not claim simply to be looking after the customers north of Hadrian's Wall, they would consider themselves, I think rightly in many cases, to be offering a UK role. They are funded, as I say, from within the science base through the Scottish Office. I think you will recognise that there are some institutes of high standing in Scotland.

(Professor Krebs) Yes.

111. I repeat, it may be anomalous to have this structure but I suppose the question one must ask is should it be broken up because you think regional funding is inappropriate or should a pragmatic approach be adopted that if it works do not alter it?

(Professor Krebs) I am, my Lord Chairman, always a pragmatist and would start from the position that if it ain't broke don't fix it. I believe that the Scottish agricultural research institutes do in fact do a very good job. I have visited the Hannah Research Institute, the Moredun, the Scottish Crop Research Institute, and I think they do do an excellent job in the field of agricultural research. They, of course, benefit from a very stable funding base and a high percentage of their funding coming through their core budgets, which is not true for NERC institutes or for most of the BBSRC institutes.

Baroness White

112. I am afraid this may sound very parochial but I am concerned about the difficulties that we have in Wales. We have considerable marine problems. You have taken our ships away from us at Barry and pushed them over to Southampton. What if the research goes to Scotland? If I might explain something which is a social not a scientific matter, we have research scientists in the University of Wales, some very good ones. If they wish to bring up their children where they can receive a bilingual education—you may suppose it to be parochial but it is serious—what opportunities do our Welsh scientists have of doing the kind of research for which NERC is noted if nothing is left within the Welsh context?

(Professor Krebs) Thank you. If I may reply through you, my Lord Chairman. NERC does, of course, fund a substantial amount of research in the Welsh universities. On the oceanographic side, as I am sure you are well aware, the University College of North Wales at Bangor, which is my old university, is one of the two principal universities in the United Kingdom for oceanographic research, the other being Southampton. We have a very large portfolio of activities at Bangor in the marine area. We also have a unit of the Institute of Terrestrial Ecology based within the University College of North Wales in Bangor and I would defend that unit very strongly against the temptation to rationalise and shrink to reduce administrative overheads because I think it is an excellent unit and carries out important research for the NERC mission. We are supporting research very strongly in Wales. We support research in Wales because the universities there have high quality scientists who bid successfully into our programmes. The particular issue of the vessel service, that was a decision that was taken before my time so I cannot explain the full logic behind it but I think it was perceived as an opportunity to make

[Baroness White *Contd*]

a major concentration on research activity and achieve substantial savings in the longer run by linking the research vessel service with the Southampton Centre. I cannot give you detailed chapter and verse on why Southampton was chosen rather than Bangor which may be a question you would wish to ask.

Lord Craig of Radley

113. Could we go back then to cost benefit analysis which is clearly a very important area. How one assesses costs, of course, depends on guidelines mainly issued by the Treasury and others. It would be helpful for the Committee to know if you have any comments about the present Treasury guidelines and whether they are satisfactory from your point of view and if they are not satisfactory, whether you have got any——

(Dr Paul) I think we find that we are able to work with them. I am not an expert in this area but I am not aware of any major difficulties that they present us with in this sort of case.

114. The Scrutiny team talked about revisiting the Treasury guidelines particularly through privatisation, although if you are going to go for privatisation you are going to have to work out the cost benefit analysis on the basis of Treasury guidelines. I wonder whether there is anything there you want to say to us about the guidelines at this stage?

(Dr Paul) I think not, thank you, Chairman.

Lord Redesdale

115. Just going back to the main report: since it was published have there been any changes within the Council as a result of this report? Has there been any action taken as yet?

(Professor Krebs) Not directly as a result of the report, although as is acknowledged in a footnote on page 129 we had already initiated changes. I became Chief Executive of NERC on April 1st and in fact on the day before I started I sent round a "Dear Colleagues" letter to all NERC employees explaining that I was going to implement some changes. At the moment the changes are that I have disbanded the directorate structure in the Swindon office. NERC used to have three directorates for earth science, marine and atmospheric science, terrestrial and freshwater science and I abolished those directorates. The reason for that I can explain later if you would like to know. I have formed two new institute groupings, one for coastal marine science and the other for terrestrial and freshwater science (Centre for Ecology and Hydrology) with two broad aspects to them. First, a clearly delineated role of NERC as a customer and the institutes as contractors which I felt in the old model was slightly ambiguous given that the directors sitting in Swindon were also in charge of the institutes and it was not clear whether they were the customers or the contractors. Second, it also enables us to develop institute groupings which are sufficiently large to have budgetary flexibility and are sufficiently inter-disciplinary to, in my view, meet the needs of users, particularly in the coastal area which is a very important growth area in environmental science, and in the terrestrial and freshwater area which again is very important in relation to land use and water quality. I could explain in more detail why I made the changes but those changes were in the stream already before the Scrutiny Report came out and were influenced by my thinking rather than the Scrutiny's thinking. Nevertheless, I think they are in the spirit of what the scrutineers were looking for: a devolution of responsibility; greater clarification of customer/contractor relationships; larger groupings that provide flexibility for rationalisation if rationalisation is deemed appropriate.

Lord Howie of Troon

116. Was there anything in the report which made you change your mind on any of these strategies?

(Professor Krebs) No.

Lord Renwick

117. To continue on funding: you mentioned, I think rather longingly, the rather longer term financial provision for your Scottish counterparts.

(Professor Krebs) Yes.

118. You also, alongside that, mentioned that "The report's proposal" at paragraph 7.16 "that establishments that remain in the public sector should have a limitation placed on their non-Government activities...." You said that: "Unless Government is prepared to act as a proxy for the wide range of potential users of NERC research and fund establishment programmes accordingly, this proposal will severely impede the contribution of NERC research institutes to wealth creation and quality of life." You did not make much of a point about Treasury guidelines, could you tell us how you feel under your financial constraints, how you feel that perhaps you could be better served, or your funding commitments or provisions could be better organised for you to make a better department, or whether under the provisions of this report perhaps things could get even worse?

(Professor Krebs) I think, my Lord Chairman, there are a number of issues here. One is we would not wish to see any inhibition placed on our institutes, even if they remain in the public sector, in securing funds from the private sector. The way we see our institutes operating is that they carry out strategic research to a tightly focused mission, we provide the core funding through the science base which enables them to maintain high quality strategic science activity, and that high quality core enables them to attract in funding from customers. The customers are either Government departments or the private sector. That, I think, is one point, that we would not wish to see any constraints placed on, let us say, the British Geological Survey to get money from the oil industry or the Institute of Hydrology to get money from the water industry. That is very important to us. In terms of the comment I made in relation to the Scottish institutes, the SOAFD institutes, the bulk of their funding—I do not know if it is 90 or 95 per cent—is from SOAFD so they have a long-ish term stable vision of where they are going. Our institutes on the whole, on average, have

[Lord Renwick *Contd*]

enables them to attract in funding from customers. The customers are either Government departments or the private sector. That, I think, is one point, that we would not wish to see any constraints placed on, let us say, the British Geological Survey to get money from the oil industry or the Institute of Hydrology to get money from the water industry. That is very important to us. In terms of the comment I made in relation to the Scottish institutes, the SOAFD institutes, the bulk of their funding—I do not know if it is 90 or 95 per cent—is from SOAFD so they have a long-ish term stable vision of where they are going. Our institutes on the whole, on average, have 50 per cent of their funding from NERC and 50 per cent from customers. We take a reasonably long-term view because in the environment you have to look at things over a period of several years. Unfortunately our customers do not always take the same long-term view that we take so we often end up with a situation where the customer will not tell us until the very last minute what sort of research they want us to do and, indeed, if they want us to do it at all. Then they will tell us what they want us to do in the next six months whereas really we like to have it rolled over three years, let us say, so we can plan it more effectively. I think those are the points I would make in response to your question. I do not know whether Dr Paul would like to add anything?

(Dr Paul) I think one thing I would add, my Lord Chairman, is that one of our corporate objectives is to try and increase the level of co-funding and sponsorship from users for generic research where we can convince users to come into partnership with us to support generic research over a longer time-scale than, for example, through commissioned research.

Lord Renwick

119. You talk about commercial customers, you are not talking about UK only or European only, you are talking about worldwide customers, are you not? Would you like to give us two minutes on the range of the benefits, not only to the United Kingdom?

(Professor Krebs) Yes. My Lord Chairman, this takes me back to evidence I gave earlier in the year in an inquiry relating to overseas activity and the science base and at that point I referred to many examples in which our institutes undertake activities for overseas governments as contractors. For example, the Institute of Hydrology is selling software to the Hong Kong Government to predict when flash floods occur, so that is flood control software. The British Geological Survey is undertaking survey work for overseas governments under contract. The Institute of Hydrology negotiated an agreement between governments in Southern Africa on water resources and the issue of how much water should be sold to South Africa and how that should be engineered. There are a variety of instances where our institutes undertake activities for overseas governments or indeed for the commercial sector overseas as a result of the scientific underpinning that we provide them through the science base.

Chairman] Professor Krebs, Dr Paul, we are running out of time, I must bring this part to a conclusion. Thank you very much for the assistance you have given us. We will obviously have to write a report very rapidly. Thank you very much indeed.

Memorandum from the Ministry of Agriculture, Fisheries and Food

Executive Summary

When the Scrutiny Report was published on 11 July the then Chancellor of the Duchy of Lancaster announced a four month period, until 11 November, of public consultation on the proposals. It would be inappropriate for the Ministry of Agriculture, Fisheries and Food, in common with other Government Departments, to comment substantively on the Government's response to the scrutiny recommendations at this stage since this would preempt the outcome of the consultation. This memorandum is therefore necessarily short and confined to observations on matters of fact which are relevant to the Ministry's concerns.

The Ministry of Agriculture, Fisheries and Food (MAFF) is a science based department with an annual spend of £125 million on research and £65 million on other scientific services. Much of this is undertaken at its own laboratories and agencies but much is also contracted with research council institutes, higher education institutes, food research associations and many other public sector and private establishments.

Among the establishments considered in the Scrutiny, those owned or sponsored by MAFF are the Directorate of Fisheries Research, which is part of core MAFF, three agencies: ADAS, the Central Veterinary Laboratory, and the Central Science Laboratory (augmented by the addition of the Food Research Laboratory at Norwich and the Torry Research Station), Horticulture Research International (HRI, a Non Departmental Public Body established on Next Steps lines), and the National Institute of Agricultural Botany (NIAB), an independent body registered as a charity, which the scrutiny described as an NDPB sponsored by MAFF.

MAFF's approach to restructuring and rationalisation is pragmatic, guided by two criteria: the effectiveness with which establishments enable Ministers to perform their responsibilities and the cost effectiveness with which services are provided. In a continuing process of evolution and adaptation to change some

QUESTIONS RAISED BY THE SELECT COMMITTEE

Q1. *Has the case for conducting the Efficiency Unit's Review been justified?*

The decision was taken by ministers collectively. It is not appropriate for MAFF to comment further.

Q2. *Are you satisfied with the basis of the choice of the 53 establishments examined by the Scrutiny Team? Should any of the 53 have been excluded, and should any others have been included?*

It is similarly inappropriate for MAFF to comment on the scope of the Scrutiny. It may, however, be noted that while ADAS (formerly the Agricultural Development and Advisory Service) was included on account of its research activities, less than a third of its total effort is dedicated to research.

Q3. *Are you satisfied with the way that the review was conducted?*

It is not appropriate for MAFF to comment on this question.

Q4. *Will the proposals in the report*

— aid efficiency?

— strengthen the effective provision of scientific expertise and advice?

The Ministry's current pattern of ownership of research establishments is the product of an historic process in which a major consideration has been the need to safeguard the Minister's ability to fulfil his responsibilities to Parliament and to the public.

For any reorganisation or restructuring to be worthwhile the benefits must outweigh the dislocation costs. These will need to be assessed.

The proposal to appoint directors of rationalisation or, under alternative models, a chief executive of a new large agency made up of the existing MAFF agencies seems to imply the introduction of an additional tier of management.

Will the proposals in the report

— contribute to wealth creation and to the quality of life?

The research and other scientific activities which the Ministry pays for already contribute to the quality of life and wealth creation. Work in food safety, animal health and welfare in marine and terrestrial environmental protection, for example, contributes to improving the quality of life, and research into various aspects of livestock, crop production and engineering contributes to wealth creation. This work will continue to be commissioned from the establishments which provide the most appropriate science and best value for money. The continued availability of appropriate facilities will therefore be a matter of major importance.

The recommendation to transfer Horticulture Research International from the sponsorship of MAFF to the BBSRC must be weighed carefully with regard to the implications of wealth creation. HRI was established in 1990 on MAFF's initiative in order to adapt the then existing structures to the needs of the United Kingdom horticulture industry. It entailed the integration under single management on Next Steps lines of AFRC Horticulture Research Institutes and ADAS Experimental Horticulture stations. The major factors influencing the decision that it should become a Non Departmental Public Body sponsored by MAFF were that MAFF provided most of the funding and that it was the clear wish of the horticulture industry. Industry funding of research at HRI has increased from £2.6 million to over £5 million per year in the four years of its operation and now makes up to 20 per cent of the total. In 1993–94 MAFF commissioned about £13.6 million of research at HRI, and BBSRC £3.2 million.

Q5. *How will the proposals in the report affect the statutory duties of the research establishments?*

Statutory duties and responsibilities will continue to depend on Parliament, not on the recommendations in the Scrutiny Report. In fulfilment of its duties, the Government will continue to seek value for money in its choice of establishments.

Q6. *How suitable are the report's proposals for privatisation?*

ADAS has a number of functions, some of which are quite distinct from R&D, and Ministers will want to reflect carefully on the options for its future while bearing in mind the recommendation made here.

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Q7. *What are the advantages and disadvantages of the following proposals in the report?*

— (Nos. 3 and 4) transfer of PSREs to Universities or closer formal links between PSREs and Universities

In considering these proposals, just as the others, the Ministry is concerned to ensure that the Minister's ability to fulfil statutory requirements and public expectations and to obtain value for money are improved. There are already well developed links between MAFF establishments and Universities. For example, the Torry Research Station is a member of the Aberdeen Research Consortium which also includes the University and other research establishments. Leeds, Durham and York Universities have, for example, welcomed the planned move of CSL to Yorkshire and Warwick University is interested in developing further the relationship it already has with HRI.

— (No. 10) the two models for organisational structures

The MAFF fisheries laboratories exist to enable the Minister to exercise his responsibilities nationally in relation to fish and to marine discharges and waste disposal. The proposal to place them under the ownership of the Scottish Office needs to be considered from this perspective.

The proposal to transfer Horticulture Research International from MAFF sponsorship to BBSRC would overturn the decision taken in 1990 and will have to be weighed against the views and needs of the United Kingdom horticulture industry.

— (No. 38) the Directors of Rationalisation

This recommendation would mean the introduction of a new tier of management. Also as the two directors would be appointed to cover marine and non-marine environment, and food, agriculture, biotechnology and biological sciences respectively, it would mean the likely division of MAFF's establishments between them and a prolonged period of uncertainty for the staff concerned.

Q8. *The report notes (paragraph 4.6) that rationalisation hitherto has tended to take place on a departmental or individual Research Council basis and suggests that this tendency be discontinued. How appropriate are cross-departmental and/or Department/Research Council rationalisations?*

The Ministry's approach to rationalisation has been pragmatic. The establishment of HRI is an example of a successful rationalisation which transcended Departmental/Research Council boundaries. In other cases MAFF has reorganised and invested in its own facilities to ensure that they can continue to provide an efficient service for research, expertise and advice. Within the last 3½ years the Central Veterinary Laboratory, ADAS and the Central Science Laboratory, previously parts of core-MAFF, have all been established as agencies. The CSL has been further restructured by the addition of the Food Science Laboratory, Norwich and the Torry Research Station as recently as April 1994. Work on the construction of a new, purpose built, facility to house CSL at Ryedale, Yorkshire, is well under way. Options for rationalising and restructuring the Directorate of Fisheries Research are under consideration. The Ministry will continue to approach the arguments for reorganisation on their merits.

Q9. *The report notes (paragraph 3.16) that Treasury guidelines place obstacles in the way of privatisation and limit the scope for selling services outside Government. To what extent is this the case? Will the situation alter if PSREs are transferred to or linked with Universities? Should the guidelines be altered, and, if so, how?*

There is inevitably tension between the two legitimate objectives of discouraging public sector bodies from competing with existing private sector providers and the need to meet stringent cost recovery targets which tends to lead public sector institutions to widen their range of commercial services.

Q10. *What should be the role of the Office of Science and Technology in the light of the review?*

Q11. *Are there any other proposals which you feel the review should have made?*

It is not appropriate for MAFF to comment on these two questions.

Examination of witnesses

Mr RICHARD PACKER, Permanent Secretary, Ministry of Agriculture, Fisheries and Food, called in and examined.

Chairman

120. Mr Packer, thank you for joining us this afternoon, we are most grateful to you for your assistance. You will recognise that we are looking at the Efficiency Unit's Scrutiny of the Government research establishments and the public sector research establishments. Because of the parliamentary timetable and because of the consultation period we are reduced into a short window to do this exercise so we will conduct it rather rapidly. Thank you also for your Ministry's written evidence. There are one or two specific questions we would like to put to you which particularly apply to the Scrutiny exercise insofar as they concern the Ministry of Agriculture's research establishments. I think it would be helpful if, first of all, you would just like to say a word about the process and degree of rationalisation of research establishments which you would expect to take place and which has taken place within the Ministry. After all, this exercise, as we understand it, was in order to satisfy the Government that efficient uses were made of resources and that there were effective mechanisms for reorganisation either within departments or between departments, or between Research Councils and departments when appropriate. Perhaps you will give us a flavour as to what extent such reorganisations do take place when necessary?

A. Thank you, Chairman. First of all, value for money is obviously at the forefront of any consideration of this or any other policy. Rationalisations have taken place. For instance, in the Department's Central Science Laboratory there were, a few years ago, 18 separate establishments, are now 13 separate establishments and the laboratory will be, from next year or the year after when the new building at York is commissioned, located on three sites, almost all of it on one site. We have done the necessary cost benefit analysis associated with it. The Central Veterinary Laboratory has shut down some sites and concentrated on their site at Weybridge. ADAS has concentrated in many places over the years. The Directorate of Fisheries Research has concentrated. We have ongoing a review of our Fisheries Research establishments and I would be surprised if there were not proposals for further rationalisation. Horticulture Research International, of course, was constructed at my Department's instigation and suggestion and cut across departmental boundaries at that time. We have looked for opportunities for rationalisation and have, more to the point, put them into effect. I anticipate that process will continue quite independently of this Scrutiny.

121. Nevertheless, the Scrutiny has identified a number of proposals, a number of options. Have any of them been helpful to you in reviewing the options that you had in mind?

A. I have to choose my words carefully, Chairman. I am not sure that the Scrutiny has come up with any suggestions that we would regard as being of great benefit.

122. Let us perhaps just have a word about the Horticulture Research International because it is one of the questions that we listed to ask you. You reminded us that this is an example of inter-departmental collaboration. The evidence we have had from the National Farmers' Union and others suggests that the horticultural industry, that is the ultimate customer I suppose or one of the ultimate customers, seems to value the arrangements. Bearing in mind this was formed, as I understand it, by a merger of some of the AFRC horticulture institutes and some of your experimental horticulture stations put under the sponsorship of the Ministry of Agriculture, is this a model for co-ordinating research which might have applications elsewhere in the agriculture or fisheries sector?

A. It is an interesting example and I believe it has been a successful one. As you say, Chairman, the horticulture industry seems to think so as evidenced by the fact that they have increased the amount of work they have commissioned from it. It is a useful model. There are differences between horticulture and the rest of the agricultural industry, there are very real differences, so I would not like to say that you could simply apply that example across the board elsewhere necessarily; but it is a valid example.

123. Yes, I was not supposing it would necessarily apply everywhere, but I was wondering if there was a precedent there which you might wish to refer to in other sectors?

A. Possibly, my Lord Chairman. Immediately we do have thoughts of rationalisation, but they are more focused, as I indicated at the beginning, rather than big new schemes for cross-departmental rationalisation. But of course in a sense the Scrutiny has taken over and while that is on the table, it is difficult; it stymies the bringing forward of new proposals while we wait to see what the Government's overall reaction will be.

124. So in a sense this exercise in trying to encourage rationalisation has actually slowed it down, as it were?

A. Well, I think it is not a new phenomenon, my Lord Chairman. "M4 widening, road narrows" is something that we all have to live with.

125. What about this recommendation for selling ADAS? Did it come as a surprise to you? Was it an appropriate recommendation that ADAS should be a candidate for privatisation?

A. It is not a silly conclusion, but I was surprised that they felt able to come to the conclusion given that only 25 per cent of the work of ADAS is concerned with R&D and there are a number of complex technical legal issues involved in the future of ADAS

[Chairman *Contd*]

which we are wrestling with at the moment. Certainly one would not be able to come to a conclusion from considering the research element of it only.

126. Can you remind us—it is, I think, in the evidence, but perhaps it would be helpful to have it on the record—as to what proportion of ADAS's turnover is directly involved with research and development?

A. Roughly 25 per cent and I will follow up with a letter to the Clerk.[1] What we call statutory work is the largest proportion of the work and the commercial consultancy arm to government constitutes the remainder, so the proportions are very roughly 45, 30 and 25.

127. Well now, I think we ought perhaps to ask your opinion on the two preferred models, Model 1 and Model 2. Do you think either of those has any merit?

A. Well, I of course only speak for the Ministry of Agriculture, my Lord Chairman, and there may well be merits in some places. We start from three central propositions which are: first, the arrangements that we have for R&D and science must allow the Minister to fulfil his responsibilities effectively; secondly, they must be instituted so as to give value for money; and thirdly, as a subset of the second consideration, the costs of dislocation must be clearly outweighed by any benefits. Judged against those criteria, we have some hesitations about Models 1 and 2.

128. Does that mean that you have been able to evaluate the costs of these models? We have had some difficulty, I have to say, in getting any costs on these models, but perhaps you have got some figures.

A. I think it is surprising to be considering proposals for increasing efficiency which do not have costs included in them. I think that is a little odd, but there is a very large number of proposals and I do not think it would be a proper use of our time to evaluate the costs of all of them. Naturally, when we are attracted to proposals we are very careful to evaluate the costs and benefits as, for example, the instance I gave just now of the moving to York of the Central Science Laboratory which was very carefully evaluated. We have not as yet evaluated the costs of any proposals in the Scrutiny.

Lord Craig of Radley

129. Perhaps one could try and attack this slightly the other way and it might be easier, bearing in mind where you are sitting and coming from, Mr Packer. I was just wondering whether you have been able to identify any nugatory expenditure as far as MAFF is concerned if either of these models were to be taken forward.

A. I think it is clear, and I am very conscious of the fact, that all change involves cost, by absolute definition, and anyone who doubts that only needs to go through the process of change and will discover the truth of it. Of course proposals for new chief executives and directors of rationalisation are a cost on top of all other costs and one would need to be very clear indeed that changes would be brought about that would not have been brought about without such appointments.

130. But that is a cost per head. I am just wondering out of what you have been spending recently at MAFF whether you think some of that expenditure would effectively prove to be nugatory because of the way in which one of the models was taken forward, for example, in the HRI.

A. Well, we would have spent money which would have been transferred to another part of government, but that is just too bad if that is what government decides to do.

Chairman

131. I can see that the Efficiency Unit's concern was to ensure that restructuring proposals were identified even if they were between departments when the interests of the customer or perhaps the inheritors of the science suggested that these were logical. To do that it is necessary, if possible, bearing in mind these are all public sector research establishments, to be able to compare like with like. Is it possible to identify clearly the relative merits of research undertaken, for example, in a research institute and in, say, a MAFF laboratory where the two are comparable? I accept in the case of a statutory function or perhaps even underpinning policy it may not always be that easy to do that, but presumably in some cases the research is comparable and in those cases would you have like-minded processes in order to assess the relative merits of the research?

A. Well, the way we approach it, my Lord Chairman, is not by direct comparison with specific other institutes, but via peer review, visiting groups. All our research establishments have arrangements whereby competent and in many cases eminent scientists on a regular basis come and review the activities undertaken by that institute, and we get detailed reports and, by and large, they are very good, they are almost always satisfactory and where they are not satisfactory, we do something about it. More generally we try to relate our expenditure to what is necessary. I appreciate your question was about research, but we do have a lot of expenditure, for instance, on surveillance for food contaminants and so on which is a scientific activity, and not a research activity. It is not, by and large, a particularly glossy part of science, and we try to spend on it what is appropriate. We do not go in for glossy science for glossy science's sake, but we go in for the level of expertise and the costs which in our view deliver what is required as cheaply as possible. Now, in some areas of research you have to be, as it were, at the

[1] *Note by the witness:*

ADAS turnover 1993-94

Consultancy for MAFF	36%
Consultancy for Welsh Office	6%
Research and Development funded by MAFF	25%
Contract and levy funded research and development	7%
Commercial consultancy	6%

Source: ADAS Annual Review for 1993-94 published on 24 October 1994.

[Chairman *Contd*]

leading edge, and BSE would be a case in point; but in other areas it is rather more prosaic.

132. I am trying to put myself in the mind of the Efficiency Unit who clearly are concerned that government occasionally confuses the role of customer and contractor. They refer to the Rothschild principle and wish to see government departments and, for that matter, research councils distinguish between their respective roles of customer and contractor. You in the Ministry are in the business of commissioning research, are you not, whether in your own research establishments or research institutes or in universities or wherever. Would the procedures be the same in all cases? Would you have competitive tendering which would effectively be open in all cases?

A. Well, first, I accept the proposition which I think was underlying what you were saying that there is a danger in too cosy a relationship between a customer and contractor, and it is easy for these matters to get a bit fuzzy. Of course we have made large steps towards a clearer system over the last decade. More or less identical steps are followed according to where we place the work. It is not true that all of the research is competitively tendered at the moment. The percentage is increasing. It has reached quite a high figure, like 50 per cent for food research, but it is lower for agricultural research and for much of the fisheries research there is not any other body that could do it. So yes, we recognise the dangers, yes, we are introducing arrangements which are comparable both internal to government departments and external to government contractors, and yes, the proportion of contracts put out to competitive tender is increasing. But there is further to go.

133. And would the same review procedures be adopted whether it was in-house or externally?

A. The same review of the quality of the work?

134. The peer review or whatever other method.

A. Well, in principle, yes. Obviously we would want to be satisfied on the competence of institutes with whom we were placing work. For internal institutes of course that is all the more important to avoid the waste of money which would occur if the sort of danger to which you are alluding got out of hand.

135. I am trying to detect the concerns of the Efficiency Unit who stressed the importance of separating the customer and contractor role.

A. I think their concern is a legitimate one which we should all, and certainly my Department should be, alive to.

136. Does that mean that the "R" element of ADAS does have a visiting group?

A. Yes, it does.

137. Every seven years?

A. Every so often.

138. Can I then come on and ask whether you feel there is any merit in the proposal for directors of rationalisation?

A. Well, it is rather difficult for me to say there is no merit. I do find it difficult to see—or I remain to be convinced—that this would achieve a lot that we could not achieve otherwise, quite apart from the general position that we are cutting large numbers of jobs, Civil Service jobs, and it seems a little odd to be proposing new ones.

Lord Craig of Radley

139. The Treasury guidelines come in for some comment in the Scrutiny Report and in the evidence which we have received. I wonder whether you would agree that there is a need for some amendment of the existing Treasury guidelines particularly in relation to privatisation and the scope for selling services outside government and what your recommendations from MAFF might be.

A. Well, I do think that the development of agencies and financial delegation have left some—confusion is the wrong word—but have left the existing rules pointing in different directions according to where you look. Now, whether it is the Treasury guidelines that need to be amended or some other part of the system is a matter of political judgment, I think, but, nevertheless, the system, as it exists at the moment, is not entirely coherent. I do not like to sit here and criticise the Treasury guidelines which are protecting public money.

140. I am not inviting you to criticise the Treasury, other than perhaps to invite you to say whether there are any particular changes which you would favour and would recommend might be considered.

A. I have looked at it and it is a very difficult question which is no doubt why the changes have not been identified already. But I think protecting public money is likely to remain a pretty serious requirement of Parliament and the Treasury.

Chairman

141. If we could move to fisheries, one of the models suggests that the MAFF fisheries laboratories should be moved to the ownership of the Scottish Office. Is that one to which you warm?

A. I found that an odd recommendation, my Lord Chairman, in that our Minister leads for the United Kingdom in the European Fisheries Council and it would seem odd for responsibility for research to be located in another government department. It is also the case that I think such a change would be viewed by the English fishing industry with suspicion, if not hostility. I thought I detected, but I may be wrong, in the Scrutiny an under-estimation of the importance of the marine environmental work which certainly in the case of our Lowestoft laboratory constitutes more than half of the work done there. Indeed the name of the laboratory is now anomalous and ought to be changed.

142. So would there be some logic perhaps in moving the Scottish fisheries laboratories into MAFF?

A. Well, there might be some logic, but no doubt the Secretary of State for Scotland and his officials

[Chairman *Contd*]

would point out with justice that he also has responsibilities and that some of the arguments I have just deployed he could also use with equal justice.

Baroness Hilton of Eggardon

143. Could I ask what the name of the marine laboratory should be? You suggested it should be a different name.

A. Mr Waldegrave would have to decide, but something like the Marine Laboratory which is concerned with the fish and the food chain which leads to the fish which covers most environmental matters, sewage discharge and all sorts of things, radioactivity.

144. Is that not covered by the present title? I was puzzled because you said it should be changed.

A. The trouble is that everyone in shorthand calls it the MAFF Fisheries Laboratory, but I personally would change the name so that they could not do that.

Chairman

145. So we are talking about Model 1 now which is where I was with the suggestion of moving the fisheries laboratories to Scotland. Of course the other part to that is that the Scottish Agricultural Science Agency comes to MAFF and again would linkage between your laboratories be improved by such a model?

A. Well, no doubt we could make it work after a time, but the Scottish Office have their own needs. They have provided for them in a particular way via the Scottish colleges. In England and Wales of course ADAS fulfils many of these functions and although I am less familiar with the Scottish set-up, I would have thought that proposal would have presented the Scottish Office with severe difficulties.

146. And then I suppose we go on through the different options and Model 2 suggests that HRI, for example, would move to the Research Council.

A. Yes.

147. And you said in your written evidence that you did not favour that.

A. I do not think I quite said that.

148. I think you did very explicitly, if I might say so.

Baroness White

149. Half said?

A. Perhaps it could be deduced from what we said.

Chairman

150. You pointed out that there was an imbalance of funding from the Research Council and from MAFF and it seemed strange that the ownership should not follow the funding.

A. Certainly I would not wish to dissent from that as a proposition and of course it is the view of the industry, as you have already mentioned, that funding should stay with MAFF and responsibility should stay with MAFF. The matter was only decided a year or two ago that the sponsorship function should be with MAFF. That is what the industry wants. I believe that is probably what the Chairman of HRI thinks would be most appropriate and it would seem odd to change responsibility for an organisation which has specifically been designed to encourage the industry to have a real link with the practical end of research and for which the sponsoring of research by the industry itself has doubled from £2.5 million over the last couple of years to move it, as it were, into the opposite direction towards the non-practical theoretical end. I cannot see any argument in the Scrutiny as to why that would be a better arrangement.

151. Well now, clearly as so much of the evidence we have had sees flaws in both Model 1 and Model 2, does that amount to supporting the *status quo* or would you like to see reorganisation contemplated by different means in future?

A. Well, there is no point in adopting something which is not going to help the objectives of any government department and is going to be opposed by a lot of people. The *status quo* is all very well provided that by *status quo* we mean a continuous striving to do the job better. Certainly we are contemplating further changes in our Department. We would be prepared to consider changes across departments. We do not have any proposals to make ourselves at this stage, but we are quite prepared to consider them if anyone comes forward with them, so if *status quo* includes continued improvement, yes.

152. We have just been taking evidence from Professor Krebs of the NERC and he was making the point that the marine sciences should be seen as a whole with a number of end consumers of which the fisheries is one, but clearly so are coastal protection, environmental matters, climate change and a whole number of others he listed. Is that the sort of area where you think it might be appropriate to review boundaries, for instance, in the marine sciences and fisheries?

A. I do not see any need to review policy responsibilities which I think are fairly well organised at the moment. Whether the institutions are properly organised, given those policy boundaries, is another question. I had not myself identified the need for change in that area, but obviously we would have a look if someone came up with a specific proposal which perhaps we had not thought of.

153. I hasten to say that there is not a specific proposal, but we were trying to explore at what point there was a change in priorities, and climate change is clearly a priority which was not around ten years ago to the extent it is now, and if climate change becomes a large part of the marine science and, if so, some of the laboratories which are in different ownership are all contributing to the same programmes, it may be that somebody should be looking at the ownership once more and really we are seeking assurance, as I think the Efficiency Unit was seeking, that there are mechanisms for continually reviewing

[Chairman *Contd*]

ownership of these research institutes in order to establish whether the parenthood is appropriate.

A. Well, you do need a willingness amongst the participants to listen to new ideas. I think the establishment of HRI was an illustration where we launched something and we did not know when it finished that we were going to be allocated responsibility for it and it might have gone elsewhere. But we still pushed ahead with that cross-department reorganisation which we thought was justified, and there may be others, and if there are not others now, as you indicate, the development of policies might mean that the need for others would develop over time.

Lord Craig of Radley

154. I would really just like to ask whether you have got any suggestions as to how these cross-departmental approaches are best initiated if it is not by some form of scrutiny review because it seems to me what has happened is that the Scrutiny Review has brought up quite a lot of cross-departmental science. Your indication and your evidence a moment ago suggested that if somebody suggests something, it would be sensible and you would be happy to look at and to do something about it if it made sense, but it is getting to the first step of that.

A. No, I think the Scrutiny is a very good means, but given the complexities, a specific scrutiny, I would have thought, on a specific point is more likely to be able to get into the detail sufficiently to come up with something that a significant number of people might actually be prepared to go along with.

Chairman] Mr Packer, thank you very much for the help you have given us. As you know, we are working under some time constraints and it has been helpful to have the benefit of your advice today.

THURSDAY 27 OCTOBER 1994

Present:

Craig of Radley, L.
Hilton of Eggardon, B.
Platt of Writtle, B.
Selborne, E. (Chairman)
White, B.

Memorandum from the Biotechnology and Biological Sciences Research Council

SUMMARY

The Biotechnology and Biological Sciences Research Council (BBSRC) agrees with the conclusion that the institutes it supports are not suitable for privatisation. They should stay in the public sector, but with independent legal status coupled with an arms' length relationship with the Council, as sponsor.

The planning and provision of facilites and long-term, mission-oriented programmes in agricultural, food and biotechnology research requires strategic planning on a national scale. That is BBSRC's role. The Council would oppose any opportunistic transfers to Universities from the national network of agricultural and food research council institutes. But it will seek to develop already strong bilateral and multilateral links between the institutes it supports and Universities.

The Scrutiny's case for rationalising present institutional structures rests heavily on the elimination of perceived duplicated skill bses, facilities and collaborative links. A true test of duplication, however, would require a detailed comparison of scientific objectives and approaches in the PSREs under scrutiny, Universities and other institutions. This was beyond the scope of the Scrutiny.

BBSRC had much experience of major institute restructuring, which is a costly operation. Costs and benefits need to be calculated carefully before embarking on the sort of changes implied by the Scrutiny.

Of the proposed orgnisational structures, Model 1 would create a coherent scientific grouping in line with the BBSRC's United Kingdom mission. But it contains major practical difficulties. A simpler approach, based on existing ownership and sponsorship patterns, should not be rejected. There are continuing strong pressures on all owners and sponsors to explore institute restructuring as one way of increasing efficiency. OST could provide the broader view across departmental and research council boundaries.

Because of restructuring in the recent past, the potential for further efficiency gains from rationalising agricultural and food research council institutes is not great.

* * * * *

Q2. *Are you satisfied with the basis of the choice of the 53 establishments examined by the Scrutiny Team? Should any of the 53 have been excluded, and should any others have been included?*

BBSRC was consulted on the inclusion in the Scrutiny of the eight institutes it supports. Universities were not included in the review although they are a major component of the United Kindgom science and engineering base, have extensive collaborate links with research council institutes and feature centrally in some of the recommendations.

Q3. *Are you satisfied with the way that the review was conducted?*

Scrutinies are by definition rapid reviews conducted against a tight timetable by officials with varying degrees of familiarity with the issues. Despite the scale and speed of the review the scrutineers were able to visit BBSRC and each of the eight institutes at least once. Based on the Council's experience, the scrutineers went about their fact-finding fieldwork in an open manner and as thoroughly as the timetable allowed. At all stages they were approachable and prepared to discuss issues within the Scrutiny's terms of reference.

Q4. *Will the proposals in the Report:*

— aid efficiency?

— stengthen the effective provision of scientific expertise and advice?

— contribute to wealth creation and to the quality of life?

The Scrutiny's case for rationalising present institutional structures and efficiency gains rests heavily on the elimination of duplicated effort. But the perception of overlap seems to be based largely on two or

more sites having similar skill bases, facilities and collaborations (Annex M in the Report). In the vast, fast-moving and internationally competitive fields of biotechnology and biological sciences this is to be expected. A true test of duplication would have required a detailed comparison of scientific objectives and approaches in the 53 PSREs under scrutiny, other institutes and Universities. That was clearly beyond the scope of a scrutiny of only four months duration. That said, it is even difficult to judge potential efficiency gains within the selected 53 PSREs because there is no quantification of costs in the Report other than present financial inputs.

BBSRC has inherited AFRC's programme of restructuring agricultural and food institutes that started in 1982. That rationalisation was driven by new scientific opportunities, changing customer requirements (principally by MAFF) and reduced funding. Over the past 12 years AFRC has pulled out of seven major institute sites and one more closure is in prospect. In addition the Council closed three experimental farms during the restructuring period. Staff in institutes were reduced from 6,300 in 1983 to 3,500 at present, 700 of whom are on short-term contracts. Gross costs of capital investment and staff transfers and redundancies amounted to £125 million. (Over the same period the Scottish Office carried out a similar exercise in Scotland, reducing the Scottish Agricultural and Biological Research Institutes (SABRIs) from eight to five in number). The financial costs of institute restructuring are therefore high and implementation requires a considerable managerial effort. All this emphasises the need to calculate overall costs and benefits before embarking on the sort of changes implied in the report. In the time available to them the scrutineers were unable to make even preliminary calculations.

Wealth creation and the quality of life are key goals in the missions of the BBSRC and the other research councils. Following last year's White Paper on Science, Engineering and Technology, the Council is enhancing existing programmes of technology interaction and developing new initiatives. The science base in Universities and research institutes need strategic goals, long-term commitments of support and a period of reasonable stability to take the philosophy and policies of the White Paper fully on board. If handled badly, some of the proposals in the Report could impact negatively on the contribution of research council institutes to achieving the objectives of the White Paper.

Q6. *How suitable are the Report's proposals for privatisation?*

BBSRC agrees that a clear statement of the Government's long-term privatisation intentions would be valuable (recommendation 9). Research council institutes are not suitable for privatisation, a conclusion reached by the Scrutiny with only minor qualifications (paragraph 3.6). The privatisation of the plant breeding programmes of the Plant Breeding Institute in 1987 underlined the difficulties associated with transferring institutes that are registered charities to the private sector. Charitable assets can be transferred only between charities with similar objects. The Council firmly believes that all the institutes it supports should stay in the public sector, but with independent legal status and independent boards coupled with appropriate managerial freedom through an arms' length relationship with their sponsor—the BBSRC.

The suggestion in paragraph 7.16 of the Report that PSREs remaining in the public sector should have to operate with restrictions on the non-government activities is worrying. Relegation to a public sector slow lane would hamstring BBSRC supported institutes. They need to pursue research opportunities and funds from all possible sources, home and overseas, if they are to remain intellectually vibrant, internationally competitive and financially successful. Restricting industrial funding, if that is what is suggested, would also inhibit the interactions necessary to achieve the wealth creating potential of public funded research.

Q7. *What are the advantages and disadvantages of the following proposals in the Report:*
— transfers of PSREs to Universities or closer formal links between PSREs and Universities

Seven of the eight institutes sponsored by BBSRC have formal one-on-one links with a University; several laboratories are located on a University campus; one, the Long Ashton Research Station of the Institute of Arable Crops Research, is a department of the University of Bristol, which owns the property and employs the staff. These links encourage institute staff to do undergraduate teaching; they also facilitate postgraduate training and promote sharing of facilities. A BBSRC Linked Research Grant scheme, which provides University researchers with funds to work with institutes, was introduced sucessfully in the 1980s to encourage wider use of national facilities at institutes.

Equally, institute scientists have extensive national and international collaborative research links based on common research interests and goals. For example, Silsoe Research Institute has research and teaching links with eight British Universities, all of which involve at least two collaborations; Babraham Institute has a department located in the University of Cambridge Zoology Department and is a partner in 18 BBSRC Linked Research Grants held by 11 Universities; the John Innes Centre has more postgraduate students and overseas visitors than permanent scientific staff, and, with the Max Planck Institute in Cologne, leads the European Union AMICA plant molecular biology programme; and the BBSRC is involved in discussions about a vaccines research institute, a proposed joint venture between the public and private sectors. All

this shows that the anticipated scientific returns accruing from major capital investment in recent years are now materialising and institutes are increasingly being recognised as international centers of excellence.

It will be clear, therefore, that BBSRC attaches great importance to links between the institutes it supports and Universities, as the two components of the science and engineering base. Where they are not yet fully developed, the Council will encourage more formal links between the institutes and Universities as set out in recommendation of the Report. These will complement, not replace, existing and growing national and international scientific collaborations and networks.

The Council, however, would oppose any opportunistic transfers of institutes to Universities, as appears to be proposed in recommendation 3 of the Scrutiny Report. The planning and provision of large scale facilities and long-term programmes in agricultural, food and biotechnology research requires strategic planning on a national scale. BBSRC's role, set out as recently as last year's White Paper, is to provide the necessary vision and strategy. It is not the traditional role of Universities to plan and sustain long-term, mission oriented research.

— the two models for organisational structures

Model 1, based on market sectors, would create a coherent grouping of institutes with expertise and facilties consistent with the BBSRC's mission which embraces the entire United Kingdom. Both NRI and HRI need strong links with the science base. But it is difficult to see how either Model 1 or Model 2, which creates a territorial groups of PSREs in Scotland, would work in practice. Both would create anomalies and discontinuities within the science, notably in the environmental sciences. The concept of parenting, on which the organisational models depend, needs clarification, particularly with regard to the responsibilities, authorities, liabilities and influence of the parent organisation. For instance in Model 1 how would rationalisation plans involving the SABRIs, NRI and HRI drawn up by BBSRC be funded and implemented? What if SO, ODA and MAFF, if they continued to fund these institutes, did not agree with BBSRC's plans?

A simpler approach to planning, efficiency and rationalisation, based on existing ownership and sponsorship patterns, should not be rejected. BBSRC, SOAFD, MAFF and NERC can all point to a record of change over the past decade in the institutes they sponsor, designed to meet new scientific opportunities, changing customer requirements and value for money. There is every reason to believe that in today's competitive climate there will be pressures on all owners and sponsors to explore institute restructuring as one way of increasing efficiency. Because of AFRC and SOAFD initiatives over the past decade, however, the potential for further efficiency gains from rationalising agricultural and food research institutes in England, Wales and Scotland is not great.

The BBSRC fully recognises the importance of separating its dual customer and contractor roles. Within its Swindon office two Science and Technology executive groups act as customer, allocating research funds competitively, in responsive and directed modes, on the advice of specialist committees. Groups responsible for Human Resources and Finance include institute sponsorship within their reponsibilities. The Deputy Chief Executive chairs both an Internal Sponsorship Committee and an Institute Management Committee that includes a representative from each of the eight sponsored institutes.

— the Directors of Rationalisation

This is a weak alternative. Whilst not denying that an outsider looking in can sometimes bring fresh thinking, the proposed Directors of Rationalisation, lacking resources and influence, would not be well placed to analyse options for rationalisation or to argue for their adoption. The planning and implementation processes are likely to prove much more effective if they are internalised, as the AFRC/BBSRC record shows, rather than creating another layer at a senior level.

BBSRC welcomes the Scrutiny's conclusion (recommendation 11) that research council chief executives should continue to be reponsible for planning and executing institute restructuring. Such plans would be more robust if they were drawn up corporately by each council and carried the chief executive's authority.

Q9. *The Report notes (paragraph 3.16) that Treasury guidelines place obstacles in the way of privatisation and limit the scope for selling services outside government. To what extent is this the case? Will the situation alter if PSREs are transferred to or linked with Universities? Should the guidelines be altered, and, if so, how?*

This is not a major issue for institutes supported by BBSRC. The Council encourages institutes to broaden and diversify their income sources. Institutes' R&D income, in the form of contracts and grants from the public sector, the European Union, commerce and charities has increased steadily over the past decade. All industrial contracts are priced on a full cost return basis. Of the eight institutes sponsored by BBSRC, only three rely on grants from the Council's Science Budget funds for more than half their total income. Together the eight institutes received a total of £26 million (24%) in external income; ie excluding Science Budget and MAFF commissions.

With such varied income sources institutes increasingly found it difficult to plan and balance income and expenditure on a year-on-year basis. BBSRC recently secured agreement to allow the independent institutes supported by the Council to carry forward the capital element of contract income and up to 10 per cent of the recurrent element. These measures considerably increase the flexibility of institutes to manage uneven income streams and to plan their capital expenditure in a strategic way that more precisely meets the needs of their programme.

Q10. *What should be the role of the Office of Science and Technology in the light of the Review?*

As part of its responsibilities for co-ordinating government policy on science and technology the OST could take a broad view of institutes and facilites that cross the boundaries of existing departmental and research council ownership or sponsorship responsibilities.

Examination of witnesses

Professor T L Blundell FRS, Chief Executive, and Dr B G Jamieson, Deputy Chief Executive, Biotechnology and Biological Sciences Research Council, called in and examined.

Chairman

155. Professor Blundell and Dr Jamieson, welcome. You have helped us in the past on many occasions and, indeed, you have helped other select committees, I know, so we are most grateful to you for your patience in returning once more to help us with what I think is a fairly short report—it has to be short because of the timetable—on the Efficiency Unit scrutiny of public sector research establishments. Some of us have had the opportunity to hear Professor Blundell speak on this both at the Royal Society in July and at the Parliamentary and Scientific Committee where he made an intervention, I well remember, only last week, so I think that we do perhaps know a bit about the background from which you come. It would be helpful, Professor Blundell, if by way of introduction you could give us your views as to how you feel the Minister should respond at this stage to the scrutiny exercise.

(Professor Blundell) My Lord Chairman, maybe I could begin by saying something about strategic planning in the research councils, in which the institutes are an important part. Within science, and certainly within research councils, we need to have a strategy planning in order to be able to prioritise, to be able to look at the health of the science base. It is not an ordinary market; we do not have customers for long-term basic and strategic science. Instead we have a responsibility in the public domain to be quasi customers. So one role of a research council is to plan strategically by setting up institutes, research centres and research groups, which are healthy and well found. The second step is to develop a research market where there is competition between different scientists. Competition should decide whether one wants to put funding in the form of a project grant in this university or that, in a university centre or where a project grant or in a university or an institute. In this process we do need to separate the customer (the Research Councils) and the contractor (the university or institute scientist). My advice to the Minister would be to encourage and support that process of broad strategic planning, reflecting the research councils' responsibility for the health of the science base, alongside a rather separated customer-contractor relationship, in which the competition for projects is taking place. This has operated very well in the research councils, in particular in the AFRC and now the BBSRC. We have evidence that we have reviewed effectively the competence of our institutes, we have changed them and we have restructured them. This is an on-going process. Thus, my advice to the Minister would be to encourage us to continue this dynamic evolution of our structures.

156. We understand—and you may wish to correct us on this—that the original concept of the scrutiny was to look at government research establishments and that the research council institutes perhaps which were not originally suggested in the White Paper as to be included in the scrutiny were added in order to compare like with like and see whether a reorganisation across research councils and government research establishments might in some cases be appropriate. Is that your understanding first of all as to the original concept of this scrutiny?

(Professor Blundell) I think that it is difficult for me to say what the original concept was because I was not party to the discussion, but, of course, the general view I think is that government research establishments have been under less pressure to restructure and have suffered fewer cuts over the past years than research councils have. But I really cannot comment on that.

157. So did you welcome the opportunity which was afforded by the scrutiny exercise to look at how linkages or different parenthood—the word used in the report—might be arranged both for research council institutes and for government research establishments? Presumably with the possible exception of horticultural research the opportunity to develop reorganised institutes across departmental and research council areas was unusual?

(Professor Blundell) It has been unusual in that the Horticulture Research Institute is certainly the best example of bringing together institutes or research establishments that were under two different structures, the Ministry of Agriculture and the AFRC. But I should like to emphasise that we have had within the research council system, and we do continue to have, much cross-representation

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between the different organisations so that we continue to get an overview. This has been reflected in the past, and in the present, by members of the Ministry of Agriculture, members of the Department of Trade and Industry and members of the Scottish Office as members of our council. We are developing that now into concordats. I welcome the opportunity to look across the government research establishments and the research council institutes, but, of course, we do do that now through these many horizontal interactions.

158. But would these concordats and other arrangements be sufficient to fill surplus capacity? If, for example, you had an institute whose overheads were getting higher because of a lack of running at full capacity would you expect these concordats to be able to bring forward arrangements which might be more efficient?

(Professor Blundell) I think that they would contribute to it. But, as you know, if we have more capacity than we have projects then we have to slim down. We have made 200 redundancies in Swindon, HRI and BBSRC-supported institutes this year already for just that reason. Of course, it is good to do that in the context of discussions between departments and the research councils, because quite often the customers that cause these changes are other government departments that also own government research establishments. Therefore, I am sure it will be helpful, but the discussions between organisations go on anyway. I do not know whether Dr Jamieson would want to add anything to that, my Lord Chairman.

(Dr Jamieson) My Lord Chairman, I think that the only point that I would make is that it was certainly my impression that the research council institutes—and perhaps I should restrict that to the AFRC and BBSRC institutes—were included in the scrutiny to provide a benchmark. Their inclusion recognised the really substantial rationalisation of the institutes, with which you will not be unfamiliar may I say, that the AFRC carried out over the decade from 1982. On reading the report I do feel that the model that is being advocated is not light years removed from the model which the AFRC and the BBSRC have been developing for the dynamic evolution of research structures to meet the market as defined by developing scientific opportunities and the funding by customers.

Lord Craig of Radley

159. May we turn to what I might call the financial aspects. The scrutiny were not able to undertake any cost benefit analysis, and that is understandable bearing in mind the time that they had available to present their report, but it does raise the question as to how acceptable their report is in the absence of any cost benefit analysis. I would be grateful for your comments about that side of the business.

(Professor Blundell) My Lord Chairman, you will know that the intervention, to which the Chairman referred earlier, was exactly on this question of assessment of cost. We have a long experience of rationalisation in response to changing customer requirements and changing scientific opportunities. We have, for example, already spent £125 million over this period of time both in redundancies as well as in rebuilding rationalised institutes and moving people physically. It costs quite a lot for each individual, probably £30,000 to £40,000, even if you are relocating scientists to restructure an institute without redundancies. So it seems that any plans for rationalisation could incur very, very high costs. It is absolutely essential to map those requirements both of the scientific opportunity and of the customer against the costs over a period of time. I can give an example to the Committee. We have had a nitrogen fixation laboratory at Sussex University for a number of years. Strategically nitrogen fixation was funded because it was thought that we could introduce nitrogen fixation into crops and this would be very beneficial; it would mean that we would not have to add fertilisers. Unfortunately, as the science has developed that possibility has tended to recede. But at the same time the science developed in the Nitrogen Fixation Laboratory has become absolutely essential to exploiting the new plant sciences, especially genetics. So we decided on the basis of the scientific opportunity and the need to use the new plant biotechnologies more broadly than in nitrogen fixation that we should bring the Nitrogen Fixation Laboratory together with the John Innes Centre for Plant Sciences at Norwich. We made that decision based on the science, we fully costed out the options and we are funding it now over a two or three year period. That is a good example of the dynamic evolutionary aspect, but even that small movement of 100 scientists is costing several million pounds. To restructure the whole system, involving the 53 GREs described in the report, would cost much more than the £140 million that we have already expended in this area, probably an order of magnitude greater.

Baroness Platt of Writtle

160. Presumably you are going to make this kind of evidence available in the consultation period back to the authors of this paper anyway, but what you are doing seems to me to be very efficient. Are the other research councils doing similar things?

(Professor Blundell) The AFRC, and now the BBSRC, was subjected to pressures from change of customer requirements in agriculture, particularly reflected in a change of funding from the Ministry of Agriculture; but also there has been a changing scientific opportunity, particularly in the new genetics which impacted on traditional breeding of both crops and livestock very strongly in the late 1980s. So we have been through this in a very real way, probably ahead of the other research councils. But the Natural Environment Research Council has already made some similar restructuring with respect to marine sciences at Southampton University. NERC are proceeding in a very dynamic and thoughtful way.

(Dr Jamieson) And, of course, if I may come in here, my Lord Chairman, the Medical Research Council has a programme of closing units and starting new units as scientific opportunities and needs change, so there is a dynamism in the

[Baroness Platt of Writtle *Contd*]

three research councils that have major institute structures.

161. So in a way what you would see as a better way of operating as a result of this report is to do it on a research council basis but to push it hard, I suppose?

(Professor Blundell) My Lord Chairman, we intend anyway to continue our critical appraisals of all the structures within the research council system. I meet regularly with the other heads of research councils and, where there are common interests, we look for common solutions, for example, in nutrition with the Medical Research Council and in the environmental aspects of agriculture with the Natural Environment Research Council. So, yes, our view is that we should continue to restructure, keeping good connections horizontally both with other research councils and with the government departments. We can guarantee that we will continue to restructure using the resources available in the way that we have done, I think very effectively, up to now.

Baroness White

162. Might we ask, did you learn anything at all from the efficiency unit scrutiny report?

(Dr Jamieson) My Lord Chairman, we learnt some facts and figures about the other people's establishments.

(Professor Blundell) Of course, it was helpful in the sense that it made us focus on some of the discussions that we were already having. For example, we have been discussing with the Natural Resources Institute how our science should properly underpin the science which is relevant to developing countries' agriculture and environment. But it was obviously a rather brief report and I do not think that there were really substantive elements in it that were new to us.

(Dr Jamieson) Perhaps anticipating a later question, my Lord Chairman, it did cause us to stop and review the relationships between the BBSRC supported institutes and universities. The pattern is that seven of the eight institutes do have a formal relationship with a particular university but they have scientific networks with individuals and teams in universities up and down the country and internationally. We think that that is a terribly important balance for the institutes to have—the formal link with one university which facilitates PhD training and teaching—but that the institutes must also be internationally competitive and be part of international scientific networks.

Baroness Hilton of Eggardon

163. My Lord Chairman, I wanted to pursue the area that we are in, which I think is what sort of model we should adopt of scientific research. Dr Jamieson seemed to be saying that he thought that we were moving towards a model suggested by the scrutiny team, but they in fact suggested two separate models, did they not, they suggested one based on discipline and one based on regions? Would I be correct in thinking that you think that neither is wholly appropriate because of the way that scientific research develops which tends to be organic rather than firmly structured with divisions between separate bits and one has go to along with that evolutionary flow of science? However, Dr Jamieson did say he thought that we were moving towards a model as proposed by the scrutiny team, and I wondered what you meant by that.

(Dr Jamieson) I certainly was not referring to the organisational models; it was a rather more diffuse model of what the main feature of a public research establishment should be, that it should be dynamic, it should have a plural funding base, it should be arm's length from the parent department or research council. I detected all of these attributes in the report's recommendations. When compared with the BBSRC, I found there was rather a good match.

164. But you were not suggesting that there should be clear-cut divisions on discipline lines or on regional lines?

(Dr Jamieson) No, certainly not. Those particular models I think have flaws of the sort to which you have alluded. They seem to be almost supply side rationalisation which does not take sufficient heed of what the market is saying, the scientific market and the customer requirement market. That seems to me to be a better way to rationalise. It is the way that the AFRC rationalised over the last 12 years. There is a tension, I believe, between rationalising within coherent groups like the BBSRC and the global approach where you try to do it all in a single operation. I think that a balance has to be struck. I see many disadvantages in trying to do it on a single, centralised basis and, indeed, the scrutineers came to the same conclusion. They proposed to disaggregate into four groupings in model one and probably also four in model two. Those groupings still look rather large to me.

(Professor Blundell) My Lord Chairman, model one is, at least superficially, closer to our broad mission which is UK ordered, but as I have already said we would prefer a more evolutionary approach. I think model two has some specific dangers associated with it. It is very important that we keep the links between the English and Welsh institutes and the Scottish ones. That is accepted in model one. In the past this has been achieved through the Agricultural and Food Research Service. We organised the visiting groups for the Scottish agricultural and biological research institutes. Indeed, you, my Lord Chairman, were chairman of one of those visiting groups to the MLURI recently. Such connections, which have organically grown over the years, must be retained and should not be lost if, say, model two were adopted. There is a further problem with model two, my Lord Chairman. The Roslin Institute has very complementary animal science, in terms of its genetic and animal welfare studies, to that of the Babraham Institute. Without the Roslin we would not have a proper portfolio of animal science.

Chairman

165. I think perhaps it would be as well for the Committee to understand that the Roslin Institute is one of your institutes in Scotland?

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(Professor Blundell) It is, yes, my Lord Chairman. I am sorry, I should have explained that.

166. That may not be known by all members of the Committee. This brings us to some quite detailed matters within Scotland which need to be teased out, I think. The Scottish system that we have heard about from written evidence from the Scottish Office and, indeed, from the Royal Society of Edinburgh is clearly held in high regard in Scotland not just by the scientific community exemplified by the Royal Society of Edinburgh but also by the users of the science which would include the department itself and, of course, farmers, the fishing industry and the like. We also, I suspect, would recognise that the Scottish system does depend on locking into a United Kingdom structure, and you referred to the visiting group structure, for example, the peer review structure which clearly relates to the United Kingdom as a whole. If the second of the two models is the one that you find inappropriate for replicating throughout the regions of the United Kingdom does it follow nevertheless that you can continue to keep this slightly anomalous situation in Scotland where there is to a certain extent already a regional structure albeit dependent on the wider UK science?

(Professor Blundell) Obviously whatever structure we have, we do need to make sure that there are ways of reviewing the science north and south of the border. For example, we must consider animal health research at the Moredun, which is funded by the Scottish Office, against the Institute of Animal Health at Compton and Pirbright. We must review the Scottish Crop Research Institute against the BBSRC-funded John Innes Centre at Norwich. At the moment these carry out mainly complementary programmes, although occasionally they are competitive, but that is the nature of science. Under the present system we have an overview. I believe that the Scottish institutes have been very successful. We build into the system something which is good for the United Kingdom as well as something which is good for Scotland.

167. So you do not wish to disrupt the Scottish system unduly?

(Professor Blundell) I would be concerned if it should become more polarised, but I do not want to disrupt it unduly.

Lord Craig of Radley

168. My Lord Chairman, may we turn to commercialisation—a terrible word—of the customer-contractor relationship. There is a striking sentence in your memorandum where you say, "Relegation to a public sector slow lane would hamstring BBSRC supported institutes". I think that you are taking exception to what is quoted in paragraph 7.16 of the scrutiny report where it says, "PSREs which are to remain public sector organisations should have the emphasis placed on economy and limitation of non-government activities". Would you like to help us with this particular point?

(Dr Jamieson) It hinges on the interpretation of paragraph 7.16 of the report, of course, but certainly a limitation on non-government funded activity would restrict the BBSRC institutes. We have encouraged institutes to build up a plural funding base and we have encouraged them very positively to work with industry, to exchange staff with industry, to win industrial contracts, to do collaborative research, because we believe that that is most important if technology is to be transferred and institutes' work is to be relevant to industry. That is one of the main themes of the White Paper and we were pleased to see it. We did interpret, perhaps over-interpret, from that paragraph that those institutes remaining in the public sector, and that seemed to include all the BBSRCs, would then have restrictions imposed on them. That would totally change the character of the institutes in terms of their interface with users, particularly industrial users, the international aspect of their science, public funds from the EC and winning funds commercially. That is the worry.

169. Would you also relate in your worries there the restrictions which the current Treasury guidelines place on these economic activities?

(Dr Jamieson) We are not seriously restricted by Treasury regulations. There has been an amelioration of the financial regulatory climate in which we operate over the last few years, won initially by the Department of Education and Science and now the Office of Science and Technology. These freedoms, which have been very helpful, have allowed the institutes to carry over funds from one year to the next to enable them to cope with the irregular cash flow from the increasing proportion of their funds from non-governmental sources. We are relatively satisfied with the way in which the Treasury regulations are interpreted and they do not bear down on us.

(Professor Blundell) My Lord Chairman, I think it is a unique feature of the BBSRC, and the AFRC before it, that we have had targets in our institutes for external funding. This has certainly focused the institutes' attention on collaboration with industry and exploiting their science into new technologies. We see this as an absolutely essential part of the whole area of technology interaction and something that we should be encouraging in the future. Indeed, the mixed funding of the institutes through applied research from industry, through international EC collaboration, through policy driven research from the Ministry of Agriculture and the Department of the Environment, and through basic research from the Office of Science and Technology is I think a very good way to run a healthy institute. The science produced can be used for UK plc as well as to advance basic knowledge.

Chairman

170. May I refer to the process by which government departments and research councils determine how they should fund research within the public sector research establishments. I think that specifically it would be helpful in your case. I know that the Ministry of Agriculture are a large customer of your research council. They are funding work in your research institutions and also in their own research establishments. Can you tell us whether you are

[Chairman *Contd*]

satisfied that the procedure by which they determine where this work is to be undertaken is comparable?

(Dr Jamieson) Perhaps I may start, my Lord Chairman. It is a difficult question because the procedures of MAFF and BBSRC are not totally identical. The motivation for funding the research varies between us and the Ministry of Agriculture, Fisheries and Food. As I understand it, the Ministry of Agriculture, Fisheries and Food have had a rather structured ROAME procedure for reviewing their requirements and commissioning research. That has certainly been in operation for a number of years. It has not caused any particular difficulty of itself for the BBSRC, but there have been rather rapid fluctuations of policy and funding levels, which have caused some difficulty for the BBSRC institutes. As far as the BBSRC is concerned, as Professor Blundell explained, we have this mixed structure of research funding mechanisms ranging from three year project grants to universities through larger groups into disciplinary research centres and the institutes. We have rather different approaches to funding three-year research grants, which may be of the order of £100,000 each on the one hand, and the rolling grants to the institutes which may be as much as £10 million per annum. However, as far as possible we subject each to the same degree of scientific rigour by different mechanisms. Over the last five to ten years we have been increasingly trying to build up a fund which is open to both universities and institutes. Some 12 per cent of our science budget funding now falls into that category, where we appraise on a level playing field proposals from universities and institutes. Therefore, the approaches are different as between the BBSRC project grant funding and rolling grant funding and yet another approach is adopted by the Ministry of Agriculture, Fisheries and Food for its commissioned research. As far as the BBSRC is concerned, procedures are very thorough and rigorous. I have no reason to doubt that this also applies to the Ministry.

171. And if an efficiency exercise is to be undertaken it would be helpful to have total transparency, would it not, so that a measurement can be made of the relative efficiency of each of the potential research establishments that might be capable of undertaking a specific area of research? However, what I am not quite clear about from Dr Jamieson's answer is whether you are satisfied that there is in fact this degree of transparency?

(Professor Blundell) My Lord Chairman, over the past years, we have offered the Ministry of Agriculture, Fisheries and Food full participation in the council; they still have council membership. All our operations have been transparent. It is, of course, much more difficult for us to participate in the ministry's strategic thinking, although in the last two days—in fact, going on now—there has been a Strategy Forum between the Ministry of Agriculture, Fisheries and Food and the research councils, allowing us to think and plan together. In the long term we are concerned that there has probably been a greater decrease in funding of BBSRC-supported institutes than of the internal MAFF ones. That is really extremely difficult to assess. But, if one looks at costs per individual in different institutes, a superficial analysis from the data available in the scrutiny report shows that of the 53 institutes five of ours come in the top twelve and they all come in the top 22. They are very efficient compared to MAFF establishments. I know that there are problems in making comparisons. For example, one of those at the bottom of our efficiency list is the John Innes; the problem there is that we are only including the staff employed by the BBSRC. In fact the John Innes is an international centre and attracts literally hundreds of people from overseas. So a large number of scientists at the John Innes, as you would expect from a world centre, are funded from elsewhere and capital and equipment is used more efficiently than at first seems. In general the evidence is that our institutes are more efficient and competitive than those of MAFF, but this is not reflected in relative success in gaining funding from MAFF.

172. Would you accept that this exercise has drawn attention to the need not just for your own research council but for the relevant government departments to develop a methodology which can determine to what extent one particular establishment might be more efficient than another and therefore give better value for money? I am sure that the methodology, as you remind us, will have to take account of the anomalies in the system?

(Professor Blundell) We would certainly like to see that. We do realise that different kinds of science have different costs. I am only too aware of that from my personal experience where I require pieces of equipment which cost half a million pounds and other colleagues require less expensive equipment. That having been said, further analysis of the efficiency of different institutions would be helpful.

173. We are running out of time, but there is one last question that I should just like to put to you. The Royal Society of London were not enamoured by recommendation No 27 which suggested that research councils should declare themselves open to applications from all competent suppliers, including GREs, institutes and other research councils". However, the Royal Society of Edinburgh did seem to favour this. Would you like to comment?

(Professor Blundell) The open competition has to take into account two factors. One is that we should have the best scientists doing research. The other is that we have a responsibility for the health of the science. Different institutions have different primary objectives. In any competitive situation one has to remember that we do have a responsibility to retain expertise in the UK. If the competition undermines that, then it is undesirable. But BBSRC has moved as far as it can to open up to competition our research programmes, first between the institutes and university groups, and then to government research establishments and certainly other research councils. We have done this with our research programme on genome analysis. As long as we maintain a healthy science base, competition is not too much of a problem.

174. We were assured specifically that the Scottish Office would be able to fund work at

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Rothamsted, which is one of your institutes. Can you therefore give us the same assurance that you could fund work in a Scottish institute if you felt that that was an appropriate area where the science base should be developed?

(Professor Blundell) I think that we certainly would, my Lord Chairman.

(Dr Jamieson) We will match the Scottish Office in that respect, I can give you that assurance, my Lord Chairman.

Baroness White

175. May we just assure ourselves that you would find no need for two directors of rationalisation?

(Professor Blundell) We see the concept of directors of rationalisation, as you may expect, to be totally unnecessary. We have demonstrated that we can rationalise according to the needs of our strategic plans. If the directors of rationalisation were going to be effective, they would need to have a support structure to inform their decisions. I think that it would be very expensive. I am very surprised that the scrutiny report comments that they could be funded from savings from rationalisation when they have not done any assessment of the resource implications of any of their models. I think that this really is a proposal that is inappropriate to the research councils.

Chairman] That was another telling point which we noted you made on the previous occasion to which I referred. I think that we have run out of time, Professor Blundell. We have others that we would like to take evidence from in a moment. Thank you very much, Professor Blundell and Dr Jamieson, for your help, and we will now have to move fast in order to meet the deadlines required by the system.

Memorandum from the Construction Industry Council

EXECUTIVE SUMMARY

The main points raised in the evidence of the Construction Industry Council are:

— There is an overwhelming need in the construction industry for an independent, impartial and authoritative National Centre for research and related activities.

— Two key roles for such a Centre would be to provide a facility whereby research work with a long timescale can be undertaken, and to support the Government's regulatory responsibilities.

— More specifically the Centre would have United Kingdom representational responsibilities, embark on work which is in the general public interest, undertake commissions for research/consultancy work, provide an advisory and public information service and have various international responsibilities.

— The Centre would be directed by industry, academia and Government.

— Initially the Centre would receive most of its funds from the public sector, but with the introduction of an industry-wide research levy this could change.

— Commercially driven privatisation, in whole or part, of the existing BRE, or its transfer to academia would not provide the kind of organisation industry and Government needs.

— The existing BRE provides the basis from which such a National Centre could evolve.

The evidence of the CIC is expanded in the accompanying main report and its representatives would be very pleased to elaborate on specific points and proposals by giving oral evidence to the Sub-Committee.

MAIN REPORT

Introduction

The Construction Industry Council is the representative forum for all of the professional bodies in the construction industry, collectively representing over 330,000 individual professionals and over 1,000 consulting firms. It was formed in 1988 and its principal objectives are to promote improved value for clients and to encourage unity in the construction industry to emphasise its significance to the nation. A full list of members is attached (*not printed*).

The Council welcomes the opportunity to submit evidence to the Sub-Committee on an issue which is of considerable interest and vital importance to its members and to the construction industry as a whole. The industry plays a key part in the country's economy accounting for some 10 per cent of Gross Domestic Product. However, it is an extremely fragmented industry with a wide diversity of clients and an equally wide range of firms and companies supplying their needs.

We have noted the questions highlighted by the Sub-Committee, and have no specific comments to make on the scope and conduct of the Efficiency Unit's Review.

CIC's particular interest is on the future of the Building Research Establishment (BRE) and the references

in the Scrutiny Report as to how this might be developed. Aspects of the Scrutiny Report which are particularly relevant to this include the recommendations that the Department of the Environment (DOE) should review the case for moving elements of the BRE into the private sector (paragraph 3.8), and that there should be an examination of the potential for transferring Public Sector Research Establishments to Universities (paragraph 3.11). In reviewing these and other issues the CIC has tried to stand back from present arrangements and identify what kind of central research facility (if any) is needed to support the industry.

It has long been recognised that much of the research needed in construction is for the general good of the industry and its clients. Investment in work of this nature cannot yield a direct return to the investor. It therefore has to be funded by collective mechanisms such as taxes, levies, subscriptions or voluntary donations.

A National Focus for Research in the Industry

CIC believes very strongly that the industry needs a multi-disciplinary National Centre for Building Research that is independent and authoritative. Such a Centre is needed to enable research work with a long timescale to continue to be undertaken and appropriate continuity and long term memory to be maintained. It is vital for the Centre to establish a reputation for excellence that ensures it attracts high quality staff and thereby attains a widely recognised international standing which would be to the considerable advantage of the United Kingdom. The Centre is also needed to underpin the responsibilities of Government for regulatory matters in the industry in the interests of public health and safety, and the increasingly important environment and energy-efficiency related issues. These latter issues need to be constantly re-evaluated as technologies change and new materials emerge and the Centre's work would need to encompass this. To meet this wide range of objectives the Centre needs to be of a size that gives it an effective critical mass.

More specifically such a Centre should focus on:

(i) Projects commissioned by Government in support of its regulatory and statutory responsibilities.

(ii) Work of a more general public and industry interest. This would include projects of a long term character which, although often with direct relevance to individual companies, requires sustained support over a long period and is therefore impractical for them to undertake themselves.

(iii) Research and representational activities as a national voice for industry/Government in relation, for example, to the development of Codes and Standards within the European Union.

(iv) Commissioned private research/consultancy work for industry either for specific organisations or through some form of club network.

(v) An advisory service for industry and its clients to stimulate adoption of new methods with the authoritative approval of the Centre.

(vi) A public information service on issues relating to building/construction technology and management.

(vii) An international role in support of United Kingdom industry; obtaining overseas contracts in its own right in order to benefit United Kingdom trade in services; providing links with the international research community and acting as a conduit for international technology.

Management of such a Centre would need to reflect its close relationship with the industry and its clients, Higher Education Institutions, as well as with Government. To achieve this, all these interests should come together to form a Council to guide the operation of the National Centre.

In the immediate future, and in addition to Government project work, there is little alternative than to provide public funding for a number of the specific activities listed above—notably work related to general public and industry interest (ii), the representational activities (iii), the advisory service (v), and the public information service (vi). However, the CIC has made proposals[1] for an industry wide levy to fund research and if this is implemented we see the opportunity for the National Centre to bid for a share of the money raised by this levy to fund these particular activities/services. Voluntary or subscription funding has been shown not to yield enough money in the very price competitive environment of the industry. The levy, on the other hand, would provide continuing and relatively stable funding which would underpin the industry's "ownership" of the National Centre.

The Establishment of a National Centre

The CIC believes that the current BRE provides the basis from which such a National Centre can evolve. An important first step is the establishment of an effective Council with representation as outlined above.

[1] "Private Funding for Construction Innovation and Research: Options for a National Institute". A Discussion Paper, prepared by a Working Party of the CIC Research and Development Committee, January 1994.

Coupled with subsequent support funding from an industry-wide levy, this would transform the activities of the Centre from the Public Sector Research Establishment status of the existing BRE, to an independent National Centre run by industry, supported largely by industry funds, but also providing the level of authoritative support that Government needs.

Is Privatisation a Viable Way Forward?

CIC believes that the range of services required of a National Centre could not be provided by a commercially driven, privatised establishment, either newly established or by privatisation of the existing BRE. A wholly privatised research establishment might not be able or willing to direct its priorities in the interests of the industry as a whole, and there would be no assurance that a capacity to undertake general public interest research of a long term nature would be retained. Government could also find that its own requirements cannot be met because of the unavailability of suitable staff, or more pressing priorities for the organisation.

We are also opposed to the suggestion that it may be possible to create a privatisable entity by removing the less readily privatisable activities within the BRE. The profile of the National Centre will depend critically on creating a stimulating environment which attracts a range of different disciplines all working together, essentially on a single campus, on a range of issues. Its international standing as a perceived Centre of Excellence would be diminished if its successful initiatives were continually hived off into the private sector. It would not be able to attract the right calibre of staff, and the overheads or publicly funded research would increase. Modern construction industry research depends on collaborative input from many different specialists, and the strength of the Centre will be much improved by a cohesive grouping of activities.

BRE has a valuable national asset in the information it holds. It is essential in whatever arrangements are made, that this is held "in trust" for the public benefit. Access to similar public interest information is more difficult with some of the privatised entities, such as the public utilities. The independence of the Centre would be its most valuable asset and the model for the appropriate legal entity could be found in the existing research associations or the Chartered status of the British Standards Institution.

The Scope for Mergers with or Transfers to University Departments

We see the role of the National Centre as different from and complimentary to that of construction departments at Universities which have a different culture. Research at Universities, apart from its links to teaching, does, and should continue to, focus on fundamental issues, albeit those driving towards wealth creation, which have little immediate prospect of application. The National Centre would not compete with Universities, but would be pro-active in helping Universities to provide a stronger base for their research activities, so that with the assistance and support of industry, appropriate research findings could be applied in a way that helps industry improve its performance.

The value of the National Centre would therefore be its independence from any one University, and its focus on promoting the application of fundamental research. In many ways the Centre would act both as a go-between and facilitator, bringing together industry and academia, and creating a climate and an opportunity for improved coordination, development and dissemination of construction related research. There could also be considerable scope for involving the Centre's resources in collaborative training activities, and for staff exchanges between sectors.

Conclusion

The issues raised by the Efficiency Unit's Scrutiny of Public Sector Research Establishments has helped the CIC to develop its own ideas as to the kind of national research facility that will most benefit the industry. Such a facility is vital to the long term development of an efficient construction industry. We do not see commercial privatisation (in whole or in part) or links with a particular University as providing the solution, but rather the evolution of the existing BRE into a National Centre controlled jointly by industry, academia and Government, and, in due course, largely funded by industry through a levy.

The CIC would very much like to be invited to give oral evidence to the Sub-Committee in order to expand on these ideas further.

Examination of witnesses

Mr G WATTS, Chief Executive, Mr T O'BRIEN, Chairman, CIC Innovation and Research Committee, and Director, Ove Arup, and Mr M ANKERS, Deputy Chairman, CIC Innovation and Research Committee, and Director of Professional Services, Chartered Institute of Building, Construction Industry Council, called in and examined.

Chairman

176. Welcome, Mr Watts. Would you like first of all to introduce your team perhaps and then any preliminary words of advice that you might like to give us that will be helpful?

(Mr Watts) Thank you, my Lord Chairman. First of all may I take this initial opportunity of thanking you for allowing me the chance to elaborate on our written submission. My name is Graham Watts and I am chief executive of the Construction Industry Council. Mr O'Brien is a director of Ove Arup and Partners and chairman of CIC's Innovation and Research Committee. Mr Michael Ankers is director of professional services of the Chartered Institute of Building. He is deputy chairman of the CIC's Innovation and Research Committee and he chaired the subgroup that was responsible for making the written submission to you. Having introduced the three of us may I also say that this is very much a team approach and I hope that you will allow my colleagues to make direct responses to you where their competence is rather better than mine to deal with individual questions. I hope that that is acceptable, my Lord Chairman.

177. Yes, indeed, it is. What we would like to do is to concentrate particularly on the proposals in the scrutiny document for the Building Research Establishment regarding which, of course, there is a proposal that part of it should be privatised. Would you like to comment on that first?

(Mr Watts) Yes, of course, my Lord Chairman. Our submission is very specifically in relation to the Building Research Establishment. As an overview of our position may I first of all say, and I am sure, my Lord Chairman you will appreciate this, that the construction industry is a multifaceted industry and has often been characterised as a fragmented industry. The Construction Industry Council's intention has been to develop a whole industry view which is supported by all sectors of the construction industry. Our initial work, the product of which is in the written submission to you, is now evolving through the council's partnership with other bodies within the construction industry, specifically those that represent main contracting and subcontracting firms and material producers, and most importantly our partnership with the construction sponsorship directorate of the Department of the Environment. The options presented in the scrutiny are, we feel, essentially either public or private options, privatisation either in whole or in part. The proposal which is evolving through our work envisages a partnership arrangement between Government and industry which is jointly funded and jointly controlled by a council which is representative of both the public and private sectors. I think that it is very important for me to emphasise in this introduction that there is a strong feeling throughout the whole of the construction industry that privatisation in relation to the Building Research Establishment either in whole or in part is not appropriate. The scrutiny report identifies the Department of the Environment's own assessment that 36 per cent of the work of the Building Research Establishment would need to be transferred back to the parent department in order to enable privatisation to occur. In addition there is much construction research undertaken by the Building Research Establishment which is for the common benefit and is not appropriate for research in the private sector. Examples of that can be given by my colleagues later on if you wish. Our central view therefore is that in order to create a privatisable entity from the Building Research Establishment so much would need to be removed from the Building Research Establishment that the core privatised entity which remained would fall far short of the national centre with the broad range of expertise that the industry and society need to attain. That is really the thrust of our submission, my Lord Chairman.

178. Perhaps I may ask your view as to the track record of the Building Research Establishment. You will remember that the scrutiny was specifically asked on a sector by sector basis to identify those public sector research establishments where early privatisation is feasible and desirable and, of course, you represent the ultimate customers in many senses of the Building Research Establishment. You clearly from the evidence that you have given us in writing and in what you said just now believe that this should remain within the public domain. Is that because you feel that no one could run it more efficiently than the Government?

(Mr Watts) I think the first thing to say is that the industry has a very high regard for the work of the Building Research Establishment. The recent history of the Building Research Establishment's activities under the present arrangements I think is a very valuable source of ideas about what can be achieved through the evolution of the arrangements that we are discussing. There are many activities such as the development of a European research club, for instance, and other international activities within the Building Research Establishment at the moment that are being developed because of the public/private partnership that is evolving. I do not know whether either of my colleagues would like to add to that, my Lord Chairman.

(Mr O'Brien) My Lord Chairman, I should like to add to that by saying that the Building Research Establishment has for many years worked under a particular brief, to undertake particular commissioned work to meet Government needs. More recently its brief has been changed, since it had the

[Chairman *Contd*]

Executive Agency status, to take account more directly of the needs of industry. It is going through a transition. Our submission is that this transition should be given further impetus to make it possible for it to act to meet the broader need of industry, where collaborative work is so important. Its efficiency would be enhanced by transforming it from essentially a tool of Government, although remaining in the public sector, to being the agent of a partnership between industry and Government.

Baroness Platt of Writtle

179. My Lord Chairman, I was very interested reading this and can quite see the advantages of the Building Research Establishment remaining as a total establishment with the interaction of the various scientific and technological expertise and continuity and so on to which you refer. What I found difficult to encourage was this question of the levy. I am an engineer and certainly the engineering industry absolutely loathes levies and it did everything that it could to get it chucked out. The construction industry maybe is different, but it did strike me reading this that it could become a much more independent institution while serving both industry and the Government and the public. But why should not anyone who wanted to use its services pay, the Government perhaps paying for the more basic and long-term research to which you refer to, with industry maybe singly or in collaboration paying, and the public—I mean, I have been into the Building Research Establishment for various things and I cannot see why it should not be like a shop in a way where you buy what you need? This would then retain the independence that you want without bringing in what might be a very unpopular levy. But maybe everyone loves the idea of a levy—I am not sure?

(Mr O'Brien) I can confirm that the levy idea did not have universal support. What we believe is important is that the total level of research activity in our industry and particularly that which is for the general good of the industry, our clients and the technology transfer from one part of our industry to another, should be enhanced. There have been various reports through the 1980s which have identified a significant underspend; and that the level of activity is too low in this country. But we have been realistic enough to realise that Government is not going to increase its spend in this area. In the national centre, we are proposing that the total level of activity should be greater, that industry should have a strong part to play in it and that, by implication, industry must find the way of enhancing the funding that is required. There are various suggestions for mechanisms by which that might be done. It is going to be most important, if our concept of a centre is implemented, that the council that is set up to direct it addresses this issue very early on. It has to find the most appropriate ways, and I suspect that they will be diverse ways, in which this enhanced funding and the industry contribution to it could be made.

Chairman

180. Are you familiar with the model of research associations which other sectors have for undertaking work both for Government and for industry?

(Mr O'Brien) Yes, indeed, and I am personally a member of council of one of the research associations, the Construction Industry Information Research Association. The research associations play a very important part in the diversity of our industry. Their particular strength is in producing best practice guidance. They commission topics where the research contractor searches out good practice, compares the basic research data and then prepares a report for publication in a form which has a major impact on technology transfer. The scale of the research association activity is important, but it is not big enough. The industry has difficulty finding the money to support them at a level which is needed, we have to admit that, but they are very important and we see them as complementary to this national centre which would have within it significant laboratory-based activity to add to the diversity of its other activities.

(Mr Watts) Perhaps I may add, my Lord Chairman, that there are, I believe, 11 research associations in the construction industry. They are with the exception of the Building Research Establishment all sectoral bodies, so, for example, we have the Building Services Research and Information Association, the Steel Construction Institute, and, as Mr O'Brien has said, they all do very valuable work in their own sectors. I would also say that there is a very good history particularly in recent years of collaborative work between the private sector research associations and the Building Research Establishment, and the Construction Productivity Network which was established recently is a good example of that.

Baroness Platt of Writtle

181. You said, enhancement of the amount of money available for research, and you are talking about what is obviously an important national resource. How would you view it from the point of view of an important European or global research for which you might get an international grant of one sort or another?

(Mr Ankers) My Lord Chairman, we see the development of the national centre as the first step in this. The Building Research Establishment has an international reputation and it also serves UK interests internationally in Europe and in other parts of the world, both keeping in touch with what is happening in those countries that might be of interest and benefit to the United Kingdom, and also in promoting UK activities in other parts of the world. We certainly see that as a very important part of the Building Research Establishment's current activities and something that the national centre should take on. We would see this national centre taking advantage of international grants, particularly European grants. In fact, they have done work in that area already to help bring the industry together and act as a focal point to assist the industry in getting

[Baroness Platt of Writtle *Contd*]

money from Europe. We would not, however, see it at this stage developing into a European centre embracing other European countries or other European research institutes. We see it very much as looking after the interests of the United Kingdom. How things develop in ten or 15 years' time, of course, is very uncertain and unclear, but I think that the agenda for the next five years would be to establish a very successful national centre looking after UK interests and tapping into international and European funds and expertise.

Chairman

182. The Government clearly holds a view which perhaps not everyone agrees with that they feel uneasy at having research establishments in the public sector if they can be transferred into the private sector and their view appears to be—and I make no comment on it—that government departments are not as close to industry as industry themselves. You clearly would be prepared to see this research establishment remain within the public sector. Would you be prepared to contemplate a change to a council on which there was a wider representation?

(Mr Watts) Yes, my Lord Chairman, that is the essence of our proposal. As I said earlier in the introduction, there is a very large part of the Building Research Establishment's activities which require to remain in the public sector. The option of privatising the rest or a large part of the rest and transferring that which needs to be in the public sector to the public sector would lead to a fragmented body that could not be the powerful player that Mr Ankers has just identified we need, and our proposal for a partnership arrangement governed by a council which would be representative of the public and private sector is intended to retain the national body of substance that we currently enjoy while changing the basis of its ownership.

(Mr Ankers) My Lord Chairman, perhaps I may just add to that that I think we are perhaps not entirely comfortable with the extreme options that seem to be presented in the report where it is public or private. Our view is, and I think it is in line with government thinking in other areas over the last two or three years, that we should be looking for much more of a partnership between industry and Government in areas where there is a common interest. In other activities that the council has been involved in we have been working very much in partnership with our sponsor department, the Department of the Environment.

Baroness Platt of Writtle

183. Could you not have partnership together with independence though? Why should not the Government buy in just the same as industry buy in?

(Mr Ankers) My Lord Chairman, I think that this is very much the essence of our proposal. We see this as something where the Government would undoubtedly use the national centre and buy into the resources there for the regulatory work and other work that is required by Government on health and safety and in support of other regulatory work. But the partnership would mean that the direction was from industry and Government jointly and the funding in due course was shared between the two sectors because of the essence of what was going on and the benefit to everybody in the industry and Government and public at large would be the synergy that was created by attaching multidisciplinary people to work at a truly national centre of excellence where synergies and joint working were achieved which we do not believe would be achieved if part were privatised in a commercially driven way and the rump was left of a regulatory activity which we do not believe would attract the quality people that we need to drive research in our industry forward.

(Mr O'Brien) May I add, my Lord Chairman, that it is the commercial privatisation that worries us so much. We would like to find the appropriate constitutional arrangement whereby this national centre could exist and there are a variety of models of precisely what it could be. But the idea that it would belong to a company or a group of companies out in the industry and be run on commercial lines really we feel would be disastrous for the country. The Building Research Establishment has an immense asset for this country in the knowledge base that it has built up over the years since it started. If that knowledge base were transferred into a commercial environment, the people who have to tap into it would find it much more difficult and there would be a different set of guidelines under which it would operate. Really, as I say, we feel that it would be very disturbing.

Lord Craig of Radley

184. My Lord Chairman, perhaps I may follow on on this privatisation issue, going back to Mr Ankers' vision of a partnership being jointly funded but clearly still within the public sector. Would you like to comment on what seems to me to be part of your proposition, that is, that Government should contribute to the funding of this arrangement but should also be expected to pay for what it requires from that organisation—at least, that is how I understood your proposal?

(Mr Ankers) My Lord Chairman, yes, I think that the two are the same, if I may say so. I think that the contribution from the Government would in due course be in respect of the work that it required from the centre so Government would buy into the centre as a customer; Government would not necessarily put in money and then buy in for its research.

185. In other words, it is only when the Government want something that they actually produce money towards the organisation?

(Mr Ankers) Yes, it may share funding and there may be some specific things that Government want in support of their regulatory activity which Government would pay entirely for. There may be other activities where there is an industry under the public interest and Government as representative of the public interest share the funding with the industry, so it is not easy to, say, put things in categories, but I think that the essence of our proposal is that by

[Lord Craig of Radley *Contd*]

virtue of the direction coming from industry, the clients of the industry, Government running the organisation, these balances would be struck. At the moment that partnership does not exist.

Chairman

186. You have made it quite clear that what you perceive as a commercial privatisation would not be appropriate. Nevertheless, in the language of the scrutiny unit, they describe, for example, moving into a university or into a trust as privatisation, a very different concept from the one about which you are concerned. Research associations with their own councils can still, and some of them do, have a very large amount of government funding coming in in order to fulfil certain roles. Now that would be privatisation. What I suspect we have to be quite clear about is whether you would be prepared to see this research establishment moved in the line of accountability out of the department, which of course removes them from the constraints of Treasury rules and much other impediments to commercial activity, and the alternative presumably would be to be put it under the management of a trust or an industry-wide council in which, of course, the Government would be perfectly capable of being a partner, but they would no longer be part of Government. Is that a concept that you have considered?

(Mr O'Brien) My Lord Chairman, yes. We have emphasised this. It is commercial privatisation that we are opposed to. I anticipate that an evolution could occur with such a body starting off and essentially remaining in the public sector but working out the best constitutional arrangement of the various options that you have identified. However, this should happen in parallel with the resolution of the funding issues. We would see considerable danger in altering the constitution into that of a private sector organisation and only then working out how to resolve the funding issues over the subsequent period. There could be a terrible hiatus which would be damaging.

Chairman] So providing you had a guarantee that funding would remain in place you would look quite favourably on such a proposal.

Baroness Platt of Writtle

187. Have you in fact had discussions with the Government about the way in which reconciliation might happen between what is being suggested in the White Paper and what you are proposing? It does not seem to me that you are very far from each other in a way?

(Mr Watts) My Lord Chairman, we have a very close dialogue with the Sponsorship Directorate of the Department of the Environment and the construction ministers and under the auspices of the CSD there is a group known as the Whole Industry Research Strategy Panel—WIRS—which brings together the senior civil servants and industry representatives. This issue has been discussed at those meetings and will continue to be evolved through those discussions. We also have regular briefings with our appropriate government ministers and only yesterday morning we met both Viscount Ullswater and Robert Jones to discuss specifically the future of the Building Research Establishment and to outline the proposals that we have made, and I am very pleased to say that they were welcomed and the dialogue will continue and we will work very closely with the Department of the Environment in the development of these proposals.

Chairman

188. And you were discussing no doubt with them a partnership concept?

(Mr Watts) Oh, yes, my Lord Chairman.

189. Are there any other questions that members of the Committee would like to ask? If not, is there anything further finally that you would like to add which we have not covered that you feel needs further elaboration?

(Mr O'Brien) My Lord Chairman, yes, there is one point that I should like to raise, and that is the interrelationship with the academic world, which perhaps we have not brought out sufficiently. We think that it is most important that we have developed mechanisms whereby the contribution that universities can make to research in construction is enhanced. We think that our suggestion for the national centre will provide a better way in which the diversity of the academic world in research could have a focus and could have a body that it can interrelate with better. We feel that the potential for the academic contribution to research at the moment is insufficiently tapped in our industry.

190. But you do not think that linkages with any higher educational or further educational establishment would be appropriate presumably?

(Mr O'Brien) No, my Lord Chairman. We make specifically the point that it is not appropriate to transfer part or whole of it under that and, indeed, we see the importance of the academic culture research as having its place and we see the national centre having a different culture, not an academic one, but that a stronger relationship between them should develop.

191. So that the partnership could include some educational element within it, could it not, a consortium rather than a partnership, I suspect?

(Mr O'Brien) Indeed, yes, my Lord Chairman.

Chairman] As there are no further questions, may I thank you all very much for your help today. We are most grateful to you.

WRITTEN EVIDENCE

Memorandum from the University of Bath

The University wishes to comment on three areas:

(1) Privatisation/transfer of PSREs to Universities

(2) The proposed new organisation structures/Directors of Rationalisation

(3) Commercialisation of the customer-contractor relationship and full costing of research bids.

1. *Privatisation/Transfer of PSREs to Universities*

In this University's view, the Efficiency Scrutiny suggests far more complexity in the future structure of government financed research than is necessary.

Whether the research to be performed is long term and fundamental in orientation or short term and applied in nature is not relevant to the design of the basic structure for delivering research. It can all be contracted out provided that both Universities and companies are permitted to bid for work. Government departments and the research councils as the purchasers of research from universities and private sector institutions can simply have the responsibility to fund whatever research they like within their own prescribed objectives and parameters. If deemed appropriate research councils could always emphasise fundamental research while government departments commission more applied work. Moreover, purchasers do not necessarily purchase just the cheapest offering; it is quite possible to have purchasing criteria which allow for strategic concerns. For example, one criterion might be the need to maintain a national presence in certain types of research, by choosing to locate certain types of work in Universities.

We believe, therefore, that there is no fundamental reason why all PSREs should not be disbanded and their work contracted out. Of course, as in other contracting arrangements in the public sector, the university or private sector corporation might offer to take over existing GREs in order to put itself in a position to satisfy any contract won. If more complexity than this is required, we have seen no convincing arguments in the documents presented to us.

2. *New Organisational Forms for GREs and Directors of Rationalisation*

If the position proposed in the previous paragraph were accepted, the proposals about both organisational change of the GREs themselves and the alternative of employing Directors of Rationalisation are redundant. Even if our views as indicated above were not adopted, we would be against the creation of Directors of Rationalisation with no executive power. In fact we are amazed that this should be a serious proposal. In our view that would be a recipe for confusion over who is responsible for managing what. If some GREs are to be retained, the government should decide first, perhaps advised by consultants, what degree of rationalisation is required so that the appropriate structures can be devised and executives given clear directives and accountabilities. We repeat, however, that our preferences is for the contracting out of all GRE research services.

3. *Commercialisation of Client-Customer Relations and Full Costing of Bids for Research*

The fact that this question is posed at all rests on a failure to distinguish properly between prices and costs in a competitive market. A market bidding process assumes that each bidder will offer prescribed services at whatever price it thinks is competitive in order to win the contract. Universities might be foolish if they often bid at prices which do not cover their costs, but surely the point of market competition is that participants must be free "to be foolish" if they wish or, more precisely, to decide for themselves how to ensure that their total revenue covers their total costs. It might be argued that some contracts are better suited to a cost-plus basis because of the uncertain nature of the work involved such that no University or company would be prepared to bid on a fixed price basis. Even in that situation, however, the purchaser will want to see that the supplier does not overstate his costs in claiming payment. We don't see why the purchaser should be bothered if the supplier underclaims. The argument companies put forward about "level playing fields" is irrelevant. The essence of market competition is that companies themselves seek to acquire some distinctive competitiveness on either price or quality of goods or services. If the purchaser insists on a minimum price, this reduces the effectiveness of the market mechanism.

Memorandum from the Building Employers Confederation

Introduction

In providing this evidence to the Select Committee we have not attempted to address each of the questions given on the call for evidence. We have limited our evidence to answering question 6, "How suitable are the report's proposals for privatisation?", and in answering this question we have only considered the Building Research Establishment.

The Future Role of the Building Research Establishment

The Building Employers Confederation (BEC) is the largest trade association of building employers in the United Kingdom. Its members account for approximately 85 per cent of the building construction output in the United Kingdom. The BEC have always had a strong interest in research and development matters associated with both the design and construction of buildings. The Confederation has a strong standing committee which devotes a large amount of its time to such matters.

The Confederation has a good working relationship with the Government research centres which undertake construction research and development. Our main contacts are with the Building Research Establishment (BRE) at Garston, Watford and our evidence to the Select Committee on Science and Technology concerns the work of the BRE.

In our view the role of the BRE has changed from an organisation carrying out fundamental research for central government to an organisation who try to assist the industry achieve a better and more cost effective industry. The change of role to an executive agency of the DOE has helped to clarify its interaction with the industry.

The BRE is clearly a very diverse organisation and the effectiveness of each of the areas of its work clearly varies. Industries' views on the usefulness of any particular work item will also vary depending upon their sectorial interests.

As a contracting organisation we would first like to consider the role of the BRE Advisory Service which is the only contact many people have with the BRE. In our view this provides the building industry with an essential service that must be retained and even extended. Over the last few years the number of advisory services available to designers and builders has reduced. The specialist services provided by specific material sectors, eg concrete, brick, timber have all closed or reduced their advisory services. Many now only provide their services to their own members or charge a fee for advice. Our own service, the BEC Technical Advisory Service is normally a members only service, although in practice we do provide advice to architects and even the general public. Our concern is that any reduction in the BRE Advisory Service would increase pressure on our own service which would be unable to cope. We would suggest that without free advice such as that available from the BRE many people will try to complete designs and specifications without adequate back-up thus increasing the risk of defects occurring in buildings. Experience has shown that the building industry requires an independent source of advice on technical matters, this must be available to professionals in the industry, contractor, sub-contractor and the general public.

We do not consider that the advisory service should be taken over by industry as there is no funding available from the private sector to provide such a comprehensive service. It should also be noted that any service provided by the private sector is likely to be influenced by its owners thus the view expressed may not be as independent as those given by BRE.

The effectiveness of the Advisory Service depends upon both the staff of the department concerned and its links with the other technical staff in the BRE. This linking is often not available in outside organisations and this often results in biased advice being given.

Another major role of the BRE which we strongly support is the production of guidance, codes and books on technical matters related to construction. These are invaluable to the industry and are widely used by all sectors. The advice is clearly independent of any particular interest and there are times when we do not fully agree with the advice given. It is however accepted that the staff at the BRE often look at a problem from a different stand-point to our own. They often include the view of the user or owner of a building, these groups being poorly represented in the majority of discussion forums in the construction industry. The information provided by BRE is therefore respected and accepted by industry as being the state of the art in the majority of subject areas. We do not consider that this level of independence could be provided through a private funded group in the current financial climate.

The third role of the BRE is its involvement with research projects. We would first say that the majority of the projects are not fundamental research but applied research and we support the BRE in this type of work. The construction industry is an application industry and not a pure science industry. The facilities at the three BRE sites are very extensive but may often be under employed. We would therefore like to encourage the use of this equipment by other research organisations. This is a service that could be developed.

We would also suggest that the testing work within many of the projects could be carried out by a sub-contract to Universities, etc., particularly where the BRE do not have the necessary test equipment. We appreciate that about £6 million is already spent in this manner but there may be room to increase the cross flow of this type of work between outside organisations and the BRE. The flow should ideally be in both directions, ie private organisations employing the BRE to carry out type testing.

It has been said, by some organisations, that the BRE could be sub-divided, the objective being to retain only that part which carried out work of general public interest. This in our view would produce a much weaker and less sound structure. The current organisation is clearly linked to all sections of the construction industry, it receives feedback from actual building under construction and in use via the advisory service. It has considerable involvement in British Standards development which is greatly valued by the technical

committees concerned. It also assists industry to resolve its technical problems. This work is more effective if there is interaction between each of the roles. Any attempt to remove one particular sub-section will weaken the remainder and the overall structure.

To summarise we would state that:

(a) We would wish to retain a multi functional BRE which is able to provide independent advice and support to our industry.

(b) We believe that the transfer of any or all of the BRE to the private sector would result in a reduced service to the industry and could also result in the disappearance of some of the current services from the industry.

(c) We would like to see an increase in the exchange of the testing facilities between BRE and other organisations.

(d) We consider that the advisory service need to be strengthened to help the industry produce better and more durable buildings.

We would ask the Committee to consider very carefully the risk associated with any cut back in the funding of projects undertaken at BRE. The construction industry is a major industry with expenditure of about £80 billion per annum. The total expenditure on R&D is probably £250 million of which £40 million is at the BRE; we would like to see an increase in the overall expenditure on R&D and this may be available through the methods suggested in the Latham Report. The proposal will, however, take time to develop and in the meantime the BRE should be supported and if possible, expanded.

If the Committee would like further comment we will be pleased to provide this.

Letter from the Chartered Institute of Building

Thank you for drawing to the Institute's attention the call from the House of Lords Select Committee on Science and Technology for evidence concerning its enquiry into the efficiency unit's scrutiny of Public Sector Research Establishments.

The Institute has a particular interest in those aspects of the report which affect the Building Research Establishment. We have made a major contribution to the response of the Construction Industry Council on this and are fully supportive of the evidence given to the Sub-Committee by the Council. A copy of this is attached for your information (*see memorandum from the Construction Industry Council*).

Memorandum from the Chartered Institution of Building Services Engineers

1. This Institution considers that the case for conducting the Efficiency Unit's review has been justified. We understand that this is to support the White Paper on the Strategy for Science, Engineering and Technology (Cm 2250) by promoting a strong science base.

2. We are satisfied with the basis of choice of the 53 Public Sector Research Establishments (PSREs).

3. The study appears to have been conducted in a satisfactory manner. The remit, terms of reference, coverage and methodology are all clearly stated. The structure and terminology of the report allow for easy reading and comprehension.

4. Regarding the proposals of the report, we feel that:

(a) They will not necessarily aid efficiency. In the case of the Building Research Establishment (BRE), for example, simply removing the less profitable activities in order to create a more privatisable entity (paragraph 3.6) will not contribute one iota to the efficiency or the effectiveness of the way in which BRE conducts its business.

(b) Neither will the changes proposed in paragraph 3.6 strengthen the effective provision of scientific expertise and advice. We feel that the reverse may apply, namely that the effect of privatisation of parts of BRE's operations will lead to a two-tier structure with perhaps the private sector attracting a small but high-calibre section of expertise with the remainder of BRE's staff either leaving altogether or remaining in what will be essentially a low-cost, low-esteem public sector environment.

(c) It is hard to see how the differentiation and dilution of the construction industry's research expertise can contribute to wealth creation and the quality of life. We feel that this will be an irreversible step for the United Kingdom construction industry which will be diminished by this loss. However, the vacuum created may be quickly filled in the short term by national competitors from the EC buying into the United Kingdom market.

5. The report's proposals for the BRE may make the statutory duties of the establishment more expensive since, with a mix of public and commercial activities, there is scope for economies. With the loss of the commercial activities to the private sector, this latent benefit will be no longer available.

6. We do not believe that the report's proposals for privatisation have been fully thought through. In particular, the report has failed to provide any indicators of performance by which the efficiency and the effectiveness of the proposed privatisations can be judged. In the case of construction industry research, there are also many hidden disbenefits associated with privatisation, for example the possible loss of valuable sections of the research market to overseas competitors.

7. We support the proposal that PSREs should develop links with Universities where they do not exist at present but we consider that the possibility of transferring the BRE to a University is just not workable, given the need to co-ordinate and control the construction industry's research programme in the private and public interest. The needs of the industry and those of a host University may only fortuitously coincide. We have no comment on proposals 10 and 38 relating to the alternative organisational models and the new appointments of Directors of Rationalisation respectively.

8. The benefits of cross-departmental and/or Department/Research Council rationalisation are clearly desirable and achievable if they result in the optimisation of resources, including human, capital and revenue wealth. If they are merely used to identify surplus assets for disposal, then this will simply produce a one-off gain and not a long-term and sustained benefit.

9. We support the Treasury guide lines for selling services outside Government to areas where they will result in a better service to the public and industry. We do not feel that a public enterprise acting in this way should have its activities restricted or its future blighted by a perceived need to privatise the profitable parts of it. The enterprise as a whole shall be seen as a benefit to society, not just parts of it segregated along sectorial interest lines.

10. The Office of Science and Technology should continue to monitor oversight of the Open Market policy provide that this market is genuinely open to private and public enterprise alike. In this way, competition and market forces will be matched on a level playing field and not one which is tilted for the benefit of either player.

11. We have no other proposals to make.

Letter to the Clerk of the Committee from Sir Peter Levene, KBE, the Prime Minister's Adviser on Efficiency

You wrote to Susan Scholefield in the Efficiency Unit on 1 August enclosing the Select Committee's call for evidence on the Efficiency Scrutiny into Public Sector Research Establishments.

Your letter asked, in particular, for identification of the guidelines on "Selling into Wider Markets" referred to in the Committee's question 9. I understand these have now been forwarded to you by HM Treasury (Mr Milner's letter of 4 August).

You also asked, more generally, whether there was any evidence the Efficiency Unit might wish to contribute. Neither I nor other officials will, of course, be in a position to comment on the Government's likely response to the Report's recommendations until the public and departmental consultations have been completed. In view of questions 1 and 2 of the call for evidence, it may, however, be helpful if I set out the background to this Scrutiny.

As you know, a key underlying issue was the need to ensure that government funding for science is devoted, as far as possible, to output rather than to overheads, so that the best possible science is obtained for the resources expended. The importance of ensuring best value for money in the Government's expenditure on science, engineering and technology was a major theme of the May 1993 White Paper "Realising Our Potential" (Cm 2250). The White Paper reaffirmed the Government's commitment to its role as the main funder of basic research, reflected in the provision of more than £2 billion in 1994–95 through the Research Councils and the Higher Education Funding Councils. It also announced the Government's intention to undertake a scrutiny of public sector research establishments, looking at privatisation, rationalisation, and different ownership options.

The immediate impetus for the scrutiny came, at least in part, from the proposals for change in the ownership and organisational arrangements for Government Research Establishments (GREs) made in the Review of Allocation, Management and Use of Government Expenditure on Science and Technology, which was commissioned as background for the White Paper and was published at the same time. The decision to establish an Efficiency Scrutiny was made collectively by Ministers, as was the determination that it should cover not only GREs but also related laboratories in the Research Council sector. The terms of reference and the list of establishments to be scrutinised were subsequently considered and endorsed by Ministers of the relevant departments.

The Scrutiny Team itself came together at the end of last year. Five of its members were from Government Departments (four scientists and an administrator with experience of policy issues affecting GREs) and the sixth was a scientist from the private sector. Shortly after Christmas they sent out a questionnaire to all the 53 establishments under scrutiny, and to their parent departments or research councils. They then spent from the end of January to mid-March visiting the establishments, their parent organisations, and a number of consultants and comparators in the private sector to discuss what the establishments did, why, and possible options for change. At the end of March, following standard efficiency unit practice, they produced an internal working document describing their findings so far. Their final report was published on 11 July. As it says inside, the views expressed are those of the Team. They do not represent a consensus of all the views expressed by those consulted; nor do they represent government policy.

As you know, the Government has not as yet taken any decisions on the Report, and is anxious to ensure that all interested parties can contribute to the decision-making, hence the announcement by the Chancellor of the Duchy of Lancaster of a four-month consultation process lasting until 11 November. It will be particularly important in this context to have the views of the Committees of both Houses, and I look forward to reading the House of Lords Select Committee's projected report, which will be a welcome and extremely valuable contribution to the process.

Memorandum from the Forestry Industry Committee of Great Britain

The Forestry Industry Committee of Great Britain (FICGB) is the body which represents collectively all the interdependent interests within the private sector which comprise the industrial "wood-chain" based on British-grown timber, and also professional bodies, associations and individuals engaged in forestry in the United Kingdom.

We have consulted widely among our constituent members and must report unanimous concern over the likely damaging consequences to forestry which would result from the proposals advanced by the recent report of the Efficiency Unit: "Multi-Departmental Scrutiny of Public Sector Research Establishments".

The consultative document makes the important point (Summary, paragraph 2) that "establishments parented by government departments carry out applied research and other scientific and technical activities *which underpin departments' statutory, regulatory and policy roles*" (my emphasis).

This relationship is critical where the Forestry Commission is concerned, because the Forestry Authority regulates the industry and administers subsidy according to guidelines designed to implement research-based standards (and the efficiency of the operation is augmented by the ready access which the scientists and researchers have to the forest resource). The efficiency and credibility of the Forestry Commission's regulatory function—and the capability of regulation to reflect research fundings—would be seriously compromised if the Report's recommendations are followed.

It is particularly important that a coherent forestry research strategy should respond to the changing priorities and objectives which forestry currently has to address, and this requires that the research capability should not become remote or be distracted from the operations of the policy unit. This interface would be prejudiced by the proposed detachment of the Forestry Research Stations.

At the same time we recognise the desirability of clarifying contractor-customer relationships as one means of improving the efficiency and cost-effectiveness of research support which is the Government's objective.

In addition to the two critical points outlined above, we have the following comments on the specific recommendations of the Scrutiny.

Model I: Proposal that the Forestry Research Stations should be Transferred to NERC within an Environment (Non-Marine) Grouping

— Forestry does not "belong" in this grouping and has little common interest with its other members. This will operate to its disadvantage and to the detriment of forestry research.

— The bulk of forestry research is not environmental. Although arguably there is an environmental dimension to most research—eg plant health, etc.—this linkage is better co-ordinated through the Foresty Research Co-ordination Committee.

— Government policy—as stated in the Conclusion of the Forestry Review Group and in "Sustainable Forestry—the UK programme"—recognises *productive forestry* as the *core objective* of the national forestry policy. In the NERC grouping, research relevant to *productive* forestry will—by definition—have less priority.

— Research relevant to farm woodlands and the integration of farming and forestry as co-existing productive land users would be awarded a lower priority, while agricultural and forestry research risk being institutionally separated at a time when they should be brought closer together.

— The expertise (eg in tree pathology) developed by the Forestry Commission risks being dispersed and diluted.

— Forestry Commission resources—access to forests, hands-on experience, interchange of personnel, technology transfer—would be less efficiently available.

— Transfer to NERC would reduce Ministerial control over research as a critical means of policy support, and the detachment of its forestry research capability would impair the Forestry Commission's authority and effectiveness in its various regulatory roles—for example in exercising phyto-sanitary controls, containing disease outbreaks, preparing and administering guidelines and standards, exercising discretion under the Woodland Grant Scheme—and generally being *The Authority*.

Model II: Proposal to Adopt Geographical Groupings and Divide Forestry Research between The Scottish Office and NERC

This has all the disadvantages of Model I and more besides:

— Devolution of the Forestry Authority and/or the Forest Enterprise has not been recommended in any other study (eg the Forestry Review Group) and is opposed by the industry. So long as the Forestry Commission's functions and "satellites" maintain their GB integrity, their forestry research should be co-ordinated on a GB basis also.

— At a time when there is a perceived need to draw together the various research needs and priorities into a coherent and more comprehensive research strategy, this proposal invites duplication, complicated communication, lack of coherence and split objectives—and an inefficient use of interdependent and site-based research results.

The Preferred Way Forward

While we think that the proposals advanced in the Scrutiny document would have potentially disastrous consequences for forestry and forestry research, we do support the general objectives of ensuring greater efficiency, value for money, the development and evolution of research in response to changing needs, and the greater clarification of contractor/customer relationships.

In seeking to achieve these we believe that there is a simpler, more practical way forward, whether achieved through further consultation with Directors of Rationalisation (which we find a somewhat cumbersome device), or implemented as a logical progression in the reorganisation of the Forestry Commission which is currently going on.

We recommend that the Northern and Southern Forestry Stations are merged into a Next-Steps Agency, under a Chief Executive reporting to the Forestry Commissioners. This would accord with the Government's Next-Steps policy. Presuming that, in due course, the Forestry Authority may also become a Next-Steps Agency, we envisage an eventual situation whereby the Forestry Research Agency would be one of the several satellites (the others being Forestry Authority and Forest Enterprise) orbiting the policy nucleus of the Forestry Department.

The Forestry Research Co-ordination Committee would continue to pursue its co-ordinating function, charged with avoiding duplication and ensuring practical integration with other agencies when required, and identifying research needs and promoting the work and services of the Forestry Research Agency.

This structure would avoid the disadvantages of the other two proposals as listed above, while it would retain that crucial link between policy and research, and between the research capability and the regulatory function of the Forestry Commission. It would be flexible enough to achieve the links necessary with both environment and agriculture. It would achieve sufficient separation and independence to clarify the distinction between the Forest Research Agency as contractor and its customers—of which the Forest Enterprise and Forestry Authority will be two—but while it will be free to seek business where it may, it will not become divorced or distracted from those major research priorities which changing policy objectives should determine, giving essential cohesion to a cost-effective research effort.

We therefore commend this alternative as a preferred way forward, and hope that the Committee will give our proposal careful and sympathetic consideration.

Memorandum from the Horticulture Research International

The Board of Directors of Horticulture Research International (HRI) has studied in detail the report and recommendations of the Scrutiny Team. We would like to draw the following points to the attention of the Select Committee.

1. *Supply-side Rationalisation and Value for Money*

Extensive rationalisation and closure of science programmes and R&D sites preceded the establishment of HRI, following a MAFF Review of Horticultural Research in 1989. Further rationalisation is underway with the closure of HRI's Littlehampton site due to be completed in 1996, and it is clear that HRI's mission does not overlap with that of other PSREs. In addition, HRI has clearly-identified customers for all of its science programmes. Of HRI's income, 85 per cent comes from funding arrangements in which customers are directly commissioning or contracting specific research to meet their requirements, demonstrating that there is a clear market demand for HRI's scientific skills. The balance of funding is provided by BBSRC, who have already sought, in their own rationalisation programme (as AFRC) to ensure that there is no overlap in the work that they fund. We would therefore contend that further rationalisation of HRI would not be justified on grounds of scientific overlap.

Another clear objective of the Scrutiny Team was the development of mechanisms for achieving best value for money. This has been a key objective within HRI, and the Board of Directors has played an important role in streamlining the organisation to ensure economy, efficiency and effectiveness.

The HRI Board, with strong, commercially-orientated members will inevitably be a more effective influence in providing excellent low cost science and technology for horticulture than some heterogeneous sponsorship grouping well-removed from the industry it serves.

2. *Links with Industry*

In providing the R&D expertise for United Kingdom horticulture, HRI's science programmes are of central importance in generating information and products for an industry that is receptive to new technology and whose improved competitiveness will contribute very significantly to United Kingdom wealth creation. HRI's mission is clear and it has the strong support of the horticultural industry who actively fund R&D. Potential dilution of our present mission is a hazard that could arise given the very broad grouping of institutes within which the Scrutiny Team have placed HRI's future sponsorship. We believe that HRI can be more directly responsive to market needs as it is managed currently. HRI's potential incorporation into alternative sponsorship arrangements could diminish our ability to retain and develop further our contacts with the United Kingdom industry and such changes would be likely to create unease and apathy within the industry. The support of the industry had been vital in the progress of horticutural R&D. Already, significant concerns on the Scrutiny Report have been expressed to us by leading members of the industry. They believe it would be a retrograde step if HRI were to be absorbed into the research conglomerate proposed by the Scrutiny Team, particularly as the industry was closely involved in bringing about the establishment of HRI.

The horticultural industry would also need to understand how the changes proposed could improve the delivery of research. At present, BBSRC or University sponsorship would be preceived as moving away from the White Paper objective ("Realising Our Potential") which stresses the need for closer relationships between R&D establishments and a clearly-identified user community, such as the horticultural industry.

The horticultural industry requires and expects stability following the earlier rationalisations within horticultural research, some of which are still being completed. The sponsorship groupings proposed in the Scrutiny Team report reflect the team's views on convenience for future rationalisation rather than any real attempt to promote the links between the science base and industry.

3. *University and BBSRC Links*

We note that the Scrutiny Team report recommends that Government Departments should consider transferring PSREs to University ownership and that formal links should be established with Universities. We welcome the latter recommendation. HRI already has a formal link with the University of Birmingham and has discussions under way with the University of Warwick: the breadth of HRI's science programmes make such links a sound scientific option, but with several Universities rather than just one. University ownership is not favoured by HRI's Board, not least because the criteria by which University productivity and excellence are judged are quite different to the criteria by which HRI's performance is assessed. We would expect an alienation from industry in any shift within HRI towards basic science and teaching and believe that the considerable advantages to be gained from close contact with Universities can equally well be achieved by formal links that fall well short of ownership *per se*. Furthermore, the sheer size of HRI, coupled with the complexity and magnitude of the necessary financial arrangements, would preclude takeover by a single University. The supportive grower community that HRI services would be deeply hostile to fragmentation of HRI's operations. Just as there are good scientific grounds for collaboration with relevant Universities, HRI also collaborates with complementary science programmes at BBSRC institutes. This collaboration can be sustained without the need for common sponsorship by BBSRC. Indeed we believe that the organisational groupings proposed by the Scrutiny Team, in which HRI would be sponsored by BBSRC, would only be justified if there was real scientific overlap between HRI and BBSRC institutes. We contend that there is no such overlap and therefore that no sound case has been made for a change in sponsorship on these grounds.

Within the sponsorship groupings proposed, with its extra layers of management, we believe that HRI's clear mission would be blurred, the key influence of the HRI Board would be reduced and unnecessary change

and uncertainty would be created both for the United Kingdom horticultural industry and HRI's staff. These would all contribute to HRI functioning less effectively than at present.

4. *HRI's Identity and Key Function*

In the four years since its establishment we believe that HRI as an entity has developed as an outstanding role model for the way in which science can be effectively managed across a wide range of research establishments and over a wide range of industries. In an ideal world, HRI should be left alone to get on with the job and to test its potential fully. Because it is providing the R&D technology for a sophisticated industry, we are strongly of the view that HRI needs to retain its identity and key functions. These key functions include:

— meeting the specific R&D needs of United Kingdom horticulture while operating in the international market-place,

— a broad science base ranging from basic science of relevance to horticulture (eg supported by the Science Budget), to applied R&D (eg supported by industry),

— maintaining and strengthening the excellence of our science and technology programmes,

— enhancing the existing strong links between individual research scientists and both industry and government customers,

— ensuring that the results of R&D are effectively transferred to the end-user,

— operating with a representative and commercially-aware Board of Directors.

MAFF has already successfully invested much time, effort and finance in ensuring that HRI has a focused remit and is running on efficient lines. We also recognise that, as an NDPB, HRI is already subject to a quinquennial review of its function (due in 1995) during which "Prior Options" will automatically be reconsidered. We acknowledge that such a review may mean that the *status quo* may not exist as a future option. However, within MAFF, key ministerial and policy customer objectives in horticulture continue to be coincident with those of HRI, ie in providing strategic R&D to improve industry competitiveness.

We contend that MAFF will continue to be the most logical sponsor for HRI's future development.

Memorandum from the Institution of Civil Engineers

With reference to the House of Lords' Select Committee on Science and Technology call for evidence, the Institution of Civil Engineers comments as follows using your paragraph numbers.

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2 & 3. The Efficiency Unit team has had just 90 or so days to investigate 53 establishments. It is doubtful if anything but a broad brush concept can have been formed in that time. Perhaps a "top down" approach to the Scrutiny would have given better information. Such an important national issue is surely worth more time and consideration.

4.(a) In general it is questionable that efficency will be aided. This, of course, does not mean that in particular circumstances efficiency levels cannot be improved.

(b) Building better links with industry is surely the most effective provision and utilisation of scientific expertise and advice.

(c) It believed that wealth creation and a better quality of life has always been an objective of these establishments.

5. It should be noted that few of these establishments have statutory duties in their right. Their role has generally been to provide independent and authoritative support for those with statutory duties. Typically, the operation of the BRE provides support for the Building Regulations and the proposals should not dilute such efforts.

6. It will always be possible to privatise, so certain aspects of the Research Establishments could proceed along that route. Where *independence and impartiality* from commercial interest is important, then clearly privatisation is not tenable. It must be remembered that such establishments like the TRL have a very high standing in the professional community. The County Surveyors have sought expert advice for many years. The use of this free service has enabled vital information to disseminate to the point of usage. Privatisation will destroy this facility by virtue of the fact that each piece of advice given will have to be charged. The normal consequence is that communication ceases with the resultant loss of up-to-date technology at the sharp end.

7. (a) *Nos. 3 & 4*

The ICE does not support transfer of PSREs to Universities; the ICE supports the establishment of closer formal links between them as this has many advantages:

(1) Many close links already exist.

(2) The PSRE is not confined to, or dependant upon, the whims of an individual institution—thus creating the type of competition that privatisation seeks, and maintaining the concept of impartiality. The result of transference to a University leaves the present situation as it is but with a different name.

(3) The multiplicity of links would give longer term stability especially if they exploit computer links/networks, etc.

(4) There would be less risk of high quality University researchers, with a contribution to make and who wished to work with PSREs, being isolated.

(5) The loss of autonomy will not lend itself to the quality of work with which professionals have become accustomed.

(b) & (c) *Nos. 10 & 38*
These proposals succeed only in introducing yet another layer of management, at a time when industry is shedding management vigorously.

8. Arrangements for cross-departmental and/or Department/Research Council collaboration have existed between organisations like BRE and TRL for many years. They should continue, but recognise that an element of plurality and competition is not altogether either wasteful of resources or unhealthy.

9. The ICE is not aware of any Treasury obstacles on privatisation or on selling services outside Government. Many PSREs have built up their external services without compromising either their authority, recognition or impartiality. The situation is more dependant on the willingness within a Government department to permit its REs to sell services. For example BRE has built up its non government income to £35 million per annum over the last five years without prejudice to its prime role of working for the DoE.

10. The Office of Science and Technology is not a Treasury limiting service and its ultimate role needs to be decided as an outcome of the review to encourage the provision of national science and technology expertise and facilities to benefit the community and industry.

11. (a) Over the last few years the cost of publications emanating from the REs has escalated beyond reason. The detrimental effect on the dissemination of information to industry has been noticeable and should be reversed.

(b) There requires to be a tripartite arrangement between Universities, REs and Industry. Up to the present the relationship has largely excluded industry. The encouragement of secondments from industry would provide commercial input towards projects aimed at wealth creation and enable better utilisation of many research facilities which will assist in the creation of more jobs.

Memorandum from the Marine Biological Association of the United Kingdom

Preamble

1. The Marine Biological Association of the United Kingdom (MBA), founded in 1884, is a private incorporated charity which acts as a learned society and runs a research laboratory. This laboratory began as an independent organisation obtaining funding from a variety of sources. The focus of the research at the MBA laboratory has always been directed towards fundamental research in marine biology. The work carried out under the auspices of the Association has been of great international importance and impact. In the early 1960s the Association's Laboratory became entirely funded by the Natural Environment Research Council (NERC) through a Grant in Aid.

2. In the 1970s the NERC established the Institute of Marine Environmental Research in Plymouth (IMER) which focused more closely on strategic research into the coastal environment. As a result of a House of Lords Select Committee report in 1986 the NERC and MBA entered into an agreement under which the IMER was combined with components of the MBA research programme to form the Plymouth Marine Laboratory (PML). The Association retained its own laboratory, funded in part through a Grant in Aid from NERC.

With this agreement the Association's laboratory returned to independent status. The NERC Grant in Aid, which contributes approximately one-third of the Association's income, provides salaries for several Fellowships which are renewable on open competition at the end of each five year period. All other support for the research at the Association's laboratory is funded by successful competition by MBA scientists in the open market. The Association is recognised by the Research Councils and other funding bodies (eg The Wellcome Trust) as an academic organisation.

3. Under the MBA/NERC Agreement, the Association agreed to lease part of its laboratory to NERC, retaining space for its own Fellows and visitors who wished to use the facilities for their research. In return for the use of the laboratory and the facilities owned by the Association (such as the library, ships, aquarium, electron microscopes), the NERC agreed to provide "Well Found Laboratory" support for the Association's scientists.

4. Through the shared Well Found Laboratory provision and facilities, the work of the Association's Laboratory is intimately linked with the NERC's Plymouth Marine Laboratory. Alterations in the way in which the NERC laboratory operates affect directly the ability of MBA scientists and visitors to carry out their research. The MBA continues to augment the Well Found Laboratory at PML from its own resources.

5. The Association's Laboratory now operates independently. The NERC Grant in Aid is awarded on the basis of quinquennial review by NERC. MBA Fellows apply for research grants from a variety of sources in open competition. Independent fellows, who obtain their own salary and research support from the Research Councils and the Wellcome Trust, contribute to the Well Found Laboratory. Short term visitors fund the costs of their own visits.

6. The Association's scientists have been highly successful in obtaining research support, but the future of the MBA Laboratory is intimately linked with the fate of PML through the Well Found Laboratory provision. Re-organisation and rationalisation of PML without due consideration of the consequences for the efficient, prestigious and highly successful MNA Laboratory would not be appropriate.

7. Answers to the specific questions posed by the Select Committee on Science and Technology are attached. Although the perspective of the Association reflects its links with the NERC, equal concern is felt for the impact of the Scrutiny on the other Research Councils from which the MBA also obtains funding.

Response to the Call for Evidence

Q1. *Has the case for conducting the Efficiency Unit's review been justified?*

No. The White Paper promised an "in depth" review of the options for ownership of the PSREs. This exercise was carried out in haste with less than one day being spent at each establishment. No attempt was made either to understand the scientific activities within the laboratories or to set the recommendations within a scientific strategy.

The purpose of the Review seems to have been to reorganise the management and structure of the Public Sector Research Establishments (PSREs) to obtain savings and where necessary improve efficiency. However, it would not be possible to assess overlap, duplication or efficiency without understanding function, mission and structure.

Q2. *Are you satisfied with the basis of the choice of the 53 establishments examined by the Scrutiny team? Should any of the 53 have been excluded, and should any others have been included?*

The basis for the choice of laboratories is unclear. It is difficult to understand why the MRC Laboratories were excluded from the Scrutiny. The relationship between basic, strategic and applied research in medical science closely parallels that in environmental science and the multi-disciplinary, team approach that characterises much of medical research has strong parallels in the environmental laboratories managed by NERC.

The omission of the Institute of Oceanographic Science Deacon Laboratory has not been satisfactorily explained. If rationalisation and the assessment of competition and overlap are at the core of the Scrutiny then this laboratory should have been included, irrespective of its pending transfer to the University of Southampton.

Q3. *Are you satisfied with the way that the review was conducted?*

No. The exercise was superficial, though extensive. Fifty-three establishments were visited, in most cases for less than 24 hours. No attempt was made to examine the scientific work that was going on or to set the establishments visited into context on a scientific basis. Interactions that were already in place were neither raised nor explored. In Plymouth, where a NERC Institute is linked closely to the MBA, an incorporated charity already operating along the lines preferred by Government, the team did not establish what the consequences would be for the private organisation. The approach to scientific mission, the strategy for tackling environmental problems, and the need for an integrated, interdisciplinary approach were treated only superficially.

No account was taken of the rationale underlying the establishment of PSREs. For example, NERC Institutes exist to provide impartial, long-term, large-scale interdisciplinary strategic knowledge about the environment. These Institutes are also the custodians of many United Kingdom and international environmental databases. There were fundamental omissions in the terms of reference of the Scrutiny Team. The concept of "public good" and the need for impartial advice was given insufficient emphases, and is difficult to evaluate in commercial terms.

Insufficient account was take of:

— the need for a *scientific* strategy to underpin the proper application of the skills and resources encompassed by the PSREs;

— the value of the work carried out by the PSREs for British science and for the United Kingdom economy;

— the need in many areas of environmental science for parallel approaches to be taken to the solution of complex problems.

Q4. *Will the porposals in the report:*

— *aid efficiency?*

No. For example, the basic rationale behind the existence of environmental PSREs, in addition to the academic, University-based approach to environmental problems was not addressed. "Efficient" environmental research depends upon the establishment within the PSREs of integrated interdisciplinary teams of skilled and experienced scientists working with a sound logistical base. To dismantle such structures in a piecemeal fashion (Recommendation 8) would minimise efficency and, in marine research, rob the University sector of its fieldwork focus. If there were grounds for improving efficiency, this should be achieved via a strategic assessment of aims and objectives within environmental priorities—and not on the basis of the rules of accountancy. The uncertainties introduced by the Scrutiny will be highly detrimental to the development of environmental science in the United Kingdom.

— *strengthen the effective provision of scientific expertise and advice?*

No. The concept of progressive and piecemeal privatisation, to be achieved by a continual bidding process (Recommendation 8) could result in the dismemberment of the Institutes, as viable projects are asset stripped in turn—to the detriment of the science overall.

While agreeing that very little "duplication" had been identified, the team suggested that there were areas of "significant overlap" (Summary, section 4). Such judgements cannot be made without an understanding of the scientific missions of the establishments. Yet it is on the basis of such statements that rationalisation recommendations are made.

— *contribute to wealth creation and to the quality of life?*

No. Both these outcomes of research depend on long term investment. Advances that can be applied to the commercial sector derive from long term investment across the spectrum, from basic research through to strategic research. There is a serious danger that *ad hoc* rationalisation and ill-considered moves towards Agencies and privatisation would jeopardise the continuity and integrity of the research base.

Q5. *How will the proposals in the report affect the statutory duties of the research establishments?*

No comment

Q6. *How suitable are the report's proposals for privatisation?*

Privatisation of research laboratories would lead to loss of expertise, fragmentation of aims and a diminution of long term investment. This is so in all areas of science, but particularly in marine research. The needs of the commercial sector require, inevitably, research directed at very specific questions, with outcomes that can be determined in the short term. The generation of knowledge and expertise that allows such questions to be posed and answered rests upon the bed rock of long term research, where the outcome cannot necessarily be predicted.

Such long term research is rarely funded by the commercial sector, for whom commercial pressures, requiring rapid solutions, mitigate against investment over long periods. To privatise laboratories whose mission is to provide the research that underpins the ability to solve questions of immediate urgency would, over time, remove the capacity to provide the very advice that industry needs. In the longer term, therefore, it would reduce the wealth creation and the contributions to the quality of life that currently devolve from such establishments.

Q7. *What are the advantages and disadvantages of the following proposals in the report?*

— *(Nos. 3 and 4) transfer of PRSEs to Universities or closer formal links between PSREs and Universities*

Unless the transfer of PSREs to the Universities is accompanied by an equivalent and full transfer of resources, this would simply move the laboratories to another precarious state of funding. Core resources are essential for good and efficient research. The experience of MBA scientists is salutary in this regard because although the costs of specific research projects can be obtained, core resources must be retained so that new projects can be carried out. These core resources have to be maintained over intervals when specific project funding is not available in order to maintain a base from which new projects spring. It is neither efficient nor cost effective to close and open core facilities in response to the short term needs of specific projects.

Closer formal links with the Universities should be encouraged because this would increase research opportunities and enhance the range of experience available to meet research needs. A variety of mechanisms is necessary to optimise interactions. For example, strong links are being developed between NERC PSREs and a wide range of Universities to tackle environmental problems. Transfer of each PSRE to a single University could restrict the contributions that these Laboratories can make to the overall research capability of the United Kingdom.

— (No. 10) the two models for organisational structures

Both models assume extensive "overlap" and the need to rationalise. Such decisions cannot be based on the superficial assessment of the science that formed the basis of the review.

Model 1. Ownership of All Marine Laboratories by the Scottish Office

A model that puts all marine work under the Scottish Office and non-marine environmental work under another implies that the two can be separated. This sets up a false division between terrestrial and marine environments just as we are beginning to tackle the crucial problems of the coastal zone. It also throws NERC and Fisheries Labs together thereby confusing environmental/fisheries, strategic/applied, policy/impartiality issues.

Model 2. Split of Ownership of Environmental Laboratories between Scotland and England/Wales

A purely administrative, political manoeuvre that makes a nonsense in marine environmental studies—neither seawater nor marine life know where the border lies!

— (No. 38) the Directors of Rationalisation

This proposal simply sets in place yet another tier of bureaucracy and is not warranted. Such a move would be expensive and further divert funds from the business of funding science. There should be no need to use management structures other than those that are already available. The financial benefits to be gained from the proposed rationalisations are not obvious and unlikely to cover the costs of Directors of Rationalisation and their teams. Substantial reorganisations are already under way in all the Research Councils that take into account not only the need to minimise costs but also the need to optimise effectiveness. The scrutiny proposals fail singly to address this second criterion.

Q8. *The report notes (paragraph 4.6) that rationalisation hitherto "has tended to take place on a departmental or individual Research Council basis" and suggests that this tendency be discontinued. How appropriate are cross-departmental and/or Department/Research Council rationalisations?*

Given that each Research Council and Department has its own mission, there seems no reason why rationalisation should not take place *within* organisations. Rationalisation across borders between the Research Councils and the Departments brings its own difficulties and in the absence of any good case for it, is to be avoided.

Q9. *The Report notes (paragraph 3.1.6) that Treasury guidelines place obstacles in the way of privatisation and limit the scope for selling services outside Government. To what extent is this the case? Will the situation alter if PSREs are transferred to or linked with Universities? Should the guidelines be altered, and, if so, how?*

The concept of "privatisation" adopted by the report includes transfer of the whole or a part of a PSRE to the University sector. This would do nothing to improve the sale of services and would result in the dismantling of a structure that acts very effectively both in providing services and in performing the role of impartial advisor acting for the public good. Rather than take apart a working system and putting the fragments into competition with each other, the emphasis should be on the development of working links and collaborative approaches to major problems. In this way the most effective use could be made of the skills and expertise available.

Q10. *What should be the role of the Office of Science and Technology in the light of the review?*

The role of the Office of Science and Technology should be to ensure that the United Kingdom maintains the ability to carry out the basic and strategic research that is essential if future opportunities are to be realised. Its role should not be confused with that of the commercial sector.

The superficiality of the review has negated any benefits that might have flowed from it. The Research Councils review their portfolios constantly, initiating change, new initiatives and rationalisation as and when necessary. They have proved remarkably capable of dealing effectively with constant changes of direction and short term decision making by Government Departments. The most effective rationalisation of research would result if OST, through the Research Councils, were allowed to complete its current detailed and scientifically-based review of its research portfolio and of the structure of its organisation.

Q11. *Are there any other proposals which you feel the review should have made?*

The majority of the PSREs considered under this scrutiny have already been subjected to substantial reorganisation and rationalisation over the past five years. Another round would only serve to diminish the United Kingdom's ability to compete internationally in all sectors. The best outcome for the future of British science would be for this review and its proposals to be buried without further ado.

Memorandum from the Medical Research Council

Introduction

This submission provides background information for the Committee on current policies and practice that have a bearing on the terms of reference of the scrutiny.

Whilst the Council's submission makes no comment on specific recommendations in the scrutiny report, the Council would be happy to let the Committee have its views on these after the conclusion of the public consultation exercise.

The Role of MRC Institutes and Units

It may help the Committee to begin by setting out why the Council considers investment in institutes and units important in helping it fulfil its mission.

We believe in retaining a diversity of forms of research so providing a diversity of research environments. Our own institutes and units create a special research culture arising from the whole-time, long-term commitment to research which complements grant-supported work in Universities. Through our institutes and units we are able to provide a research capability that:

— takes account of Council strategy which in turn takes account of the needs of user communities, eg through operation of the Concordats;

— can respond quickly to national needs;

— can provide test beds and exemplars for innovations and best practice in research management (eg training and career development opportunities and structures, technology transfer);

— undertakes a national advisory role for government/industry, eg in nutrition.

Management of Units

Each institute and unit undergoes a major high level scrutiny by Council every five years ("quinquennial reviews"). These reviews:

— evaluate the quality and value-for-money of the scientific work undertaken and of the proposals for future work

— revisit the question of whether an MRC unit/institute continues to be the most appropriate form of support

— allow consideration of transfers to University status when the case for a unit is no longer justified and supporting through grants to Universities would be more appropriate.

They are conducted by the relevant research board. The research boards comprise members from academia, the public sector (eg Health Department representatives), charities and industry. Members bring a range of scientific expertise and research experience in one or more areas within the board's remit.

Proposals for new or continued unit support are considered alongside and in competition with proposals from the University sector. All proposals are judged by the board against the same fundamental criteria (scientific quality; contribution to strategy including exploitability and applicability; value for money). The claims for work in the MRC's research institutes and units are weighed against claims for grant support and *vice versa*. All proposals are banded and ranked by the research board and summary recommendations are put to Council via its Strategy Sub-Committee.

The competition is fierce. Reviews by boards of MRC units aim to yield—on average—sums for recycling of about £3 million per annum or about 20 per cent of current costs of work reviewed in that year. This is to provide some of the funds necessary for redeployment to new work whether in MRC units or in Universities. The target has been met in the last three years, ie since it was first set by the Council.

Implementing Review Findings

As a result of the review process outlined above the Council has closed whole units (19 over the last 10 years), terminated individual scientific programmes, restructured and transferred units. This has permitted resources to be recycled to other programmes within existing institutes and units (12 new units opened in the past 10 years) and to fund grant-supported work in the Universities.

The most notable example of transfers following reviews has been the decision to close the Clinical Research Centre at Northwick Park (an institute of some 400 staff and with a budget of £13.8 million in 1991-92) and the transfer of the funds to the new Clinical Sciences Centre at the Royal Postgraduate Medical School and to six university based regional centres, forming part of the Council's Clinical Research Initiative and funded through grant support. Individuals and teams from the Clinical Research Centre have transferred to Universities and medical schools to pursue programmes of research within the Initiative.

Unit reviews have also led to the development of new university based configurations, examples being the transfer of the Toxicology Unit to form part of the Interdisciplinary Research Centre in Mechanisms of Human Toxicity at Leicester University and the configurations which will result from decisions to close the Social and Applied Psychology Unit in Sheffield and the Social and Community Psychiatry Unit at the Institute of Psychiatry.

The MRC will continue to make examination of the potential for transfer an explicit part of the quinquennial review process. This will be consistent with the Council's existing target of increasing the proportion of resources directed to, or closely associated with, Universities from 70 per cent to 80 per cent over the period 1990-95.

Memorandum from the National Farmers Union of England and Wales

Farmers and growers in England and Wales have a clear interest in the cost-effective operation of government-funded research and development in agriculture and horticulture and on the scientific and technology services which develop and disseminate new knowledge. The Nation Farmers Union (NFU) accepts, therefore, that the multi-departmental scrutiny of public sector research establishments can play a useful role in ensuring improvements and rationalisation.

Nevertheless, the NFU does have some reservations over the coverage of the scrutiny and over some of its conclusions affecting agricultural and horticultural research. We would have preferred the scrutiny to have covered all the government's R&D programmes in our sector including Universities and agricultural colleges. Links between PSREs and these institutions are already strong and both have a role to play in the future United Kingdom R&D programme.

We concur with the scrutiny team's conclusions over the prospects for privatisations in the agricultural and horticultural sectors. Given the changes already made within ADAS, we accept that its privatisation as a whole should be completed as quickly as possible. We strongly share the scrutiny team's conclusion that no other privatisation of research establishments should take place in the agriculture and horticulture sector.

Although we believe that the PSREs in the sectors of concern to us should remain under government control, we are concerned over the implications of the scrutiny team's suggestions on non-government activities made in paragraph 7.16 of their report. We see very considerable advantages in PSREs, and especially the research council institutes, being freed from over-restrictive Treasury controls and enabled to secure funding from other sources. More joint funding will improve co-ordination within the United Kingom and will provide an important element of cross-border funding which can make it easier to attract European Union funding. The NFU believes that the increased funding of PSREs from external sources over recent years has been of great advantage to the overall R&D effort in agriculture and horticulture and that no artificial obstacles should be placed in the development of such funding. External funding has particular advantages in ensuring better technology interaction and transfer.

The NFU agrees that links between PSREs and Universities are important and notes that many already exist in the agriculture and horticulture sector. We are concerned, however, over the implications contained in the recommendations that there should be a routine examination of the potential to transfer PSREs to Universities. Such transfers would involve short term disruption and, in the longer term, difficult questions over funding, capital investment and staffing issues. They would detract from the efficient operation of the overall research and development programme in agriculture and horticulture.

The Scrutiny Team's conclusions on organisational structures involve several alternatives. The NFU is not aware that any great potential for savings exists in the agricultural and horticultural R&D structure given the very significant changes which have taken place over the past decade. Indeed, BBSRC research institutes already have one of the lowest level of overhead costs in the research councils and further cuts could call into question the effective management and coordination of agricultural and horticultural research. We would, therefore, view Option 1 as having the greatest merit.

We have, however, a particular concern over the position of Horticulture Research International (HRI). HRI has established itself as a centre of excellence for research in its field, has already undergone much restructuring and has formed good relations with growers. It should be left substantial operational independence.

The NFU supports fully the recommendation that the scope for enhanced customer-side co-ordination should be reviewed. The Priorities Board for Food and Agriculture R&D has in the past provided a useful platform for customer co-ordination and the NFU would welcome the establishment of a similar body.

The NFU again supports the steps proposed to commercialise the customer-contractor relationship. We urge that decisions on the use of PSREs or other suppliers should be taken only on the base that all are quoting on the same full economic cost base. Equally, we are concerned over the impact of cuts in government funding of agricultural and horticultural R&D on PSREs. These can take place at short notice and can involve heavy redundancy costs falling on the science budget. The NFU suggests that MAFF and research institutes should base their arrangements on three-year contracts to ameliorate this problem. Already, short term contracts represent too high a proportion of the United Kingdom's research and development programme for agriculture and horticulture. The need for flexibility must not outweigh the need for efficient operation.

The NFU has some concerns over this report, and particularly over its lack of market focus. Nevertheless we accept many of its conclusions and urge that they be acted upon speedily. Continuing uncertainty can only do harm to agricultural and horticultural research and to the United Kingdom farming industry as a whole. A particular example of this is the long overdue privatisation of ADAS.

Memorandum from the Nottingham Trent University

Recommendation 27 states that Research Councils *declare themselves open to applications from all competent suppliers, including GREs, ... independent research associations and the commercial as well as the academic private sector.*

The Nottingham Trent University (TNTU) believes that this change would have a serious and damaging effect on research in Higher Education Institutions (HEIs). HEI research is largely conducted by graduate students and young post-doctoral fellows. The important outcomes are thus not only the research *per se*, but the addition to the nation's supply of trained manpower. Training is an important aspect of almost all of the research conducted in HEIs, and this distinguishes them from the other potential providers of research identified in Recommendation 27. TNTU believes that it will be impossible to create a level playing field, which would be necessary for the equitable award of RC Grants to the full range of suggested providers, without significant damage to the training function of HEIs. That would not be in the national interest.

Memorandum from the Royal Academy of Engineering

The Royal Academy of Engineering is the United Kingdom's independent self-governing body of professional engineers of all disciplines. The Academy's objectives are the pursuit, encouragement and maintenance of excellence in the whole field of engineering in order to promote the advancement of the science, art and practice of engineering for the benefit of the public. By recognising Britain's most distinguished engineers the Academy aims to take advantage of their wealth of engineering knowledge and experience. The interdisciplinary character of the Academy's membership provides a unique breadth of engineering experience with which to further all forms of engineering.

In order to overcome traditional barriers, the Academy promotes a multi-disciplinary approach to demonstrate the interdependence of different areas of expertise in the effective use of modern technology and engineering. Emphasis is also placed on the importance of well-informed communication between engineers, government, research establishments, industry, public services and academia.

This evidence represents a collation of personal views from Fellows of the Royal Academy of Engineering. It cannot reflect the views of all contributing Fellows nor those of the Academy as a whole. It may, however, be regarded as representative.

Q1. *Has the case for conducting the Efficiency Unit's review been justified?*

1.1 Fellows have expressed contrary views on whether the Efficiency Unit's Review has been justified but this is not to say that there was no case for the Review. Periodic reviews of the status and operation of PSREs are certainly justified as a matter of general good practice. Other factors which contribute to the case for a review include: the Government's privatisation and "Next Steps" agency policy; a need to cut public expenditure; a policy to reduce the public sector; a drive for financial efficiency generally; the change in public sector research priorities as signalled by the OST White Paper "Realising our Potential"; and a large number of civil research establishments with areas of overlap between some of them. Hence, whereas the report presents little evidence in terms of figures for potential savings and improvements in efficiency a case for their examination nevertheless exists. The penalties of privatisation are not examined and the value of research work not mentioned but Fellows recognise the case for rationalisation.

1.2 The Terms of Reference and the news release (OPSS 16/94, 2 February 1994) accompanying the launch of this particular review indicate a strongly doctrinaire approach on the part of the Government. The impression given is that the scrutiny team was being pointed towards privatisation as the preferred option wherever possible, with other options only being acceptable where privatisation is not feasible. There is also a strong emphasis on the idea of the PSREs being seen as businesses operating in an open market, providing services defined by customer requirements in a manner analogous to the operation of retail, manufacturing and other service markets. No indication is given that Government recognises:

(a) that the nature of research work is rather different to the provision of goods and services generally, in that it involves a higher degree of uncertainty regarding its outcome, often involves long timescales during which progress may fluctuate considerably, and in the case of more advanced and speculative work, may be ahead of "customer requirement";

(b) in the past, the value to government of receiving objective and disinterested advice on scientific and technical issues from public sector organisations not dependent on "customer sentiment" or other "market" considerations, has been very considerable.

Q3. *Are you satisfied with the basis of the choice of the 53 establishments examined by the Scrutiny Team? Should any of the 53 have been excluded, and should any others have been included?*

2.1 The choice of establishments is generally acceptable. The inclusion of the Metropolitan Police Forensic Science Laboratory in the recommendations was noted with some surprise as it was not included in the scrutiny. In the circumstances of the recent formation of the DRA the omission of defence establishments can be understood. Inclusion of DRA in the scrutiny as a comparator has been suggested since it has already gone part of the way towards private control. Its growing inability to conduct and lead nationally important research serves as a warning not to rush headlong in that direction.

Q3. *Are you satisfied with the way that the review was conducted?*

3.1 Responses of Fellows to this question vary from positive, albeit with reference to a bland report but providing a reasonable basis for consultation and policy formulation, to the negative stating that the review was blinkered, concentrated on short-term issues in the current industrial situation, and appeared to have been undertaken against preconceived ideas and a doctrinaire policy.

3.2 It is difficult to form a clear view without knowing more about the experience and qualifications of the members of the scrutiny team. However, the following points are of concern:

(a) The Efficiency Scrutiny Guide appears to be a quite general document covering efficiency scrutinies of all kinds of government organisations. As such, it shows no recognition of the special nature of the research process, the close collaboration with industry and the formulation of scientific and technical advice to government referred to in the response to Q1.

(b) The summary of the Scrutiny Report suggests that the Scrutiny Team embraced the general approach of the Government, referred to under Q1, very readily. Paragraph 1 of the Summary refers to "... the Government's desire ... to extend and accelerate the operation of market forces, to minimise the costs associated with public sector capabilities ..., etc.".

Q4. *Will the proposals in the report:*
— aid efficiency?
— strengthen the effective provision of scientific expertise and advice?
— contribute to wealth creation and to the quality of life?

4.1 All three aspects of this question have the possibility of being realised to some extent if the proposals are implemented but much depends on the actual process of implementation and the abilities of the people involved. The emphasis on ownership and organisation means that the last two parts of this three part question have not been addressed by the Review. Hence any help from the recommendations would be coincidental. The scope for rationalisation is recognised, particularly in the light of the number of smaller units, with a consequential reduction in overheads and increased synergy. However, the Review has been conducted in a negative manner with no strategic considerations and the overall result could weaken the United Kingom science base. Coupled with the lack of United Kingdom industrial investment in R&D this could further reduce the national wealth creation capability. It is by no means certain that the step to privatisation will further enhance the performance of these establishments or improve cost effectiveness. The report could have recognised the excellent work being done at the laboratories and to have recommended expansion for at least two out of the 50. It was disappointing to see none. It appears that, apart from hiving off the larger establishments, the recommendations are mainly for numerous further investigations.

4.2 If "efficiency" is equated solely with the saving of budgets, the intelligent implementation of the proposals, resulting in a more unified structure together with the introduction of modern accounting practices, is likely to aid efficiency. Alternatively, efficiency could be judged by comparison with foreign

laboratories attempting the same task, but this was not done. Returning to the report's mechanistic view of efficiency, (defined outputs delivered at minimum cost), such a measure may fail to take into account the degree of excellence achieved in research work. For example, it is relatively easy to define a requirement for, say, making accurate measurements of the properties of a number of new materials. With good planning and financial control, this kind of work can be done with high "efficiency". It is much more difficult to bring about a situation where a laboratory invents important new materials, and carries their development through successfully to the point where the materials industry can begin manufacture of the material. Defining the requirement is more difficult, and the invention and related research depends critically on the excellence and motivation of the scientific staff. A good example is the invention and development of carbon fibre composite material by staff at the Royal Aircraft Establishment in the 1960s, which involved a great deal of work characterised by "technology push" rather than "customer pull". In general, conventional efficiency measures are more easily defined and met in work whose outcome is relatively foreseeable and which is therefore usually the subject of "customer pull". More speculative, high-risk research which, if it succeeds, may have far-reaching benefits not perceived at the outset by "customers" is more a matter of "technology push", and the crucial need is for imagination, insight and adaptation as the work proceeds, rather than close accounting and "efficiency".

4.3 The report's proposals aim to reduce costs without regard for the quality of the science and the need for government to have unbiased sources of expertise. The relationship between ownership and quality of service is not examined and, on a broad front, the changes will weaken the effective provision of such scientific expertise and advice. Extension of the customer/contractor principles and a free market in research will improve the relevance of programmes and the effectiveness of such advice. Also, it is important to bear in mind that the PSREs have a history of deep access to industry's laboratories because they have been perceived as supportive organisations, working in the national interest. A major flaw in the currently fashionable Government drive towards "market competition" is that if the PSREs become perceived as commercial adversaries by industry, the interchange of information and ideas, so valuable nationally in the past, will be inhibited or stopped. The PSREs (or their privatised successors) may operate "efficiently" in the output/input sense as defined above, but very much sub-optimally in terms of their contribution to the nation.

4.4 The report does not address changes directly aimed at wealth creation or quality of life but it is thought that its proposals could detract from them. In considering this issue the whole spectrum of scientific and technical work is significant—ie ranging from meticulous but essentially routine data-gathering, through work with a higher content of uncertainty, to the radical advances such as carbon fibre, the transistor, etc. But it should be noted that success at the latter end of the spectrum is a vital requirement if "technology plateaux" are to be avoided. Radical advances benefit consumers and can create new industries. In chasing accountability and efficiency the intellectual freedom needed to produce radical advances must not be stifled.

Q5. *How will the proposals in the report affect the statutory duties of the research establishments?*

5.1 The effect will be to destroy the present structure and open it to the market. It is likely that the ability of the research establishments to evolve new techniques and skills (eg standards work at NPL) will be reduced as a result of implementation of the proposals in the report. The extent of any reduction will be a function of proposal implementation. Efficiency proposals will need to be implemented and subsequently managed to ensure that statutory duties are performed to the continuing satisfaction of all concerned. Those establishments performing work of national importance should remain independent bodies not biased by commercial interest nor deflected from their core research.

5.2 The appropriateness of industry undertaking statutory duties needs consideration. These duties must be carried out with a certain level of authority and independence which is respected professionally, commercially and in some cases by the general public. It cannot be claimed that statutory duties, falling on a government department, can only be delivered from "in house" resources. It is possible to deliver statutory duties from the public or private sector. In a customer/contractor regime, the customer must ensure that the capabilities for delivering statutory duties are maintained. Presumably, there would be a binding obligation on the owners of these establishments to maintain their statutory duties and core research missions.

Q6. *How suitable are the report's proposals for privatisation?*

6.1 The report's proposals are mechanistic and lack any strategic considerations. There is no indication of what form of privatisation is proposed for the engineering based establishments, on which the Royal Academy of Engineering would wish to be consulted. Privatisation cannot be ruled out at this time since much depends on the details yet to be laid down; there may be examples where a programme area is best transferred to the private sector (including Universities). However, no case is made and, in general, privatisation will be inappropriate and the cost to the tax-payer would seem likely to remain the same. The definition of Universities as private sector bodies and the enthusiasm to merge establishments with Universities suggest a hidden agenda, to maximise privatisation.

6.2 It is worth noting that once an organisation is privatised government essentially loses control of both its operation and its policies. In considering any organisation for privatisation, the Government should therefore weigh the possible consequences of this loss of control against the attractions of divesting itself of responsibility for owning and running the organisation. There may be issues relating to the public interest, such as health and safety where from time to time government may find it a great advantage to be able to direct an organisation under its control to pursue certain lines of enquiry, or make certain urgent assessments, free from the influence of the market. A privatised organisation will not necessarily lay aside other work to concentrate on an urgent government priority matter, because of its obligations to commercial clients; if it lets these latter down, its reputation and thus future success in gaining business could be damaged.

6.3 A way of avoiding the loss of control referred to above is for an organisation to become a Government Agency, with obligations to act on behalf of government when required but with greater commercial freedom to exploit its capabilities more widely then if under direct control by a government department. For example, an Agency can be given Trading Fund status, so allowing greater freedom financially than is available when operating under the parliamentary vote system. With a Government Agency form of organisation, the responsibility of responding to government requirements as needed can be written into the Framework Document of the Agency, so that commercial clients know from the outset that on (generally rare) occasions, their work might have to be interrupted. Experience with Agencies suggests that clients generally accept this risk readily enough. With a privatised organisation, on the other hand, this understanding is absent and the organisation must always consider the possible adverse reactions of its commercial clients.

6.4 Recommendation 9 of the report, that privatisation decisions should be treated by government departments "in a structured way", in the light of "the ultimate long-term good for a particular establishment ..." is supported. This recommendation should serve as a reminder that the implications of privatisation should be considered in a strategic manner and decisions not taken simply on the basis of short-term pressures—eg to gain money by selling off the organisation, or to make a visible reduction in the number of civil servants employed by a department.

Q7. *What are the advantages and disadvantages of the following proposals in the report?*

— *(Nos. 3 and 4)* *transfer of PSREs to Universities or closer formal links between PSREs and Universities;*

— *(No. 10)* *the two models for organisational structures;*

— *(No. 38)* *the Directors of Rationalisation*

7.1 PSREs and Universities are bodies with essentially different functions and it is not clear that in all cases transfer would be beneficial. The proposal is seen as attractive where work can be packaged in research contracts and also for some subjects, eg medicine but depends on changes to University funding and structures. Transfer should be welcomed where Universities have a proven track record in sustained and successful activity relevant to the future development needs of PSREs, ie these linkages should be encouraged to grow naturally rather than being imposed. Care must be taken not to shoehorn expertise into groups for expediency; grouping should follow the work not the geography. What remains in doubt is whether the present technology transfer role of many PSREs could be carried out by Universities. Another concern is that not all Universities are suited to the time, money and technical target disciplines of applied research. Consequently, they will not provide the continuity of broadly based excellence necessary for most of the work carried out in the PSREs.

7.2 Consideration of the organisational structure is complex and requires careful thought. An initial reaction to the two models proposed is that Model 1, the creation of four new "market sector" oriented organisational groupings, seems logical but the appropriateness of suggested parenting is less clear. A unified structure of sectors reporting to the OST will provide benefits of scale to programmes, to asset management and to the reduction of overheads. Also, it will provide a good basis for "arms-length" trading, in research, in an open market.

7.3 Rationalisation of research functions in isolation tends to become arbitrary cost cutting. The option of appointing Directors of Rationalisation has little merit especially when compared with a revision of the organisational structures. The only circumstance where the appointment of Directors of Rationalisation is supported is when there is to be no immediate structural change and the support of all departments and organisations is forthcoming.

Q8. *The report notes (paragraph 4.6) that rationalisation hitherto "has tended to take place on a departmental or individual research council basis" and suggests that this tendency be discontinued. How appropriate are cross-departmental and/or department/research council rationalisations?*

8.1 There is much merit, in principle, in rationalisation which crosses government departmental boundaries. Where research activities overlap but are independently managed, any required rationalisation measures should be considered together if possible. One of the factors which weakens United Kingdom activities in many areas is the failure of departments to work closely together in a long-term strategic

manner. (This arises because departments compete for resources; a prime topical example is the current "spending round" where Ministers successively argue their cases with Treasury Ministers.) If cross-department rationalisation is to yield its full potential benefit, it will be essential for those departments involved in taking responsibility for a rationalised establishment to make long-term, co-ordinated commitments of support. Commitments of at least five years are necessary to provide a stable planning framework. If such long-term, strategic commitments are not part of the deal, the result could be a serious loss of stability due to uncertainties regarding the continuing contributions and support of the partner departments—quite possibly to the extent that all advantage of cross-department rationalisation is lost.

8.2 Cross-departmental rationalisation will be very difficult; hence the support for a new unified structure (Q7.). However, the potential benefits from cross-departmental rationalisations are very considerable, and their practicability should therefore be studied in detail. They should not be launched until it is entirely clear that long-term co-ordinated commitments by the partner "owners" will really be forthcoming.

8.3 The same arguments apply in the case of department/research council rationalisations. These may be more difficult to arrange successfully, due to the different planning and future commitment procedures applying to departments and research councils.

Q9. *The report notes (paragraph 3.16) that Treasury guidelines place obstacles in the way of privatisation and limit the scope for selling services outside Government. To what extent is this the case? Will the situation alter if PSREs are transferred to or linked with Universities. Should the guidelines be altered, and, if so, how?*

9.1 Support from Fellows has been expressed for the Treasury guidelines except where they demand too high a return on overheads. Clearly, marginal cost trading must be controlled in public bodies. Increased trading freedom is the main advantage of operating in a trading fund regime. For total trading freedom, privatisation is the natural regime which should be encouraged, if this is the over-riding aim. PSREs have problems in operating commercially because of their general inability to carry balances over into the new financial year and have no concept of work in progress.

Q10. *What should be the role of the Office of Science and Technology in the light of the review?*

10.1 OST should have a central role particularly in light of their responsibilities for "Technology Foresight" and the "Forward Look". It should continue to develop overall views on technical policy and champion the value of research as a balance to the Treasury's cost-cutting attitude. OST should become the "Owner" of most of the establishments studied and be responsible for implementing the recommendations of the scrutiny. However, it must not be forgotten that whatever role is gained by OST it will be of little use without consensus with other government departments such as the Treasury and the DTI.

Q11. *Are there any other proposals which you feel the review should have made?*

11.1 It would have been timely and helpful if there was some consideration of improving the relevance to wealth creation and the quality of life, and the balance between them.

11.2 Insufficient attention is given to staff leadership and development necessary to achieve success in the implementation of proposals. This is likely to require considerable investment in training, particularly in the field of management and finance.

11.3 The review makes no reference to the idea of allocating a proportion of a PSRE's funding for work of a discretionary nature. Too much is made of the "ideal of commercialism ...". An over-zealous application of the Rothschild "customer/contractor" principle, whereby the customer specifies all work, can be a major threat to the creativity of research institutions. Speculative, high-risk research on radical new possibilities will often be ahead of customer demand, and there needs to be provision for the most creative minds in research institutions to follow up their own hunches. The Rothschild report (Cm 4814, November 1971) supported the allocation of around 10 per cent of funding for such purposes to meet this need generally, though the appropriate percentage could vary with the field of work and the nature of the establishment. If it is felt essential to include this "blue-sky" allocation under a customer/contractor heading, then it could be done by the major customers for the work of the institution "requiring" such an element of speculative work to be done, as part of their general commitment to exploring future possibilities. In practical terms, this would mean adding a "levy" to defined expenditure to provide the resource for discretionary work. It is vital that government should appreciate that, without some provision for the conduct of a proportion of this highly speculative work, the very best scientific individuals will no longer be attracted to work in these nationally-important establishments—with serious loss to the country far outweighing any gains in conventional "efficiency" measures achieved by the recommendations of the scrutiny team.

Memorandum from the Save British Science Society

EXECUTIVE SUMMARY

1. Privatisation

1. The Public Sector Research Establishments (PSREs) form a vital part of the national resource in science and technology. The Government Research Establishments (GREs) have particular responsibilities to provide Government with authoritative advice on a wide range of scientific and technological issues of great importance. This advice must be unquestionably independent, and publicly perceived to be so.

2. The GREs can also play a much needed role in bridging the gap at the interface between the long-term research of the science base and its applications in industry, assisting in technology transfer and diffusion of knowledge, especially to small enterprises.

3. It is remarkable that this review by the Government's Efficiency Unit gives little or no thought to the kind of management structures which can best ensure the highest quality and effectiveness in the way these functions and responsibilities are carried out. Nor is there any attempt to learn from the ways other governments manage their equivalent resources. The only consideration appears to be the reduction of expenditure.

4. Serious reservations on the possible outcome of the Efficiency Unit Scrutiny have been expressed in our "Preliminary Comments" to the Committee (26 May 1994), where we also recorded our strongest endorsement of the views of the Royal Society (16 March 1994). We are relieved to find the report adds only one new PSRE to the list for privatisation. But we remain deeply concerned about many other aspects of the report.

5. In particular, the continuing uncertainty over the future status of many PSREs is intolerable and a cause of damaging loss of morale. *A decision on which shall remain in the public sector or be prepared for privatisation must be made without delay.*

2. The Management of PSREs

6. Twenty years of experience has demonstrated the failure of the Rothschild "customer-contractor principle" in the GRE sector, especially regarding the support of long- and medium-term programmes of "core" research. Application of an extension of this "principle" to a "commercialisation" of Government funding in which an enlarged community of GREs, research council laboratories, Universities, research associations, and industry will compete for a share of the already grossly inadequate research council budget is misconceived and capable of causing lasting damage to the whole science and engineering research base.

(a) The customer-contractor dichotomy will frequently ensure that those best able to judge competence and "value for money", especially in the case of long- and medium-term research, are excluded from doing so. There may be a place for this mechanism in the case of well-defined applications—specific research and development; but in the PSRE and science base context other considerations often apply making collaboration preferable to competition.

(b) Attempts to form a theoretical "level playing field" to allow "fair competition" between institutions and organisations with quite different missions are inappropriate and likely to create damaging distortions: a further shift to short-term projects; covert subsidy to industry; instability in funding for long-term academic research and further weakening of the link between teaching and research; the eventual demise of the "Dual Support" mechanism and an end to the possibility of local initiatives in research.

(c) The considerable transaction costs—ignored by the report—will reduce the funds available for research.

(d) This additional competition for scarce funds (survival) will raise new barriers to the unhindered exchange of information within the science base and with the international research network, and at the interface between the science base and industry—where every effort should be made to facilitate transfer.

3. Overlap

7. In the consideration of possible mergers of PSREs with apparently overlapping missions scientific effectiveness should be dominant. The advance of knowledge often benefits from the existence of independent lines of research, approaching from different directions.

4. "Privatisation" by Universities

8. There are good reasons of symbiosis and synergy for the closer association of universities and appropriate PSREs—especially those involved in long-term, basic research. But universities should beware of taking over responsibility for institutions which would not be considered viable by the private sector because of their dependence on unreliable government funding.

5. Practice in Other Countries

9. A brief scan of practice in a few other countries shows an emphasis on strong incentives for collaboration, especially between national research laboratories and industry, in which governments provide substantial matching funds. No equivalent of "privatisation" has been found.

6. A Management Solution

10. In contrast with the Efficiency Unit's unquestioning faith in the applicability of "competitive market" concepts to the management and funding of the PSREs and other elements of the science and engineering research base, we emphasise the need for strong incentives for collaboration and the unhindered exchange of information, especially across the interface with industry.

11. It is especially important to stimulate and assist collaboration with industry in well-focused applications-specific research and development, an area where GREs have a particular competence and could have a Fraunhofer-like role.

12. There is a need to establish a management structure which can ensure that:

(a) there is the necessary stability in funding for efficient and effective performance of long-term basic and strategic research;

(b) there is a degree of effective co-ordination in the research programmes of the GREs;

(c) the objectives and quality of research and development programmes are regularly subject to external monitoring and peer review;

(d) the medium- to long-term research programmes of the GREs fit well into the overall pattern of research carried out in the research councils and universities; ie that they form an effective part of the science and engineering research base;

(e) application-specific research and technological development is well-focused through close interaction with end-users—in Departments, industry, or elsewhere;

(f) there is the means of carrying through the "rationalisation" of establishments which is necessary from time to time.

13. We propose that all GREs are brought into the control of a much-strengthened OST, together with transfer of all the associated operating funds including the base, or "core", programmes of research. The Ministry of Defence (MoD) research establishments and those of the Department of Trade and Industry (DTI) should be included in the transfer.

14. Within the OST, effective collaborative links could be established between the GREs and the rest of the research base, including the universities. Coherence in the research programmes could be ensured and an extension of mechanisms already in place would provide programme review. Building on the experience of the CASE, LINK and other schemes, an expanded and better-funded set of incentives for collaborative applied research with industry involving the universities and PSREs could be established. Rationalisations could be carried out without the present cross-Departmental difficulties, following the example set in recent years by the AFRC. Departments would remain responsible for commissioning, and funding, applied research specific to their needs from the GREs managed by the OST, or elsewhere.

15. The OST would thus carry the major responsibilities in Government for forming science and technology policy—drawing on external advice (which should be published)—and for funding the medium-to long-term basic and strategic research carried out by the GREs and the research councils. It would then have a role more like that of the Science and Technology Ministries in France and Germany, and so would need a stong, well-supported team of high quality staff with experience of research and its management at senior levels.

16. A precondition for restoring the health and vigour of the science and engineering base, including the GREs with their important role in medium-term research and technology transfer, is the reversal of the steep decline of government funding of civil science. From now on, all sums realised by reductions in expenditure on defence R&D should be transferred to the OST for the support of civil science.

* * * * *

1. Privatisation

17. Public Sector Research Establishments (PSREs) form a vital part of the national resource in science and engineering. Those with links to specific departments of government (Government Research Establishments (GREs)) are required to provide advice and perform research in support of their Department in carrying out its responsibilities. To underpin this function effectively and to attract research scientists and engineers of high calibre into their service, the GREs must have a core programme of strategic research in their field; this will allow efficient communication and transfer of information between GREs and other sectors of the science base, provide a broad base of knowledge and experience available to cope with unexpected situations (eg BSE), and ensure that the advice given carries the necessary, independent authority.

18. Lacking such advice, the Government should not believe itself able to act as an informed, competent customer when it enters the market place to seek related services from private industry: *caveat emptor*.

19. In a world of rapid change and in increasing technical complexity, it is essential for government to have access to up-to-date advice based on direct knowledge and experience which is *unquestionably disinterested and publicly perceived to be so*. A prime responsibility of Government, relying upon the GREs, is the authorisation and monitoring of standards: in meteorology, the environment and effects of pollution, health and safety regulations, forensic technology, etc.; here the independence of the advice carrying the authority of Government is crucial, especially in the context of international agreements.

20. Within the overall framework of the national science and engineering research base, the PSREs can, and do, help to bridge the gap between the long-term research of the academic sector and the more short-term application-oriented needs of industry assisting technology transfer and diffusion. This "medium-term" strategic and applied research is an area of particular weakness in the national portfolio.

21. Effectively used, the GREs can be an important route for technology transfer, especially for small enterprises with little or no capacity for their own research and technical development—often unable to be effective "customers" for research. ADAS has achieved great success in the agricultural sector, helping to make British farmers among the most efficient in Europe; a model that might be copied to the benefit of small enterprises in other areas of the private sector.[1]

22. In any review of the management structures and funding of PSREs, the effective performance of these responsibilities and functions should have been the paramount consideration.

23. The report is also remarkable for the absence of any attempt to look outside Britain, to see how the governments of other nations meet the same responsibilities and use the equivalent resources for the public benefit.

24. We have expressed many of our reservations on the possible outcome of the Efficiency Unit's scrutiny of the PSREs in our "Preliminary Comments" to the Committee (26 May 1994), where we also recorded our strong endorsement of the Royal Society's views (16 March 1994). It is therefore some relief to find that the report does not recommend the wholesale "early privatisation" that appeared to be the Government's wish. Indeed, the fact that a clear case is made for only one new privatisation (ADAS) out of the 48 PSREs selected and open for discussion must surely cast great doubt on the safety of the decisions already made by the Departments concerned to privatise four DTI laboratories and one in DoT.

25. But the abstention from further privatisations at this stage does not leave us fully reassured. Many causes for concern remain; grievous and lasting harm may yet be inflicted upon an important national resource. As the report makes clear, *the primary incentive for privatisation remains: it is the imperative of continuing reductions in public expenditure on civil R&D*. Transfer to the private sector would make it easier to reduce Government commitments, while "market forces" could be left haphazardly to achieve the cross-Departmental rationalisations that the Government itself appears to despair of managing.

26. Of the cases open to review, early privatisation (ie within three years) was recommended for only one, although (paragraph 3.17) "over the longer term further candidates could well be identified". This prompts the question: in which cases was the difficulty that "the mix of activities includes work which would only with difficulty be privatisable", or that "the organisation is not in shape for privatisation". In the latter cases steps may be expected, such as further reducing Government support, cutting staff and increasing dependence on non-Government contract work, to put the unit "in shape" for later privatisation.

27. If there is one recommendation of the report we can *strongly endorse* it is that "clear decisions should ... be taken *without delay* on which PSREs are to remain, for the foreseeable future, in the public sector (paragraph 7.16). The imperative "*without delay*" is our addition; great damage to the morale and motivation of the staff in PSREs has already been done, and this intolerable uncertainty must quickly be brought to an end.

2. Management of PSREs

28. The main body of the report deals with proposals for the management of those establishments remaining within the public sector, and their relationships with other government-funded bodies such as the research councils and universities, and with industry. Here our concerns stem mainly from what the report calls "a key underlying theme of our scrutiny, the 'commercialisation' of the public sector customer-contractor relationship". Sir Peter Levene told the House of Commons Committee on Science and Technology (13 July 1994) "The Rothschild customer-contractor principle is paramount".

29. Starting as we do from the need to ensure maximum effectiveness and quality in the way the PSREs perform their tasks, our view of what should be "paramount" is rather different. Among others, two vital factors are: stability in funding for core, long-term research; and unhindered exchange (as free as possible of restraint due to competitive funding pressures) of information and technological "know how" with all

[1]More than half those in employment work for companies with less than 100 employees.

other parts (including basic research and industry) of the national, and international, science and engineering research-base network.

2.1 *The Rothschild Failure*

30. In the PSRE context the "customer-contractor principle" relies on the existence of intelligent, well-informed and far-sighted, "customers". These have been notably absent among Government Departments, and increasingly so in recent years. The Rothschild prescription that research establishments should receive an additional 10 per cent of the value of their Departmental contracts to fund their engagement "in research which is not directly concerned with the programmes commissioned by their customers" was disregarded from the start, over 20 years ago.[1]

31. The report says (paragraph 7.9) "PSREs have highlighted to us their concern that the day-to-day preoccupations of customers may lead to short-termism in the definition of requirements and the need for capabilities. We recommend that ... owners and customers should work closely together so that a long-term view is taken of departmental needs and the part to be played in meeting them by PSREs." Evidently, the authors of the report are unaware of the lessons of 20 years of history: it doesn't work.

32. The Efficiency Unit has discovered the MAFF's arrangement with BBSRC to limit the extent to which funding can be varied, and recommends it be brought to an end. Rather than be terminated, this sensible mechanism for smoothing out significant falls in budget with damaging consequences for efficiency should be extended to other Department-Research Establishment relationships.

33. The situation in many laboratories is deteriorating as increasing pressure to replace government funding by private sector contracts inevitably drives research effort towards short-term problem-solving activity at the expense of longer-term core research. The principal assets of any laboratory reside in the staff, in their knowledge, breadth of experience, and the effectiveness of their working relationships. But instability in the funding of research programmes demotivates, and the continuous reduction of budgets results in the loss of valuable, often the best, staff and the break up of strong and productive interdisciplinary teams.

2.2 *"Commercialisation"*

34. The meaning of this is spelt out in paragraphs 7.2 and 7.3 of the report: "We recommend that Departments ... ensure that external competition is the preferred method of sourcing R&D/S&T work ... (and) ... that research councils declare themselves open to applications from all competent suppliers, including GREs, institutes of other research councils, independent research associations, and the commercial as well as the academic private sector (ie universities)".

35. Thus, all the different components of the national science base are to compete between themselves and with industry for a share of already grossly inadequate Government funds for research. The research councils, already too frequently having to refuse funds for research rated outstanding, in the universities and their own laboratories, are now to be obliged to find the funds to support "core" research which the other Departments will not pay for in their GREs, and do provide the assistance to industry in the development and introduction of new technologies which the DTI has decided to shirk.[2]

36. As well as the lack of money, there are a number of other potentially damaging consequences.

2.2.1 The "Customer" Conundrum

37. Who will, can, act as the "customer"? Who will decide which "bid to accept"? The only truly well informed customer for research is one who is doing research or—if it is applied research—is close to, or engaged in, the developments that apply the research. But the "customer-contractor" dichotomy will frequently ensure that those best able to judge competence and "value for money" are excluded from doing so. "A scientist soon loses his skills if he does not draw on them" said Rothschild, when advocating a flow of scientists from laboratories to the Department HQ—where they could act as customers—and back again by secondment. But this has not proved a sound procedure in practice and to ask more of it seems unreal.

38. In the case of well defined application-specific research or development the customer-contractor mechanism can have a place. But in the PSRE science-base context other considerations often apply and collaboration—also effective in providing the necessary focus—may be preferred as being more widely beneficial.

2.2.2 The "Level Playing Field"

39. As a condition for a "fair" market this is a theoretical concept rarely met in the real world. In this context of competition between bodies with quite different "missions" it is not applicable and misconceived.

[1]In 1971 Rosthchild's somewhat arbitrary 10 per cent for what he regarded as "non-applied" research was worth £54 million; this was expenditure by Government Departments and did not include money spent by the research councils and universities. The equivalent sum today (using the GDP deflator) would be £400 million; according to the OST's "1994 Forward Look", Government Departments spent £61 million of "non-applied" research in 1992–93, less than 2 per cent of their total R&D spend.

[2]In the last few years, the DTI has cut by over £40 million its annual contribution to programmes (including LINK) jointly funded with the research councils.

(a) The attempt to compete on equal terms with industry on short-term problems is bound to lead to further fragmentation and loss of staff with serious impact on the ability of GREs to meet their long-term responsibilities to Departments.

(b) Private industry, adept at finding ways to tilt playing fields in its favour, could well decide to bid to do research at less than "Full Economic Cost" in order to gain some subsidy on work they wished to pursue anyway.

(c) Research funds in universities provide the triple benefit of expanding the knowledge base, training PhD students in research, and enlivening under-graduate teaching; instability in funding for long-term academic research is already a desperate problem, and the attempt to compete with organisations whose staff can be devoted full-time to the tasks in hand would have a damaging impact on teaching, further weakening the link between teaching and research.

(d) Through the "Dual Support" mechanism universities receive money for research from the Funding Councils (FCs) which, in principle, should provide a "well found laboratory" and a margin of funds available to take original initiatives in research independently of the programmes and committees of the research councils. The OST's own White Paper places a large part of the burden of ensuring the survival of "blue skies" research in universities on the FC leg of Dual Support. But this will be regarded as an "unfair subsidy", not controlled by the "market" nor regulated by the research councils; it is already under attack, nearly ineffective, and likely to be ended under "commercialisation".[1]

2.2.3 *Transaction Costs*

40. No attempt has been made to cost any of the changes proposed by the Efficiency Unit, it is therefore impossible to judge the assertion that the proposals will satisfy the touchstones of greater "efficiency" or "better value for money". In particular the large *transaction costs* associated with this wide "commercialisation" of the science base are conveniently assumed to be zero. This is because the price of the increase in bureaucracy, already out of control, and the salaries of all the new accountants and administrators, will appear as a fresh burden on the existing science budget: *less science for the same money*.

2.2.4 *Unhindered Information Flow*

41. The intellectual stimulus of the competition to be first with a major discovery or development is an effective spur to the progress of science, but it is finely balanced by the need of all researchers to share in the exchange of information—an equally essential element. The unhindered flow of information, data, and technical "know how" —tacit as well as published, conveyed over coffee at meetings and conferences, by telephone, fax, and e-mail—is the intellectual oxygen firing the advance of knowledge and its application.

42. Competitive pressures for research council money (survival) are very high, and the increasing dependence of GREs and universities on industrial funding is already putting embargoes on information flow. The increased and widened scope of the competition for funds proposed under "commercialisation" will inevitably raise new and higher barriers against actual—and newly perceived—competitors within the science-base, between GREs, and at the interface with industry; places where every effort should be made to stimulate the unhindered flow of information.

43. If the situation were to degenerate to the stage where British sientists would feel difficulty in taking part in the international information exchange network, the long-term consequences would be disastrous for British science.

3. Duplication and Overlap

44. The Efficiency Unit found few instances of actual duplication of effort, but "overlap"—defined as "parallel activity on different 'targets' or for different purposes"—was a frequent occurrence often arising because establishments had partially overlapping missions.

45. It is possible that further "rationalisation" of the rather large number of GREs may be justified, but this should be approached with caution and with scientific effectiveness the dominant criterion rather than simplistic considerations of short-term "savings". The paths by which knowledge is advanced cannot always (or even often) be foreseen, and there is advantage to having independent approaches to a question from more than one direction. Also laboratories apparently working in the same field may have quite different mission responsibilities.

[1]Dual Support can also help seed collaborations with industry and small companies. In this connection we strongly endorse views recently expressed by the House of Commons Committee on Science and Technology: "Universities should not be compelled to see every interaction with industry as a source of immediate profit. While informal relationships between industry and academia may lead to difficulties in strict accounting terms, they serve to strengthen the country's industrial and academic base. Moreover, such links may lead on to more formal contracts." *The Routes Through which the Science Base is Translated into Innovative and Competitive Technology*, April 1994, paragraph 112.

4. "Privatisation" by Universities

46. The Treasury deems universities to lie in the "private sector". A PSRE transferred to the ownership of a university can thus be said to have been "privatised".

47. There are many good reasons, of symbiosis and synergy, for a closer association in the structure and staffing of universities and appropriate PSREs, in particular those with a programme emphasising long-term, basic research. Among others, we have argued that too many PSREs were set up on green-field sites instead of being linked—as in countries like the USA, Germany and France—with universities.

48. But there must be a clear financial commitment by government to transfer, and maintain, the costs of operating the ex-PSRE. "Early privatisation" may have been ruled out because the unit was not considered commercially viable without a large continuing input of government money; if private industry would be unwilling to take the risk of losing those funds, then the more so should universities beware.

5. Practice in Other Countries

49. If the Efficiency Unit had looked at successful practice in other countries it might have learned useful lessons on how not to throw the baby out with the bath water. This is not the place for the review which should have been done by the OPSS Unit, but here are a few illustrations:

USA

Building on initiatives taken under earlier (Reagan and Bush) Administrations, the Federal Government is seeking to forge closer collaborative links between industry and well-funded (and not privatised) federal laboratories and actively supporting the manufacturing base. Among the elements of this policy is the rapidly expanding Advanced Technology Programme (ATP)—contrast the recent termination by the DTI of the United Kingdom equivalent. Another of many examples is the scheme for Co-operative Research and Development Agreements (CRADAs) run by the Department of Energy: there are 1,500 of these bringing National Laboratories, industry and universities into collaboration. The National Institute of Standards and Technology (NIST), a close equivalent of the NPL has been trusted with a major role in the oversight and implementation of these programmes. Jack Gibbons, Director of the Office of Science and Technology Policy (OSTP), has said "this Administration believes in industrial policy ... in terms of nurturng new sectors as was successfully achieved for agriculture, electronics and aerospace in the past". The US chip manufacturing industry has regained world market leadership for the first time since 1985 with the help of Sematech, the government-backed semiconductor industry research consortium; now Sematech has announced it will no longer need to take the government's 50 per cent matching funds and can stand on its own feet.

Germany

The example of the Fraunhofer Institutes is well known. They operate by a collaborative sharing of costs between public and private sectors, and have been particularly helpful to small enterprises.

Japan

Japan has a strong network of national laboratories doing research in a broad spectrum of science and technology. According to recent reports from the British Embassy in Tokyo[1] the Government has played "a crucial role" in the introduction of new biotechnologies to Japan and provided 30 per cent of the total funding of biotechnology research in 1993. Collaborative projects—involving national laboratories, industry and universities—are encouraged and have brought new companies to this sector, helping Japanese industry to catch up with the rest of the world and in some areas take the lead.

Elsewhere

We know of no case of a foreign government which has "privatised" its major public sector research establishments.

6. A Management Solution

50. A review of management and ownership structures for organisations forming the back-bone of the national science and engineering research base which fails first to consider and define the purposes of the PSREs and the conditions most favourable to the delivery of a high quality product must be flawed from the start, especially when the premises on which it is based have never been exposed to the test of informed debate.

51. There is a need to establish a management structure which can ensure that:

(a) there is the necessary stability in funding for efficient and effective performance of long-term basic and strategic research;

(b) there is a degree of effective co-ordination in the research programmes of the GREs;

[1]23 August 1994, OTIS: 94/16824P.

(c) the objectives and quality of research and development programmes are regularly subject to external monitoring (eg via Boards of Visitors) and peer review;

(d) the medium to long-term research programmes of the GREs fit well into the overall pattern of research carried out in the research councils and universities; that is they form an effective part of the science and engineering research base;

(e) application-specific research and technological development is well focused through close interaction with end-users—in Departments, industry, or elsewhere;

(f) there is the means of carrying through the "rationalisation" of establishments which is necessary from time to time.

3.1 *Proposal*

52. "... whatever organisation is ultimately adopted to manage basic and strategic research it should be one that unifies rather than fragments scientific activity ...". The "Dainton Report", 1971.

53. "The Office of Science and Technology alone among government departments, is a 'supplier' of research rather than a 'customer' for research. It is, therefore, uniquely placed to hold responsibility for Government research establishments across all fields." The Royal Society (Statement on 16 March 1994).

54. We propose that all GREs are brought into the control of a much-strengthened OST, together with transfer of all the associated operating funds including the base, or "core", programmes of research. The Ministry of Defence research establishments and those of the DTI should be included in the transfer.

55. Within the OST, effective collaborative links could be established between the GREs and the rest of the research base, including the universities. Coherence in the research programmes would be ensured and an extension of mechanisms already in place would provide programme review. Building on the experience of the CASE, LINK and other schemes, an expanded and better funded set of incentives for collaborative applied research with industry involving the universities and PSREs could be established. Rationalisations could be carried out without the present cross-Departmental difficulties, following the example set in recent years by the AFRC. Departments would remain responsible for commissioning, and funding, applied research specific to their needs from the GREs managed by the OST, or elsewhere.

56. The OST would thus carry the major responsibilities in government for forming science and technology policy—drawing on external advice (which should be published)—and for funding the medium-to long-term basic and strategic research carried out by the GREs and the research councils. It would then have a role more like that of the Science and Technology Ministries in France and Germany, and so would need a strong, well supported, team of high quality staff with experience of research and its management at senior levels.[1]

57. A precondition for restoring the health and vigour of the science and engineering base, including the GREs with their important role in medium-term research and technology transfer, is the reversal of the steep decline of government funding of civil science. From now on, *all sums realised by reductions in expenditure on defence R&D should be transferred to the OST for the support of civil science.*

Memorandum from the Scottish Office

1. In the call for evidence for its enquiry into the Efficiency Unit Scrutiny of Public Sector Research Establishments, the Sub-Committee invited written submissions on matters relevant to the enquiry and in particular on a list of 11 questions.

2. The 11 questions concern the case for conducting the review, the terms of reference and scope of the study, the way in which the study has been conducted, the recommendations of the Scrutiny Team and the implications of the Report.

3. The decision to establish the Scrutiny was made collectively by Ministers. The terms of reference and the list of establishments to be scrutinised were subsequently considered and agreed by Ministers of all the relevant Departments. It would therefore be wrong for The Scottish Office to comment further, in public, on these decisions in response to the Committee's first two questions.

4. As to the remaining nine questions, the Government has announced that the Scrutiny Report is the subject of a four-month public consultation period which will end on 11 November. The Government will consider the recommendations contained in the Report, and the responses to it, before deciding on its response. In the circumstances it is not possible for The Scottish Office to comment on the merits of the recommendations of the Scrutiny report, nor on how the Scrutiny was conducted.

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[1]In 1971 the Chief Scientific Adviser (Lord Zuckerman) had a team of eight: four physicists, two mathematicians, one engineer and one economist; the OST is weak by comparison.

5. The Sub-Committee may however find it helpful to have some explanation of the "Scottish System" for organising agricultural and general biological science. Such an explanation is not given in the Scrutiny report, although it is clearly of relevance to "Model 2" within recommendation 10 of that report. What follows draws heavily on The Scottish Office Agriculture and Fisheries Department (SOAFD) paper "A Policy for Science and Technology", which was published with the agreement of Ministers in December 1993, and which sets out SOAFD's strategy for science and technology for the following four years.

6. The Scottish System might be briefly described as the co-ordinated and complementary activities of certain bodies funded by SOAFD: until this year, these were principally the five Scottish Agricultural and Biological Research Institutes (SABRIs) (The Scottish Crop Research Institute; the Macaulay Land Use Research Institute; The Hannah, Moredun and Rowett Research Institutes), the Scottish Agricultural College (SAC) and the Scottish Agricultural Statistics Services (SASS). The Scottish System has provided research from basic to applied, through a development, innovation, technology transfer, education and extension and advisory services. There is close scientific collaboration both within the Scottish System and with bodies outside it: HEIs, Research Councils, industry and other research organisations.

7. The unique strengths of the Scottish System in the past have been chiefly in the close integration of basic, strategic and applied research with industrial needs and applications. This has been made possible by the fact that the organisations within the system have had *complementary* remits: areas of duplication have been eliminated, so that to a large extent these organisations compete with each other in the *quality* and *relevance* of science; not principally in the same *areas* of science. This has facilitated the development of co-ordinated programmes of research of a standard which would not otherwise have been possible; and it has led to an efficient machine for the delivery of agricultural science to Scotland and to the world. The Scottish System is seen internationally to be a particularly effective means of technology transfer. Most of the SABRIs, and SAC, have established commercial companies for technology transfer and wealth creation, with a broader perspective than Scottish or United Kingdom farming. Thus an entrepreneurial culture has been promoted within the Scottish System. And SASS has been commended as a model for the achievements of benefits of a pooled resource.

8. However, any system, no matter how great its successes, is capable of improvement. This was recognised in a policy statment "Policy for Science and Tehnology" published by SOAFD in December 1993. It proposed a phased extension to the Scottish System and more formal administrative structures. Since the publication of the paper, the Department has worked with the member organisations of the Scottish System to encourage the implementation of the paper's proposals. The Scottish System has been extended to include the Scottish Agricultural Science Agency (SASA), Fisheries Research Services (FRS) and the Royal Botanic Garden, Edinburgh (RBGE). SASA is a Next Steps Agency, the FRS is part of the Department although there are plans to launch it as a Next Steps Agency, and RBGE is an independent body. The inclusion of these bodies, which the Department also funds, will give further coherence to the Scottish System. With the Department's encouragement, a Committee of the Heads of Agricultural and Biological Organisations in Scotland (CHABOS) has been established, comprising the heads of the five SABRIs, SAC, RBGE, SASA and FRS. It will consider matters of strategy and science. A Sub-Committee, the Scottish Management Advisory Committee (SMAC) has also been established, comprising representatives of these organisations. It will consider issues not directly scientific, but of common interest, such as information technology, internal audit arrangements, and other issues where joint consideration could result in increased economy, efficiency and effectiveness.

9. The Department does not "own" SAC, the SABRIs, and the RBGE. These bodies are independent organisations, many with characteristics of the private sector. They all rely heavily on government funding of their research, but an increasing proportion of their income is from their commercial activities and sources of funding other than SOAFD. Each body retains its independence within the Scottish System, but works with the Department to ensure the most efficient, effective delivery of services. Now that the Scottish System has been expanded, and since the Department is awarding an increasing proportion of its research funds through competition, the Department needs a formal means of communicating with the Scottish System. SOAFD has therefore established a Joint Consultative Committee (JCC) to provide a forum for discussion with these, the Department's main research contractors. It comprises representatives of SOAFD, SAC, the five SABRIs, SASA, RBGE, FRS, together with representatives of the Biotechnology and Biological Sciences Research Council (BBSRC), the Scottish Higher Education Funding Council (SHEFC) and the Natural Environment Research Council (NERC). The JCC will also be an important source of scientific advice to the Department.

Letter to the Clerk of the Committee from the Department of Trade and Industry

You wrote to my colleague, Mr Fincham, on 1 August 1994 about the House of Lords Select Committee on Science and Technology's call for evidence concerning its enquiry into the Efficiency Unit's Scrutiny of Public Sector Research Establishments. I am DTI Action Manager for the Scrutiny.

Following its publication on 11 July, there is, as you know, a four month period of public consultation on the Scrutiny recommendations. As the Government will formulate its response once the public consultation

period has been completed, it would be inappropriate for me to comment at this time on the Scrutiny recommendations. However, you may find it helpful to keep up to date with progress on the DTI's work in this area, and I am writing to you on that basis.

The President of the Board of Trade announced on 14 April this year, following a review, his plans for three of the DTI's laboratories. These include privatisation of the National Engineering Laloratory (NEL) and Laboratory of the Government Chemist (LGC) and contractorisation of the National Physical Laboratory (NPL). The President made a subsequent announcement about the National Weights and Measures Laboratory which is to be retained as an executive agency within the DTI, on 21 July. While the DTI's laboratories were included in the multi-departmental Scrutiny, the Scrutiny took account of the DTI's review.

The DTI's review was in fact very much in line with the task set for the Scrutiny. The Scrutiny was commissioned to consider the future of civil and public sector research establishments in England, Scotland and Wales and to look at privatisation, rationalisation and different ownership options. The aim was to ensure government resources were spent on science rather than on administrative overheads.

In announcing his decisions on the DTI laboratories, the President concluded that they would best be able to respond to future challenges by operating within the private sector. Recognising that each of the DTI's laboratories was an important national resource, the review revealed that competition for public funds was intense and that the laboratories would need to continue their efforts to be more focused, more responsive to the demands of the market and more cost efficient. To broaden and commercialise the scope of their business, while maintaining their reputation for quality, integrity and impartiality, the DTI's laboratories will be able to raise and use capital and develop and exploit markets more effectively without the constraints of operating within government.

Plans are being developed to bring about the privatisation of NEL by means of a trade sale by November 1995.

It is proposed that LGC will be privatised as a non-profit distributing company, or by trade sale if a suitable buyer comes forward who can demonstrate the requisite independence. In either case it is proposed that the transfer of staff and assets will be concluded by April 1996. Recommendation 24 in the Scrutiny Team's Report referred to a Home Office review dealing, *inter alia*, with the possible merger of the Metropolitan Police Forensic Science Laboratory (MPFSL) with either the Forensic Science Service (a Home Office agency) or LGC. The DTI is keen to consider the possibility of a merger between MPFSL and LGC and to this end we are discussing the matter further with the Home Office.

For NPL, it is proposed that private sector contractors be appointed to operate the laboratory by April 1995.

Given the complexity of the tasks involved, the Department has appointed PA Consulting Group to assist in the implementation of the decisions on NEL, NPL and LGC.

Do please let me know if you would like any more information on this subject.

Memorandum from the University of Warwick

The University welcomes the Scrutiny Report, and the possibility of greater privatisation of some research establishments. We wish to comment primarily on those recommendations which relate to University/ Institute links.

Recommendation 3	*Departments and research councils should routinely examine the potential for transferring PSREs to Universities (paragraph 3.11)*
Recommendation 4	*PSREs should, within two years, develop effective formal links with Universities where these do not exist at present (paragraph 3.12).*
Recommendation 8	*In their responses to this report, departments and research councils should publicly declare themselves open to approaches from private sector firms or Universities wishing to discuss the potential for taking on some or all of the activities of individual PSREs (paragraph 3.8).*

The University strongly supports these recommendations. There are clear benefits to be gained from closer institute/University links, providing the partners are chosen carefully:

— as the Scrutiny Report recognises, there can be significant synergy between the research programmes, with appropriate transfer of, and co-operation between, staff, sharing of research facilities, etc.;

— there can be considerable advantage in relation to teaching and research training. The University can help ensure a flow of younger research workers; the institute provides a different context within which training can be undertaken;

— the coming together of two different kinds of organisations requires each to develop new perspectives and ways of working. The institute benefits from academic strengths not only in the immediately relevant disciplines but, for example, in business studies, sociology or economics. The university is required to think more about research management and planning, and the institute's sectoral contacts can help ensure relevance to wealth creation, etc. in the university's programme.

The attractive feature of these recommendations is that there are genuine benefits to be secured on both sides, but to be fully realised they need a more formal structure than is provided by the many loose associations currently operating. Formal links, preferably based on a single organisation, would allow these advantages to be planned and achieved as a specific objective, rather than simply relying on aspirations which can be negated by conflicting demands.

The University of Warwick would like to see the possibility of closer links considered for all relevant institutions and Universities; not all institutes were included in the Scrutiny study and it is difficult to see why some—for example the National Institute for Medical Research—were excluded. For its part, Warwick is already in discussion with appropriate institutes, in accordance with the Scrutiny recommendations.

Recommendation 27 *Research councils should declare themselves open to applications from all competent suppliers, including GREs, institutes of other research councils, independent research associations and the commercial as well as the academic private sector (paragraph 7.3);*

Recommendation 28 *OST should review with customers in two years' time the extent to which HEIs are quoting for work on the same full economic cost basis as PSREs (paragraph 7.4).*

The University welcomes the concept of greater competition of research funding, with decisions taken on the basis of excellence, but—as the report recognises—care is needed to ensure the playing field is level:

— if government research establishments, etc. are to compete for research council funds, alongside Universities, this should imply an end to the current block funding arrangements for departments, and an appropriate (DR-like) transfer of funds to the research councils; or that universities have full access to bidding for all aspects of government research programmes including those currently reserved for GREs;

— on costing, the University of Warwick charges full overheads wherever possible. There have been cases where a Department has asked the University not to include full overheads because it received HEFCE funding for premises, etc.

A further benefit of the closer integration of Universities and institutes, as recommended in the Scrutiny report, would be that some of these questions about levelness of the playing field would be alleviated.

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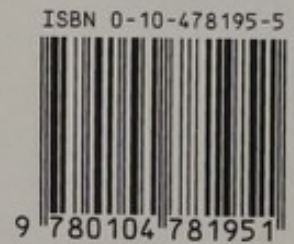

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