



House of Commons
Science and Technology
Committee

**Government Response
to the Committee's
Eighth Report, Session
2003–04, The Work of
the Council for the
Central Laboratory of
the Research Councils**

**Tenth Special Report of Session
2003–04**

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The Science and Technology Committee

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Tenth Special Report

On 22 June 2004 the Science and Technology Committee published its Eighth Report of Session 2003–04, *The Work of the Council for the Central Laboratory of the Research Councils*. On 25 October 2004 the Committee received a memorandum from the Government which contained a response to the Report. The memorandum is published without comment as an appendix to this Report.

Appendix

Introduction

The creation, from 1 April 2003, of a new strategic advisory role and additional funding responsibilities for the CCLRC – resulting from its 2002 Quinquennial Review—were intended to strengthen UK involvement in the design, build, operation and continuing development of the large research facilities that lie within CCLRC'S remit, whether or not owned and operated by CCLRC. The improved coordination of investment planning, the more effective pursuit of international partnerships, the pursuit of more effective and efficient utilisation of experimental time across facilities, and the more effective planning of operational priorities are all intended attributes of the new arrangements. This includes the construction and operation of the new Diamond Light Source, which is a partnership between the Government and The Wellcome Trust, in which the CCLRC is responsible for the Government's 86% shareholding.

CCLRC is now responsible not only for access to national neutron, synchrotron and laser facilities, but for UK investments in similar facilities that are the subject of international partnerships and located overseas. The Institut Laue Langevin reactor neutron source (ILL) and the European Synchrotron Radiation Facility (ESRF) are two such major enterprises. The CCLRC facility access role is therefore now, more than ever, an international one. CCLRC expertise and experience in international projects – for example in space science and technology and in particle physics – can now be brought to bear on these additional areas, strengthening the UK's return on investment.

The Office of Science and Technology (OST) and the Council of the Central Laboratory for the Research Councils (CCLRC) welcome the Committee's report. They have found it helpful in considering the way forward for both Research Councils UK (RCUK) and the CCLRC, following recent separate reviews commissioned by the OST¹. The Government's response to the Committee's individual recommendations is set out below. Where recommendations were plainly addressed to the CCLRC and the Government has no role in the matters raised, the response is the CCLRC's.

¹ A review of the implementation of the CCLRC's Quinquennial Review is attached to this response. Links to that review, the review of RCUK, and relevant background are also available on the OST website at <http://www.ost.gov.uk/research/councils/index.htm>

The Government and CCLRC Response to Individual Recommendations made by the Committee

1. We recommend that OST resumes its efforts to develop reliable, if broad, indicators of international levels of expenditure on large-scale facilities. (Paragraph 11)

Accepted, with qualification. The OST will look at those levels from time to time, subject to competing work priorities and the uncertainties of the data. In 2003, with the help of overseas posts, the OST looked at expenditure in France, Germany, Japan and the USA. Comparisons were very difficult as budgets were calculated in various different ways. In the UK it was possible to split out capital construction from maintenance and operations, but this was not the case for all countries. Each country also had different elements in its science budget. Nor was there any overall definition of “large-scale facilities”.

2. The Strategy Board should be chaired by someone outside the CCLRC. (Paragraph 15)

Accepted. Please see response to Recommendation 3. For the record, at the time of the Committee’s inquiry, the CCLRC did not have the Strategy Board ascribed to it in paragraph 13 of the Committee’s report. An external International Scientific Advisory Committee advised the Chief Executive, but not the Council itself directly.

3. We recommend that the strategic advisory role in respect of large facilities currently performed by the CCLRC and other Research Councils is formally transferred to RCUK, along with the necessary resources. (Paragraph 19)

Rejected, with qualifications. The Government’s policy is that the individual Research Councils remain responsible for advising on access to large facilities within their subject area, much as for other modes of research support. The Committee concurred with the argument of the CCLRC Chief Executive, Professor John Wood, that the CCLRC “should [only] be responsible for the provision of advice in areas in which it has expertise.” The Government agrees.

RCUK’s role is to advise the OST by reviewing large facilities advice from Councils, for example tensioning a funding proposal against competing priorities, and advising on approving or rejecting it, or otherwise commenting on its further development. RCUK will continue to advise on the revision of the UK Large Facilities Road Map, the prioritisation of facilities for funding from the OST Large Facilities Capital Fund, their location (where relevant), and their passage through the early stages of the Gateway process. However, to perform its role effectively, RCUK will continue to look to the individual Research Councils, including CCLRC, to provide well-informed, strategic advice that has already benefited demonstrably from consultation with other Councils, their communities, and other parties as necessary.

The Government does not agree with the Committee’s comment that “an increasing share of synchrotron time being taken up by the life sciences weakens the case for the CCLRC to be the sole provider of strategic advice on these facilities.” The increasingly wide range of users of synchrotron and other facilities strengthens the case for a Council

for the Central Laboratory of the Research Councils that is separate from the discipline-related Councils, but also underlines the importance of the CCLRC consulting visibly and effectively with that wider community, including the other Research Councils.

Although the Government therefore rejects the Committee's recommendation, it values the evidence and argument adduced to support it, particularly concerns about the independence of CCLRC's strategic advice and the clear separation of CCLRC's strategic advisory and facility operation responsibilities. The OST-initiated review of the implementation of the CCLRC Quinquennial Review (see footnote 1) identified similar concerns. It also considered the role of the five other Research Council Chief Executives on the CCLRC Council, which has created other real and perceived concerns.

The review's recommendation endorsed by the OST and by the CCLRC Council, were, in sum, that, whilst the membership of Council by other Chief Executives was not felt to be essential, the Council's strategic advisory function needed to be strengthened through additional, new independent Council members and provision of clearer, independent advice directly from an International Scientific Advisory Committee, chaired by an independent as the Select Committee has recommended. In addition, the review recommended much greater clarity in the structures and processes by which CCLRC, working with and through other Research Councils, consulted the wider research and other communities, and management structures that reinforced the distinction between operational and strategic advisory roles.

The Council's membership will be revised as recommended by the review. However, the review emphasised that primary responsibility for implementing other changes falls to the CCLRC Chief Executive, Professor John Wood. Successful implementation will address the concerns identified by the Committee, and the OST will monitor progress. The following initiatives demonstrate progress to date.

The CCLRC has recently developed a restructuring plan for its organisation, for implementation from 1 January 2005. A separate 'Head Office' unit is to be established to manage the strategic planning, policy development and resource allocation responsibilities of the CCLRC. The Head Office unit will work closely with an International Science Advisory Committee (ISAC), which will henceforth report directly to the Council, in the preparation of independent strategic advice to inform priorities for the CCLRC. The 'Head Office' unit will also be responsible, together with the ISAC and the Council of the CCLRC, for the preparation of strategic advice on large facilities and related programmes destined for RCUK, the OST and the Minister for Science.

A separate and distinct organisation is to be put in place for the three CCLRC laboratories – the Rutherford Appleton Laboratory, the Daresbury Laboratory and the Chilbolton Observatory. Three 'business units' are to be established with responsibilities for the laboratories' 'Research Facilities', 'Technology Programmes' and 'Science Programmes'. These units will be responsible for undertaking the major research and development and scientific support functions of the CCLRC laboratories in their support of the UK science and engineering base. The new organisational structure will bring together the work of 13 former separate departments and various other units to improve the science, engineering, technical and economic synergies that can be obtained through the operation of a multidisciplinary programme.

Recognising the importance of continued collaborative working, the CCLRC is taking steps to strengthen strategic engagement with each of the other Research Councils by exploring the scope for development of 'Strategic Partnership Agreements'. The intent is to put in place arrangements that will be of benefit to both parties in enabling a closer sharing of joint strategic interests in a timely manner. For the CCLRC, this will help ensure that it can align its support with the needs of the research communities sponsored by the other Research Councils.

4. Although it is too early to make an assessment of their impact, we welcome the new access arrangements for facilities, which appear to be working well. We regret that detailed information about levels of demand for the different modes of access and statistics relating to administrative costs have not been provided. We recommend that the CCLRC consults with the user community and provides indicative guidelines on the time to be made available on instruments in different access modes wherever possible. (Paragraph 23)

Accepted, with qualification. The response to this recommendation also applies in part to the responses to several other recommendations in the Committee's report (in particular recommendations 6, 10,11,18 and 30). The CCLRC is currently implementing a performance management system that will reflect its new role following the Quinquennial Review. The CCLRC will endeavour to develop a set of measures which can be applied to all the large research facilities in which it has a direct interest in ensuring facility access for the UK research community—both in the UK and overseas. This will also constitute, where it proves possible to establish cooperation with international partners, an international benchmarking regime. (See also the response to Recommendation 18.)

The new CCLRC performance management system will encompass all aspects of facility performance from source and instrument reliability to the profile of research programmes and demand for individual instruments. Indicators could include:

- technical performance data for sources and instruments;
- UK HEI level of demand for and usage of instruments;
- international use of the facilities and instruments;
- the international competitiveness of a facility and its instruments;
- the quality of the science done using the instruments;
- mapping of facility research programmes by scientific discipline;
- use of the facilities and instruments by industry;
- the achievement of knowledge transfer targets;
- 'customer satisfaction' surveys.

The new system will incorporate performance indicators relating to facility access, including time allocated in the various facility access modes, and will be implemented in 2005 -06. These outputs might then be used as indicative guidelines for the research

community of time allocated in the various modes, but in order to remain responsive to new and emerging science opportunities, these levels will not be set in stone.

The needs and requirements of the different research communities that access the CCLRC facilities are recognised at several stages in the process. The terms of reference of the independent peer review Facility Access Panels include the provision of advice on scheduling priorities alongside advice on the balance of time allocation across the differing access modes. However, assessment of the scientific quality of individual experimental proposals remains the overriding criterion for access.

As the new access arrangements become embedded and research communities become more aware of the benefits of the various access modes available to them, then appropriate levels for the various modes will become more apparent. It would be inappropriate, at this early stage, for the CCLRC to impose arbitrary cut-off levels for any one mode of access.

The Facility Access Panels and the research community will continue to be consulted on the facility access mechanism, including through open annual User Meetings and specialist user groups meetings. As is currently the case, the CCLRC will continue to publish instrument schedules via the appropriate facility websites. Additionally, the CCLRC will aim to publish the time available for scheduling on each facility prior to any call for proposals.

5. We commend the CCLRC for its work in maintaining world class facilities and in matching this standard in the provision of technical and other support services. (Paragraph 24)

Recommendation accepted and acknowledged.

6. We recommend that the CCLRC publish statistics on subscription rates for its instruments on an annual basis. (Paragraph 25)

Accepted. The CCLRC acknowledges the value of publishing statistics relating to the demand for individual instruments and from 2005 –06 will publish these via the CCLRC external website (consistent with the provisions of the Data Protection and Freedom of Information Acts), the facility annual reports and annual CCLRC reports.

7. In order to better inform the user community and to improve its own strategic planning and liaison with other Research Councils, we recommend that the CCLRC develop broad but meaningful indicators of success rates for applications for time on facilities. (Paragraph 28)

Accepted, with qualification. For internal planning purposes the CCLRC facilities already collect significant data with regard to application success rates. To make information more valuable for strategic planning purposes and to better inform the user community, CCLRC will be looking at how best to develop these indicators in accordance with the requirements of its new performance management system.

In addition to collecting data on the number of applications submitted per allocation period, together with the number which are successful in receiving some proportion of time originally bid for, the CCLRC intends to conduct a broad analysis of the percentage

of total instrument time allocated to successful applicants. These statistics will be published on the CCLRC website.

In addition, success rates will be correlated with data relating to the different science programme areas of importance to the other Research Councils. A summary report will be provided to the other Research Councils for information on an annual basis. The new reporting mechanism will be implemented in 2005 –06.

8. We conclude that the inability of Research Councils to keep pace with demand for facility access is not, at the moment, leading to a significant shift in facility use from UK to foreign researchers. (Paragraph 30)

Accepted. The CCLRC will continue to monitor on a six-monthly basis (*i.e.* per allocation period) the profile of those user communities successfully gaining access to the facilities. The data will be reviewed by facility senior management to ensure that allocation levels are maintained within pre-defined targets for various groupings and in accordance with any contractual agreements that the facilities have with third parties. Statistics demonstrating the usage of facilities by UK, overseas and industrial users will be published on the CCLRC website and in the facility annual reports and annual CCLRC reports. This information will also be made available to other Research Councils (see Recommendation 7).

9. We would not regard the CCLRC to be acting in the strategic interest of the UK research community if it were to oversee a situation in which foreign researchers benefited disproportionately from UK facilities at the expense of the UK researchers. We hope that the competitiveness of UK science is such that this situation will not arise, but the CCLRC is right to impose caps on the levels of use by EU and other researchers should the interests of UK research programmes be seriously threatened. (Paragraph 31)

Accepted. The CCLRC is conscious of the need to deliver a high quality service and appropriate level of access to the UK research community. In establishing the new facility access system, a key requirement has been to establish a single peer review entry point for all UK and international researchers via the Facility Access Panels. This has ensured scheduling of world leading science programmes on the CCLRC facilities and enabled benchmarking of the UK science programmes against those of international researchers. The current level of facility usage by the UK research community demonstrates the high quality and competitiveness of the UK science programmes undertaken on the CCLRC facilities.

The CCLRC acknowledges the concerns of the UK user community and will continue to monitor closely the level of access permitted, via contractual arrangements, for international researchers on the CCLRC facilities.

10. We recommend that CCLRC sets itself challenging targets for raising levels of industrial awareness and use of its facilities in future years, with appropriate safeguards such as caps on usage levels if necessary. (Paragraph 34)

Accepted, with qualification. The current level of industrial access to the CCLRC facilities is based solely upon data from contractual arrangements for proprietary work.

At present demand for such access does not exceed a 5% level overall on any of the CCLRC facilities. However, for specific instruments, industrial time can exceed this level as is demonstrated by the demand for access to protein crystallography stations at the SRS by pharmaceutical companies. Where industrial demand for a particular instrument is high, a capping level of 30% maximum access is applied.

The CCLRC believes that the actual value of facility access to industry may be somewhat higher as a result of collaboration in research between industry and academe. By this means, research of interest to industry can be undertaken by successful application under the facility access peer review system by the academic research groups, though this is strictly for non-proprietary work. The CCLRC intends to modify facility access application forms to capture this information. This will lead to more complete data and a more representative picture of the overall benefit to industry.

The CCLRC, like all other Research Councils, is required by the recent *DTI Innovation Report*² to increase the rate of knowledge transfer and level of interaction with business arising from its programmes. Revisions to the CCLRC knowledge transfer (KT) strategy, to be implemented in 2005, will include plans to promote greater industrial awareness and wider usage of the CCLRC facilities. The targets and performance levels for these plans will be the subject of regular review.

11. We recommend that CCLRC develops indications of user group balance for its facilities and liaises with other Research Councils as necessary to ensure that funding levels are kept as far as possible in tune with available levels of access. (Paragraph 35)

Accepted, with qualification. As outlined in the response to Recommendation 7, the CCLRC intends to provide facility access summary reports to other Research Councils on an annual basis. These will demonstrate the current usage of facilities in scientific areas of importance to the other Research Councils.

The CCLRC acknowledges that this is a retrospective approach and that a more strategic longer-term view regarding usage of the facilities must be developed. The implementation of Strategic Partnership Agreements, as outlined in recommendation 3 of this report, will provide an important vehicle through which roadmaps and development plans for the CCLRC facilities can be jointly discussed and developed with other Research Councils.

12. We recommend that the CCLRC calculates a cash value for the time on large scale facilities that departments can use in their submissions to the 2008 RAE and that the funding councils provide a clear indication of how such time is to be taken into account in the award of funding based upon the RAE. (Paragraph 36)

Accepted, with qualification. During consultation with the user community regarding the new facility access mechanism, the CCLRC was made aware of community concerns regarding facility access credit to the RAE. The funding bodies have also expressed concerns about the administrative complexity of ensuring a consistent approach to

² Innovation Report: Competing in the Global Economy – the Innovation Challenge, DTI, December 2003 (<http://www.dti.gov.uk/innovationreport/index.htm>)

facility access time in previous exercises, which, if unresolved, could make it inappropriate to include as a measure in future.

The CCLRC intends to take the lead in developing a coherent approach to establishing the appropriate facility access recognition arrangements for the 2008 RAE, in partnership with the higher education funding bodies. Initial discussions are already planned to agree the approach to be adopted and the necessary information that CCLRC will provide to university departments for inclusion in their submissions.

The CCLRC will liaise with other Research Councils responsible for facility access that falls outside the remit of CCLRC, to ensure that a consistent approach is adopted across all Research Council facilities, which can then be used to inform the deliberations of the RAE panels and sub-panels.

13. The CCLRC contributions to the Institut Laue Langevin need to be seen in the context of the needs of the UK user community. The CCLRC should spell out in its Strategic Plan how it plans to invest in ILL and then should sustain this level of investment throughout the period of the Plan. (Paragraph 38)

Accepted, with qualification. The CCLRC has indicated to the several other international partners in the Institut Laue Langevin (ILL) the high priority it attaches to investment in the continued development of the ILL experimental facilities and related research infrastructure.

As previously indicated, the nature of such international partnership means that it is often necessary to achieve a measure of agreement between all parties on the actual level and timing of such investment. The UK recently made its plans for further investment in the ILL in 2005 and 2006 clear to all parties in discussions held in June 2004 and is now proceeding to explore how this can best be achieved, with the agreement of all concerned. In future, the planned CCLRC investment in ILL will be published in the annual CCLRC Operating Plan.

In planning for further investment in the ILL experimental facilities the CCLRC will continue to take close account of the scientific needs of the UK research community. These are identified through regular consultation with the UK users of ILL and through the appointment of leading UK scientists and engineers to the ILL advisory bodies and Scientific Council.

14. The CCLRC should recognise that the European Synchrotron Radiation Facility is unlikely to be able to meet the demands of the UK user community and should base its strategy on the provision of access to alternative long term facilities. (Paragraph 39)

Accepted. The ESRF is and will remain for the foreseeable future a key element of the portfolio of synchrotron radiation (SR) facilities that the UK research community requires access to. The level of successful demand by the UK research community for time on the ESRF experimental facilities is testament to its utility and quality. The ESRF provides world-class access to the hard X-ray regime but the UK community requires access to a broader spectrum of SR.

The building of the Diamond Light Source (DLS) at the CCLRC Rutherford Appleton Laboratory represents a major investment by the Government and the Wellcome Trust in the crucially important medium energy X-ray regime that is exploited by a wide range of scientific disciplines within the UK. Its design and instrumentation is consistent with the strategy for SR facilities developed by the Research Councils in the 1990s. DLS will play a vital role in ensuring that the world class research programmes currently being undertaken on the SRS at the CCLRC Daresbury Laboratory can continue to be pursued, with the benefit of significant advances in technology.

Notwithstanding the breadth of the research community requirements for access to SR that will be met in future by a combination of the ESRF and DLS, there will remain some research areas that require access to different SR facilities – for example in the soft X-ray/vacuum ultraviolet regime. The CCLRC is currently exploring how access to such capability might be provided. This will involve the consideration of access to other facilities overseas alongside consideration of new opportunities arising from advances in technology – as part of an ongoing strategic planning process conducted in consultation with the research community.

15. We recommend that the CCLRC explores with partner countries at the Institut Laue Langevin and the European Synchrotron Radiation Facility the possibility of making peer reviewed awards for facility development in place of existing Collaborative Research Groups. In the mean time, we recommend that the CCLRC takes steps to ensure that UK researchers are given the same encouragement and opportunities to collaborate in Collaborative Research Groups as those in partner countries. (Paragraph 42)

Accepted, with qualification. Arrangements already exist at both the Institut Laue Langevin and the European Synchrotron Radiation Facility for research groups from the UK and elsewhere to build and operate what are known as collaborative research group (CRG) instruments. These instruments are distinct from the suite of public instruments operated at each facility.

The UK has sought to influence its partners in each facility to extend the opportunity to build a CRG instrument to open competition and for bids from UK groups to be considered alongside those from elsewhere. Following the return of the UK to a full share-holding in the ILL from 1 January 2004, this has now been achieved at the ILL as well as at the ESRF. All research groups—from whichever country they come—who wish to bid to build and operate a CRG instrument have to provide their own funding. Funding for these instruments is not provided from within the resources available to ILL and ESRF—though the neutrons and photons are provided ‘free of charge’. This long-established practice is supported by all the international partner countries in each facility.

The CRG instruments provide opportunities for an individual research group or consortium of groups to gain relatively exclusive access to particular capabilities – which do not justify investment as a public instrument with wider utility. The scientific programmes of CRGs add to the outputs of the research programme at each facility. The key objective for the UK in recent years has been to ensure that UK research groups can compete for the opportunities under the same terms and conditions as research groups from other countries. This has now been achieved.

The CCLRC is responsible only for funding the UK contribution to the public suite of beamlines at each facility. Should a UK research group wish to pursue the opportunity to operate a CRG at either the ILL or the ESRF then the group is required to discuss their ideas and funding requirements with the relevant Research Council or other potential sponsor of their research. Examples exist of CRG instruments operated by UK research groups at both the ILL and the ESRF that are funded by such means.

The nature of the public suite of instruments and their continued development represents the core focus for strategic planning and resource prioritisation for experimental facilities at both the ILL and ESRF. Similarly, they represent an important basis for the planning for complementarity and collaboration between international facilities, within Europe and beyond. Funding for the public suite of instruments is provided through the normal operating budgets for both facilities that are agreed each year by the international partners.

16. We recommend that the UK seeks to ensure that any emerging European Research Council takes on the role of strategic oversight of European large scale facility development and replaces the European Strategy Forum for Research Infrastructure. We would envisage that, once the proposed ERC has established itself, it would become the principal European agency for co-ordinating the development of existing large scale facilities and the establishment of new ones in EU countries.

Rejected, with qualification. The Government has made clear elsewhere the basis of its support for a European Research Council. It would be desirable for the Council to have strategic oversight of large research facility development, but not control all of it. Bilateral and multilateral agreements, with or without connections to EU structures and funding, will continue to play an important part. The European Strategy Forum for Research Infrastructures is a relatively new body. It is already performing a necessary coordination role and implementing a mapping mechanism to help take forward discussion on the future requirements for research infrastructures in Europe. It is too early to say whether and how this would be reconciled with a new European Research Council.

17. We commend the CCLRC for achieving high levels of user satisfaction and generally high reliability for its major facilities. (Paragraph 49)

Recommendation accepted and acknowledged.

18. Whilst we welcome efforts to widen perspectives on international benchmarking, the CCLRC has been slow to develop performance measures called for by the Quinquennial Review. We urge CCLRC to engage with international partners and competitors to develop performance measures that are comparable with similar facilities overseas and that performance against these measures are published on a regular basis. (Paragraph 51)

Accepted, with qualification. A number of existing performance measures for the CCLRC facilities are discussed regularly with the research community and have been published over several years. Different reporting systems at overseas facilities can impede development, but the CCLRC acknowledges the value of benchmarking performance against international partners and competitors, and plans to implement a number of

initiatives to assist in the development of a series of performance measures and indicators that will facilitate a degree of international benchmarking, and which will be published annually. New initiatives identified include:

- the formation of a 'Facilities Benchmarking Club', as recommended in a recent internal CCLRC review. A phased approach to membership will be adopted, with the initial group including the CCLRC large facilities and those facilities for which the CCLRC holds the UK shareholding. Once established, the membership of the group will be expanded, by invitation, to include other overseas facilities;
- the augmentation of existing Memoranda of Understanding and concordats that the CCLRC holds with international facilities to encompass measures and indicators.

19. We look to the Science Minister to ensure that the scientific community experiences the minimum possible disruption in the period of transfer from the SRS to Diamond. (Paragraph 53)

Accepted. The Government intends to make an announcement about the arrangements in the context of the SR 2004 Science Budget allocations.

20. We recommend that the CCLRC makes every effort to support the development of alternative projects which will provide employment for the skilled scientists in the northwest region and support the scientific profile of the northwest as a centre of scientific excellence. (Paragraph 54)

Accepted, with qualification. The North West region is a centre for scientific excellence, not just through the presence of the Daresbury Laboratory but also through the presence of world-class researchers in leading universities such as Manchester, Liverpool and Lancaster. The North West Development Agency regards science as a sufficiently important driver for the region that it has created the North West Science Council, and is investing significant sums into the region.

When the Government announced that the Diamond Light Source would be built at the CCLRC Rutherford Appleton rather than the Daresbury site, it also made available £26M for science in the North West. The nine projects supported by this funding, several of which are located at the CCLRC Daresbury Laboratory, are now well under way. They have strengthened North West science and delivered other benefits for the region and the UK, for example the SuperSTEM high-resolution electron microscopy facility and the North West Structural Genomics beamline on the Synchrotron Radiation Source.

Since this initial investment there have been further significant developments on the Daresbury site. Those that have so far been funded include:

- the commissioning and operation (from 2002) of HPCX, the current UK national supercomputing resource funded by EPSRC on behalf of the Research Councils. This is operated as a joint venture between the Computational Science and Engineering Department at the CCLRC Daresbury Laboratory, the University of Edinburgh and IBM. This facility will be augmented by the

NWGRID infrastructure project (involving the Universities of Manchester, Liverpool and Lancaster) funded by the North West Development Agency;

- the Energy Recovery Linac research and development project, funded by the Office of Science and Technology and the CCLRC, to underpin development of next generation light sources, such as the proposed 4GLS facility;
- the new Cockcroft Institute for accelerator science funded by the Particle Physics and Astronomy Research Council, the North West Development Agency, the Universities of Lancaster, Liverpool and Manchester, and the CCLRC . This centre is expected to grow to involve some 100 staff over the next three years and will help position the UK to play a major role in international accelerator projects;
- the construction of the first two buildings in the North West Development Agency incubator and science park, adjacent to the CCLRC Daresbury Laboratory, along with the construction of a new reception building at the Daresbury Laboratory, which together form a new base for the proposed 'Daresbury Campus'.

Building on this investment and emerging strong partnership networks, a number of CCLRC-HEI partner bids are currently under consideration for funding via the North West Science Fund managed by the North West Development Agency. The Government, the CCLRC and the North West Development Agency all believe that there is a vibrant future for the Daresbury Laboratory, and are working together to realise it. The CCLRC and the NWDA have signed a Framework Agreement committing to the development of the Daresbury Campus and a shadow 'Partnership Board' comprising all major stakeholders has been established to develop the concept.

21. We recommend that the CCLRC works closely with the White Rose Consortium, European and other UK partners to help develop a viable UK proposal for hosting a European Spallation Source. (Paragraph 59)

Accepted in principle. CCLRC will work with all stakeholders in preparing its strategic advice on the requirements for access by UK researchers to the next generation of neutron scattering facilities.

22. The presence of the Muon Ionisation Cooling Experiment at the Rutherford Appleton Laboratory will give the UK a strong advantage when it comes to making proposals to develop and host the new neutrino facility. It should remain in the long term plans of the CCLRC. (Paragraph 60)

Accepted. The Large Facilities Road Map has identified the Neutrino Factory as a global facility that the UK might host in the future since the UK holds substantial scientific and technical capability in this area. In recognition of this long-term opportunity, the CCLRC and PPARC will continue to seek to construct the Muon Ionisation Cooling Experiment at the ISIS facility. The two Councils have identified funding for the UK share of the project from their own resources and the OST Large Facilities Capital Fund, and are currently in negotiations with potential international partners. The CCLRC will

continue to work closely with the PPARC and others in examining the feasibility of the UK hosting the proposed global Neutrino Facility.

23. The Large Facilities Strategic Road Map already provides the strategic view for the next ten years and beyond. We cannot understand why the Treasury should seek to hijack this policy area. (Paragraph 61)

The *Science and Innovation Investment Framework 2004 –2014*³, produced jointly by the Treasury, DTI and DfES, confirms the Large Facilities Roadmap as a strategic guide to priorities for future key facilities for UK researchers. The OST, individual Research Councils and RCUK will continue to work together to produce the Road Map.

24. We recommend that the Ten Year Science Strategy gives a clear indication that Government will be prepared to support a suitable bid for a large scale facility in the UK. (Paragraph 62)

The Framework has now set out the Government's approach to investment in both national and international large facilities, located in the UK and elsewhere (paragraphs 9.18ff).

25. We welcome the establishment of CLIK, and the dedication of additional financial resources and expertise to supporting the commercialisation of outputs derived from CCLRC facilities. (Paragraph 64)

Recommendation accepted and acknowledged.

26. We would like to see CLIK provide longer-term support where appropriate. We would also like to see performance measures reflect the longer term and include indicators relating to the commercial outputs of spin-outs with CCLRC support. (Paragraph 65)

As is current practice, CLIK will continue to provide business advice and mentoring to its spin-out companies, for example with regard to potential funding opportunities. The CCLRC is also committed to nominating CCLRC Directors to act as non-executive, unremunerated Board Members of CLIK spin-out companies to provide continuity in links between the CCLRC, CLIK and the start-ups concerned. The CCLRC Directors nominated to the Boards of CLIK spin-out companies will be provided with appropriate training and support. The CCLRC and CLIK are not in a position to offer financial support to spin-out companies.

Within its Business Plan, CLIK is currently developing metrics to measure and evaluate its own longer-term performance. These will be in addition to the performance measures relating to commercial outputs of its spin-out companies. The CLIK performance evaluation framework will form a significant element of the proposed CCLRC Knowledge Transfer strategy and plans.

³ *The Science and Innovation Investment Framework 2004 –2014*, HMT, DTI, DfES, July 2004, ISBN 1 –84532 –031 –X

27. It is too early to judge the impact of the CCLRC subsidiary, CLIK, but we recommend that it plays a full part in the CCLRC's attempts to promote industrial engagement with imaginative new initiatives. (Paragraph 66)

Accepted, with qualification. CLIK will continue to play a vital role in supporting industrial engagement with the CCLRC programme. As mentioned previously, the CCLRC is developing a revised and broader knowledge transfer policy in response to recommendations arising from the recent *Lambert Review*⁴ and the *DTI Innovation Report* (see the response to Recommendation 10). This will encompass a number of new approaches to interaction with industry, including the engagement of industry in collaborative research programmes, which is outwith the responsibilities of CLIK and for which different support arrangements will be appropriate.

28. We recommend that the CCLRC engages with representative bodies from industry in order to stimulate and assess demand for training on its facilities. Subsequently, it should allocate an appropriate period of time for the use of facilities for training purposes. (Paragraph 69)

Accepted, with qualification. Over a period of several years, the CCLRC has witnessed a trend in facility use by industry. There has been a distinct shift away from dedicated company researchers visiting facilities towards outsourcing and service mode, especially in the area of process technology. In general, only the pharmaceutical and biotechnology sectors have sufficient investment in R&D to fund staff trained in large facility use. Consequently, industrial bodies will require training only if they are committed to performing work on the facilities themselves. Most opt to access facilities via service mode or through collaboration with academic researchers.

Where CCLRC perceives industrial training to be lacking is not in the 'hands-on' use of the facilities for industry, but in awareness of the potential benefits of research using the facilities for solving industrially relevant problems. To address this issue, the CCLRC intends to organise facility 'industry awareness days' and road shows. Once aware of the potential, CCLRC would then expect industry to choose the most cost-effective route of access.

For those industrial users wishing to visit facilities directly and collect their own data, the CCLRC acknowledges the need for specific training. Existing industrial non-service users will be consulted to seek feedback on their training requirements and how these might best be met.

29. Recommendation 29. We recommend that, as part of its current discussions with universities on this subject the CCLRC works to provide a framework for establishing and publicising such skills shortage areas and then providing the appropriate training, using specifically allocated periods on instruments where appropriate. (Paragraph 70)

Accepted. As set out in the CCLRC supplementary written evidence submitted to the Select Committee, postgraduate and postdoctoral training is not directly identified as a

⁴ *Lambert Review of Business – University Collaboration* Final Report December, HMT/ HMSO December 2003, ISBN 0 – 947819 – 76 – 2 (http://www.hm-treasury.gov.uk/media/EA556/lambert_review_final_450.pdf)

key element of the CCLRC mission, as is the case for other Research Councils. The primary role that CCLRC plays and will continue to play is through the provision of large facilities and direct staff interaction with postgraduate and postdoctoral researchers. We agree with the Committee's view that "*The best training offered by CCLRC lies in the support offered to researchers using the instruments there. This is seen as first class.*" The CCLRC will continue to sponsor summer schools and workshops, making direct use of experimental time on facilities, for the training of postgraduate and postdoctoral researchers.

In addition, and within the resources available, the CCLRC is committed to further exploration of education and training requirements and opportunities. This will address, among others, the continuing development of the training regime available through work at the large research facilities – in line with the needs of the research communities. CCLRC will work closely with the other Research Councils, who take lead responsibility in postgraduate training and research fellowships.

30. We recommend that the CCLRC establish user groups for each major facility in order to obtain the views of the relevant research communities on the operation and development of its facilities. (Paragraph 73)

The CCLRC already has well-established user groups associated with all its major facilities. User Meetings are held on an annual (sometimes six-monthly) basis at which senior staff from each facility meet with users to discuss progress on scientific research projects, to seek views on the prioritisation of facility developments and to seek feedback on change requirements in general facility operations.

31. We recommend that the CCLRC redoubles its efforts to come up with name that more accurately reflects its mission and functions. The Research Facilities Council would be an improvement. (Paragraph 74)

Rejected. It would fall to the Government to effect such a change of name through an amended Royal Charter. The name proposed by the Committee would still have the disadvantage of not making clear that CCLRC is responsible for advice on or provision of facilities only in certain areas of research. The Government and CCLRC agree with the Committee's basic concern, but have been unable to identify a preferable alternative name. They therefore intend to leave it unchanged.

32. We recommend that future bids for funding by CCLRC include a sum of up to £1 million per annum for public engagement activities. (Paragraph 76)

The Research Councils' mission statements include encouragement of public engagement and dialogue. The '*Science and Innovation Investment Framework 2004 – 2014*' confirms that public engagement with science remains a priority for the Government. The CCLRC achieves this objective through its 'Science and Society' programme. The CCLRC is considering expanding its programme, on a national scale, under four themes:

- "*Talking Science*" covering the CCLRC public lecture programmes;

- *"Exploring Science"* enabling schools and the public to interact directly with the CCLRC scientists and engineers;
- *"Seeing Science"* delivering educational resources to schools in an imaginative and engaging way; and
- *"Inspiring Creative Science"* investigating the cross over points between the arts and the sciences to involve a wider public that has not traditionally been engaged with science.

It is for the CCLRC, as for other Research Councils, to decide what resources it allocates to the task from within its overall budget. CCLRC will decide the way forward in the light of the forthcoming allocation of the Science Budget.

October 2004

Annex

Council for the Central Laboratory of the Research Councils: Office of Science and Technology Review of The Implementation of The Quinquennial Review (Qqr)

1. Introduction

1.1 In June 2004, the Government instigated a light touch review of progress one year after the Council for the Central Laboratory of the Research Councils (CCLRC) took up its new roles following the Quinquennial Review (QQR). The terms of reference and membership of the Review Team are shown at Annex 1. The review did not re-open any of the major changes to CCLRC arising from the QQR, but did look critically at progress in implementing the recommendations.

2. Background

2.1 The Research Councils UK (RCUK) are monitoring progress on adoption of the QQR recommendation's by all the Grant Awarding Research Councils, through regular updates. The most recent updates, including one from CCLRC, were discussed at its 27 May 2004 meeting. The report of this meeting notes that CCLRC is making good progress in implementing expectations and requirements placed on it by the QQR process.

2.2 Against the background of these general updates, this review looked critically at whether the current governance and organisational arrangements are optimal for delivering CCLRC's newly inherited strategic roles and responsibilities. A number of key issues warranting further consideration that cascade from them were identified. These fall broadly into two areas, (i) CCLRC's new national, strategic, advisory role as regards access to facilities; (ii) the strategic direction of CCLRC's own operations.

2.3 During the conduct of this review, the House of Commons Science and Technology Committee reported on "The work of the Council for the Central Laboratory of the Research Councils(1). This was published on 22 June. The Review Team were also aware of the Review of Research Councils UK (2) and outcomes were visible both via the Office of Science and Technology (OST), and cross membership provided by Sir Tom Blundell.

3. Methodology and Approach

3.1 The key issues identified and agreed by the Review Team were captured in a consultation document that posed a number of questions (Annex 2). This was used as the basis for one to one interviews with key stakeholders and also circulated more widely to current and past members of the Council of CCLRC.

3.2. The Review Team met on 13 July to discuss and finalise its report.

4. Outcomes of Consultation and Meetings

4.1 A list of the stakeholders engaged in one to one meetings, and the current and past members of CCLRC Council who responded in writing to the consultation document, is set out in Annex 3. Although unable to meet, David Brown also had a telephone conversation with the CCLRC Chief Executive (Professor John Wood) on Monday 14 June.

4.2 At the interviews, and in the written responses, the points set out below were raised on more than three occasions, and underpin the recommendations for the way forward identified in this review.

- Under the well-respected leadership of the Chief Executive, Professor John Wood, there is a general acceptance that the CCLRC senior management team have made good progress in the year since the QQR Stage 2 was implemented.
- Despite this good progress, a number of changes to CCLRC organisation, structure and governance need to be introduced to facilitate CCLRC's new roles and responsibilities.
- There is little strategic discussion in Council on the tensioning of science needs.
- There are good analogues of governance and organisational arrangement in BBSRC, MRC and NERC, who have successfully tackled the tensions between strategic versus operational roles, that CCLRC should examine as potential models for the future.
- There is almost unanimous agreement that there is no need for Research Council Chief Executives to be members of Council of CCLRC.
- Whilst agreeing with the general need not to be a member of CCLRC Council, PPARC are particularly anxious to formalise at least annual, high level, interaction with the Council and/or future CCLRC science strategy advisory mechanisms.
- The need for the International Scientific Advisory Panel that reports directly to the CCLRC Chief Executive, decisions and advice from whom are not recorded, should be reviewed.
- There is little visibility of staff management structures, staff reporting lines or the advisory or subcommittee structure, their roles and responsibilities and how these report to Council.
- Whilst the scope of CCLRC's roles and responsibilities for provision of advice on UK large facilities is understood within the RCUK family, there is little knowledge or visibility of the limits of this, and how it relates to those for other Research Councils and OST, outside this forum.
- It is not clear how CCLRC proposes to engage the whole UK community when seeking to provide advice to UK government on the next generation of large facilities for which it is responsible.

5. The Way Forward (incl. recommendations)

5.1 Although limited in time and scope, this review has provided some useful and well-informed pointers as to how CCLRC organisational and management structures should evolve. As they resonate with ideas and recommendations made elsewhere (ref. 1 and 2), the Review Team urge that Ministers ask CCLRC to give them the most serious consideration, and that the consequential changes in structure, process and culture are made first and foremost by CCLRC, but also, where appropriate, by OST and the other Research Councils.

5.2 Remit of CCLRC and provision of strategic advice on large facilities: The nature and scope of the types of large facilities that CCLRC is expected to support and provide strategic advice on to RCUK and OST, is clearly laid out in Stage 2 of the QQR. However it is clear from this review, and the apposite remarks of the Select Committee, that although the devolution of responsibility for advice on these and other large facilities amongst Research Councils, eg. research vessels, is clearly understood within the RCUK forum, there is some confusion and misunderstanding within the wider UK community and, maybe, internationally.

The Review Team recommend that, in conjunction with OST and RCUK, CCLRC clearly articulate (a) the basis, nature, scope and recipients of its advice, how the respective communities are engaged in its provision and how it is integrated into development of the OST Large Facilities roadmap, and (b) similarly its other functions."

5.3 Governance arrangements: (Council Membership): The CCLRC has a unique role in the Research Council family, providing a variety of critical services to the communities of those Councils severally and jointly, as well as to RCUK and OST. The five most interested Research Council Chief Executives currently sit on the CCLRC Council to provide visible high-level reassurance of the engagement between the respective parties. However, it is abundantly clear from submissions to this review that there is a weight of opinion that Research Council Chief Executives do not need to be members of the CCLRC Council. There are obvious problems with the current arrangement with frequent concerns about conflicts of interest. Their presence can also be unintentionally intimidating to other Council members and the CCLRC Chief Executive. For their part, the other Chief Executives often feel equally uncomfortable in the role.

5.4. The attractive possibility of reducing the size of the CCLRC Council and/or involving additional active researchers or stakeholders from the UK or overseas, both provide additional strong justifications for re-examining the composition of Council membership. However, removal of the other Chief Executives from the CCLRC Council would leave a gap (real or perceived), that needs to be addressed, namely to provide assurance that there will be necessary interaction and engagement between all the parties. This is particular critical in the case of Particle Physics and Astronomy Research Council. Reconsideration of the membership of CCLRC Council should run in parallel with consideration of the membership of the proposed new International Scientific Advisory Committee (see recommendations in para 5.5.).

The Review Team recommend that the composition of membership of CCLRC Council should be reviewed and that:

- **there is no need for membership to be extended to Research Council Chief Executives.**
- **there should be particular consideration of how the CCLRC Council will interact with the Particle Physics and Astronomy Research Council (PPARC)**
- **when re-populating the Council, it will be imperative to include new members who have skills and experience in corporate strategy and policy development.**

5.5 Governance arrangements (Independent Scientific Advice): Of particular note and concern to the Review Team, is that there is no evidence to indicate that CCLRC Council is formally receiving independent strategic advice on its, or the UK's, on-going or future investments in science and technology. Without this it is not possible for Council to have a good evidence base for tensioning competing demands or for formulating advice to RCUK/OST on future needs. An International Scientific Advisory Panel (ISAP) provides advice directly to the Chief Executive but this is not recorded or publicly accessible, and plainly has only a limited remit. These current arrangements do not provide any reassurances to the UK community that there is objective, independent advice on options, scrutiny of competing demands or an audit trail of decision-making processes. As part of the adoption of new governance arrangements it is vital for the reputation of CCLRC that it creates more open and transparent structures for provision of scientific input and advice. The critical need to retain an international benchmarking dimension to the work of CCLRC needs to be captured in the new arrangements, at either Council or Scientific Advisory level or both. With this in mind, consideration should be given to involving current members of the ISAP in the new advisory structures.

The Review Team recommend that the CCLRC Council establishes a new International Scientific Advisory Committee (ISAC). Membership should include the CCLRC Chief Executive, ideally be chaired by an “independent” member of Council for the reasons recommended by the Select Committee, have an open annual nomination process allowing turnover each year, and include scientists and technologists from outside the UK.

The new International Scientific Advisory Committee should have terms of reference agreed by Council that include a responsibility for provision of advice on all science and technology activities and investments that fall within CCLRC's remit.

5.6 Further development of performance measures and other metrics, as recommended by the QQR and, now by the Select Committee, will play a key part in providing some of this reassurance. Similarly the active promotion of a more collaborative culture at all levels within and across the Research Councils, as recommended by the concurrent review of the RCUK, will also help. Against this background:

The Review Team recommend that CCLRC take steps to ensure that additional and visible mechanisms exist that give reassurance:

- to RCUK, OST and Government that the other Research Councils have been fully involved in the provision of any strategic advice and guidance that CCLRC provides;
- to the other Research Councils that CCLRC's mechanisms for developing its strategic advice, resource allocation and operations take due account of the Councils' communities in ways that complement or reinforce, rather than duplicate or cut across, those Councils' own consultation mechanisms.
- to its research community partners that appropriate consultation mechanisms are in place to generate advice for Council, the new International Scientific Advisory Committee and ultimately RCUK and OST.

5.7 From these recommendations it is clear that the Review Team feel that the current CCLRC governance structure is opaque and seriously inhibits transparent separation of strategic, advisory and operational functions. The need to separate these roles and responsibilities was noted by both the QQR and the Select Committee's recent report. Under the arrangements proposed here, a more visibly independent Council would be responsible for balancing independent ISAC advice alongside its responsibility for CCLRC facility operations. In order to be informed and fully comprehensive, the ISAC's advice would nonetheless be expected to incorporate the perspective of CCLRC operations, for example by drawing on advice from the CCLRC Programme Board.

The Review Team recommend that the new CCLRC governance structure, and its rationale, should be well publicised, for example on the CCLRC website.

5.8 The Executive: It is clear from this review, and endorsed by comments of the Select Committee, that CCLRC has not yet introduced new internal management and organisational arrangements to facilitate the separation of CCLRC's strategic and operational roles. However the Review Team are aware that CCLRC is currently in the midst of discussing proposals and options with staff in order to move this key issue forward. The new management structure(s) must be able to implement and manage the allocation of approved funds across, and between, different recipients. The important functions of management of resources and associated high-level programmes are key to implementing Council strategy and for providing feedback to the ISAC, Council and its subcommittees.

The Review Team commend CCLRC's intention to introduce new internal management and organisational arrangements and recommend that these changes should be introduced and finalised as soon as possible.

The Review Team also recommend that the CCLRC Chief Executive considers the key senior management structure and related posts needed in order to separate out and deliver strategic advisory, resource allocation/ programme management and operational roles effectively, and makes changes, including recruitment as necessary, in order to accelerate the desired structural and cultural change within CCLRC.

5.9 The current management structure suffers from the same opacity as CCLRC governance arrangements.

The Review Team therefore recommends that new management structures, and its associated rationale, should be well publicised, both internally and externally.

5.10. The consultation document sought views on whether there would be any advantage in locating some of CCLRC senior management within the Research Council offices in Polaris House, Swindon. The Review Team has considered this option and does not recommend it.

5.11. The Review Team recognise a fundamental and important point namely that it is ultimately the responsibility of the CCLRC Chief Executive, Professor John Wood, to champion and implement the required changes.

6. References

- (i) “The work of the Council for the Central Laboratory of the Research Councils”. Eighth report of the session 2003/04. House of Commons Science and Technology Committee. Published on 22 June 2004.
- (ii) Report of the Review of Research Councils UK.

7. Acknowledgements

David Brown and the Office of Science and Technology are grateful for all the input, advice and cooperation of all those who were interviewed and who responded to the invitation to comment on the consultation document. Thanks also go to the Review Team for their advice, patience, and cooperation in assisting with the preparation of this report in a very short space of time.

CCLRC: Review of QQR Implementation

Annex 1

Terms of Reference

- To review and advise on progress made by the CCLRC in implementing the 2002 QQR recommendations, in particular changes in structure and process.
- To advise on whether any further changes are needed or whether there are any aspects of the QQR recommendations that might be refined in the light of the first year of practical experience, including the role of and membership of the Council
- To report to the Minister for Science accordingly in July 2004

Membership of the Review Team

- Sir Peter Williams (Chairman of the Engineering and Technology Board) Chair,
- Sir Tom Blundell, University of Cambridge
- Professor Bill Wakeham, Vice-Chancellor, University of Southampton
- Mr David Brown, Consultant (formerly Director Science Programmes, NERC)

Annex 2

Introduction

One year after the Council of the Central Laboratory of the Research Councils (CCLRC) took up its new roles following the Quinquennial Review (QQR), the government is instigating a light touch review to look at progress made by CCLRC in implementing the QQR recommendations. The review will not re-open any of the major changes to CCLRC arising from the QQR

Terms of Reference

- To review and advise on progress made by the CCLRC in implementing the 2002 QQR recommendations, in particular changes in structure and process
- To advise on whether any further changes are needed or whether there are any aspects of the QQR recommendations that might be refined in the light of the first year of practical experience, including the role of and membership of the Council
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Membership of the Review Team

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- Sir Tom Blundell, University of Cambridge
- Professor Bill Wakeham, Vice-Chancellor, University of Southampton

Current Situation

The Research Councils UK (RCUK) is monitoring progress on adoption of the QQR recommendation's by all the Grant Awarding Research Councils, through regular updates. The most recent updates, including one from CCLRC, were discussed at its 27 May 2004 meeting. It is clear that CCLRC has made good progress in implementing expectations and requirements placed on it by the QQR process which include some new roles and responsibilities.

Emerging Issues

In the context of the QQR induced changes and the concurrent review of RCUK, it is timely to examine whether the current governance and organisational arrangements are optimal or whether fine tuning could enhance both CCLRC's own development and its contribution to the RCUK family.

The key issues that appear to warrant further consideration cascade from CCLRC's new strategic roles and responsibilities. These are broadly in two areas, (i) CCLRC's new national, strategic, advisory role as regards access to facilities; (ii) the strategic direction of CCLRC's own operations. Suggested questions for discussion include:

- What structures or processes exist to ensure that the Council is providing comprehensive, strategic advice about access to, and operation of existing and prospective facilities?
- Is the rationale for the current Council membership correct? Is the presence of five other Research Council Chief Executives on Council a good or bad arrangement? What alternative arrangements might be preferable?
- Do existing structures and processes provide sufficient and visible assurance that continuing responsibility for CCLRC operations does not compromise provision of independent strategic advice by the Council?
- Is there enough wider UK research and user community membership on Council, or its advisory groups, subcommittees etc.?
- How is CCLRC ensuring that the views of all relevant sectors of the UK science and engineering research base are listened to across the range of its responsibilities and activities, i.e. from day-to-day facility operation right through to future facilities development in the UK or overseas?
- Does the location of the Council's HQ at CCLRC's RAL compromise its impartiality, in appearance or reality? If so, what practical solution(s) are required to address this issue?
- How should CCLRC's relationships within the RCUK family develop?
- How does CCLRC's input dovetail with other RCUK mechanisms for provision of advice on large facilities?
- Is there full knowledge and visibility of how CCLRC is now operating across the range of its responsibilities, and of the structures and arrangements facilitating this new role?

(i) David Brown had one to one meetings with:

- Engineering and Physical Sciences Research Council (EPSRC) Chief Executive, Professor John O' Reilly (11 June)
- Biotechnology and Biological Sciences Research Council (BBSRC) Chief Executive, Professor Julia Goodfellow (15 June).
- Office of Science and Technology, Head of Science and Engineering Base, Dr Chris Henshall (15 June)
- Natural Environment Research Council (NERC) Chief Executive, Professor John Lawton, (15 June)
- CCLRC Director of Corporate Development ,David Schildt (22 June)
- Medical Research Council (MRC) Chief Executive, Professor Colin Blakemore, (29 June)
- Particle Physics and Astronomy Research Council (PPARC) Chief Executive, Professor Ian Halliday (29 June)

(ii) Written responses to consultation document were received from:

- Professor Graham Davies, Birmingham University (current member of CCLRC Council)
- Mr John Burrows, Business Development and Growth Ltd (current member of CCLRC Council)
- Dr Richard Henderson, Director MRC Laboratory of Molecular Biology, Cambridge (past member of CCLRC Council)
- Mr Philip Ruffles, Rolls Royce (past member of CCLRC Council and Chair of Review of RCUK)
- Dr Derek Chadwick, Director Novartis Foundation (current member of CCLRC Council)
- Professor David Williams, University of Liverpool (past member of CCLRC Council)
- Professor Robert Donovan, University of Edinburgh (current member of CCLRC Council)

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Seventh Report	Light Pollution and Astronomy (<i>Reply HC 127, 2003-04</i>)	HC 747
Eighth Report	The Scientific Response to Terrorism (<i>Reply Cm 6108</i>)	HC 415
Ninth Report	The Work of the Engineering and Physical Sciences Research Council. (<i>Reply HC 169, 2003-04</i>)	HC 936

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Seventh Report	The Office of Science and Technology: Scrutiny Report 2002 (<i>Reply HC 293</i>)	HC 860
Eighth Report	Short-Term Research Contracts in Science and Engineering (<i>Reply HC 442</i>)	HC 1046