rae2008
Research Assessment Exercise

RAE 2008

MANAGER'S REPORT – APRIL 2009

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Executive Summary

1. The 2008 Research Assessment Exercise (RAE) was conducted jointly by the Higher Education Funding Council for England (HEFCE), the Scottish Further and Higher Education Funding Council (SFC), the Higher Education Funding Council for Wales (HEFCW) and the Department for Employment and Learning, Northern Ireland (DEL). It was managed by the RAE team, based at HEFCE, on behalf of the four UK higher education funding bodies.

2. The primary purpose of the RAE was to produce quality profiles for each submission of research activity made by institutions. The four higher education funding bodies are using the quality profiles to allocate their grant for research to the institutions which they fund with effect from 2009-10. Any HEI in the UK that is eligible to receive research funding from one of these bodies was eligible to participate in the RAE.

3. The exercise was successful in meeting its overarching objective of providing robust results for funding, and ran on schedule and within agreed budget parameters. This was in large measure due to the hard work of the panel chairs and members, the seconded panel secretariat and the RAE team.

4. In general the innovations introduced for the 2008 exercise were helpful in delivering the objectives of the exercise. In particular, the two tier panel structure ensured greater consistency across cognate subject areas, and the quality profile permitted a more fine-grained assessment and outcome. If greater consistency of approach across all panels is judged to be desirable then early advice will have to be given about the nature and timing of any exercise-wide comparisons during the assessment phase.

5. Externally commissioned reviews of the Data Collection system (by PWC) and the Accountability burden of the RAE 2008 (by PA Consulting) were positive and made constructive recommendations for future similar exercises. Most systems and processes worked efficiently to achieve this outcome. An externally commissioned review of the RAE data collection system confirmed that it was fit for purpose, and a review of the accountability burden of the RAE has shown that the burden imposed by the RAE on HEIs has decreased since the 2001 exercise.

6. The successful delivery of the 2008 exercise was largely due to having a stable and highly professional team with sufficient time to prepare adequately for the very intensive assessment phase. It is therefore recommended that any future exercise should be planned well in advance, and that the team tasked with delivering the exercise is appropriately supported throughout.

7. Considerable resource and expertise is required to develop and implement a data collection system which is fit-for-purpose. User requirements, both from the point of view of internal stakeholders and those in HEIs charged with making submissions must be balanced with technical considerations. In developing such systems, a balance should be struck between essential requirements and additional "nice-to-have" features. The move to reform the research assessment process by developing the REF could provide an opportunity to simplify the data collection

processes. The effort involved in delivering some aspects of the specification for the data collection system was disproportionate to the benefit they delivered. In addition to the main Data Collection system, the RAE team used a number of other IT-based systems to support the exercise. These were developed in-house by HEFCE's IT Services and constitute a large infrastructure investment which might usefully support the REF in the future.

8. Although the budget for delivering RAE 2008 was more than double that provided to run the 2001 exercise, there were still some areas which operated on extremely limited resources. Consideration should therefore be given to ways in which the assessment work undertaken by panels can be streamlined without compromising the quality or rigour of the process.

9. All forms of research, and all types of research output, were treated equitably and appropriately by the panels, though less "applied" work was submitted than might have been expected. There remains a perception that only those currently working in organisations which "use" the outputs of research can contribute to the assessment of its application beyond the academic sphere and that panels might not recognise the quality of such work. A simple analysis of the affiliation of panel members may not do justice to the breadth of relevant expertise on the panels. If greater explicit non-academic representation is considered desirable in a future assessment process greater flexibility in the terms of such participation would be required.

10. The 2008 RAE made strenuous efforts to take full account of equal opportunities legislation and required institutions to select research active staff in line with an internal code of practice. As well as providing processes to recognise the contribution of those staff whose time for research during the period was limited, mechanisms were introduced to recognise the contributions of early career researchers and to give credit to departments who have worked to ensure the long-term sustainability of the research base through developing the next generation of researchers. Panels were able to adapt the general requirement to reduce the expected volume of research to take account of the publication patterns of their discipline, and reported high quality work being undertaken by researchers at all stages of their career.

11. This report identifies a number of key achievements and areas for future development. These are summarised at the beginning of each chapter. The exercise achieved its overall objective in providing a robust set of outcomes which could be used for the distribution of funding, and the observations below should be viewed in the context of a successful project.

1. Introduction

1.1. This report describes the development and implementation of the arrangements for the 2008 Research Assessment Exercise (RAE) and the conduct of the exercise. The report is presented to the UK Higher Education Funding Bodies who conducted the 2008 RAE. They are the Higher Education Funding Council for England (HEFCE), the Scottish Further and Higher Education Funding Council (SFC), the Higher Education Funding Council for Wales (HEFCW) and the Department for Employment and Learning, Northern Ireland (DEL).

1.2. The report has been prepared by the joint UK Higher Education Funding Bodies' RAE Manager. It is based on the experience and observations of the RAE Manager and his Team during the 2008 exercise and incorporates many of the views and comments received throughout the exercise from panels, higher education institutions (HEIs), officers of the funding bodies and others.

1.3. The 2008 RAE will be the last such exercise in its current form. HEFCE is working to develop new arrangements for the assessment and funding of research. The new arrangements - the Research Excellence Framework (REF) - will be introduced after the 2008 RAE and will be fully implemented to inform funding from 2014 onwards. Although the new scheme is expected to be significantly different from the RAE, in some respects there will inevitably be some similarities in process and policy. Therefore, where appropriate, suggestions for the future have been made in this report. These are summarised in section 13.

1.4. The RAE Manager's report provides an opportunity to reflect on the overall success of the exercise, and to highlight those areas which were particularly successful or where improvements could have been made. Each of the main sections includes a summary of lessons learned as well as a more detailed narrative.

Acknowledgement

1.5. The RAE Manager is grateful for the input of colleagues in the RAE team and others at HEFCE in compiling this report. The dedication and professionalism of all those involved in the exercise, whether panel chairs and members, the RAE team, or the panel secretariat could not be faulted. All those involved took on a workload considerably in excess of that which should ordinarily be expected, and it is only with this goodwill and commitment that an exercise on this scale can be accomplished within the time and resources available. It has been an enormous privilege to have had this opportunity to work alongside such dedicated colleagues over the course of the exercise.

2. Context for RAE 2008

Key Successes
The 2008 RAE built on the success of previous exercises and the findings of Sir Gareth Roberts' review of research assessment and funding.
Key innovations crucial to the 2008 RAE were implemented as a result of that review.

Areas for improvement
The pace of evolution of the RAE was too slow for some stakeholders, resulting in the decision mid-way through the RAE process to make the 2008 exercise the last in its current format. This announcement created uncertainty about the value of continuing with the 2008 RAE.

2.1. Following the 2001 RAE, the funding bodies commissioned a full review of their approach to research assessment, led by Sir Gareth Roberts[1]. In the light of the two rounds of consultation which informed that review, the UK HE funding bodies set out the basis for the 2008 RAE in February 2004. Amongst the most important decisions announced at this time were the introduction of a two-tiered panel structure, with sub-panels working with a number of overarching Main Panels, and the replacement of the single grade point scale used to present the outcomes with a "quality profile". These initial decisions were to have a significant bearing on the shape of the 2008 exercise and provided the focus for much of the policy work during 2005.

2.2. With the publication of "*RAE2008: Initial Decisions by the UK funding bodies*" (RAE 01/2004) work to implement the exercise began. By the time the RAE Manager, Deputy Manager and other members of the 2008 RAE team were in place, a process had been established to consult upon the configuration of panels and to nominate panel members.

2.3. Also during 2004, the House of Commons Science and Technology Committee published *Research Assessment Exercise: a re-assessment*.[2] This was published almost immediately the RAE team was put in place, and whilst welcome in so far as it confirmed that the 2008 RAE should go ahead as planned, criticised the funding bodies for taken an approach which the Committee felt was unduly conservative. This report set the tone for the political dimension of the RAE over the following years, and ultimately culminated in the decision to replace the RAE following the 2008 exercise.

2.4. The decision to move away from the RAE was announced in the update to the 10 year Science and Innovation Framework[3] published as part of the 2006 Budget, in which the Government announced….in paragraph 1.13, that: "*In order to maintain the UK's world-class university system, the Government is keen to ensure that excellent research of all types is*

[1] Review of research assessment, Sir Gareth Roberts, May 2003

[2] House of Commons Science and Technology Committee Eleventh Report of Session 2003–04

[3] Science and Innovation Investment Framework 2004-2014: Next Steps, 2006

rewarded, including user-focused and interdisciplinary research. It also wants to ensure that institutions continue to have the freedom to set strategic priorities for research, undertake "blue skies" research, and respond quickly to emerging priorities and new fields of enquiry. The Government is strongly committed to the dual support system, and to rewarding research excellence, but recognises some of the burdens imposed by the existing Research Assessment Exercise (RAE). The Government's firm presumption is that after the 2008 RAE the system for assessing research quality and allocating QR funding from the DfES will be mainly metrics-based. The Government will launch a consultation on its preferred option for a metrics-based system for assessing research quality and allocating QR funding, publishing results in time for the 2006 Pre-Budget Report."

2.5. The announcement, mid-way through the exercise, that RAE 2008 would be the last of its kind, and more significantly that its successor would be introduced as soon as possible thereafter, initially had a detrimental effect on the morale of many panel members who felt that their own efforts would have relatively little impact on the UK research funding landscape. It is to the great credit of all involved that this did not deter them from continuing with the task in hand, and rewarding for those involved that the RAE outcomes will substantively inform research funding over the next few years.

2.6. The process for the Research Excellence Framework (REF), which will succeed the RAE, is currently in development. It is vital that any future process considers the views of those involved in previous exercise and it is encouraging that a number of chairs and members of the RAE 2008 panels are involved in Expert Advisory Groups to help inform the deliberations of the UK funding bodies.

3. RAE 2008: Start-Up Phase

Key Successes
Panel chairs, members and secretariat were recruited in time to start the criteria setting process.
Key policy decisions were implemented and promulgated through RAE Guidance to Panels.
Key staff were recruited and developed quickly into an effective and outcomes focused team.

Areas for improvement
The initial timetable was extremely tight, in part due to late recruitment of core RAE team.
Nominations process should be developed with greater thought about how the information will be conveyed to the panel chairs.

3.1. The RAE Manager came into post in late August 2004, by which time interviews to recruit a Deputy Manager and other members of the team had already taken place. Continuity from the 2001 team was provided by the RAE administration manager and a number of colleagues from HEFCE's Analytical Services and IT services teams who had been involved in the technical work of several previous exercises.

3.2. The initial timeline to set up the key processes for the exercise was almost unfeasibly tight. A commitment had been given that submitting HEIs would have 2 years' notice of the criteria to be used for the exercise before the submission date of 30 November 2007. The provisional timetable for the exercise therefore indicated that the final criteria would be published in November 2005, preceded by a consultation in the summer. However, at the point at which the RAE team started work, there were no main or sub-panel chairs or members, and no dates for meetings had been fixed. In addition, the processes for gathering nominations for the exercise were entirely paper based, so putting together lists of nominations was difficult and time-consuming. The timetable for the exercise is set out below.

Table 1: Timetable for RAE 2008

January 2005	Guidance to panels issued
May 2005	Panel membership published
June 2005	Guidance on submissions issued
Summer 2005	Consultation on criteria and working methods of panels
January 2006	Final criteria and working methods of panels published
May 2006	"RAE Roadshows" to discuss the process with HEIs
December 2006	Data Collection system launched for use by HEIs
December 2006	Formal invitation to HEIs to make submissions issued
Spring 2007	Survey of HEIs' submission intentions carried out
31 July 2007	End of assessment period for research income and research student data

31 October 2007	Census date for staff in post
30 November 2007	Closing date for submissions
31 December 2007	End of publication period (cut-off point for publication of research outputs)
January to November 2008	Panels meet to make assessments
December 2008	Results published
From January 2009	Funding bodies use the results of the 2008 RAE to calculate funding allocations for research.

3.3. Making rapid progress in the initial phases of the exercise was not aided by the complexities of working with the RAE Steering Group drawn from the four UK HE funding bodies. Whilst the relative size of the higher education sectors, and therefore the financial contribution to the exercise, were very different, each funding body, quite fairly, has an equal voice on the Steering Group. Moreover, each funding body had different priorities for the new exercise, and during the formation stage of the exercise, it was natural that all parties endeavoured to exert influence over the direction of the project. The RAE team was made to work hard to demonstrate its credibility during what was already a very pressurised period of activity. Whilst the Steering Group provided a healthy level of challenge to the proposals made by the RAE team, a more collegiate approach in the early stages of the exercise might have built better long term relationships between the RAE team and partners in the UK HE funding bodies. Future jointly run exercises should consider how best to involve and engage all four funding bodies so that ownership of the delivery of the exercise is shared, even though the delivery arm of the exercise might be located with only one of the funding bodies.

3.4. The RAE Manager also had a series of meetings with the Chief Executives of the UK HE funding bodies which ensured that there was support and input to the development of the exercise from the most senior levels of the key stakeholder bodies. This high-level engagement was important in building confidence in the exercise.

The RAE Team

3.5. A dedicated RAE Team was established to run the 2008 RAE. Although based in HEFCE and with a direct reporting route to HEFCE's Director for Research and Knowledge Transfer the team also reported through the RAE Steering Group to the four UK HE funding bodies on whose behalf they ran the RAE. Strenuous efforts were made to integrate the RAE team with colleagues within HEFCE (notably in IT Services, Analytical Services, Office Services, Research Policy and Finance). This was to prove particularly important as the exercise progressed and the project became increasingly reliant on the input of other parts of HEFCE's organisation. Any future similar exercise might wish to consider what could be done to ensure that there was similar, but proportionate, integration working across all four of the funding bodies.

3.6. A strong delivery focused culture developed in the team. As the team expanded during the exercise (see Annex B for the team structure) it was also important to put in place good

communications structures within different parts of the team to ensure that information flowed effectively within increasingly dispersed and discrete project elements. In the assessment phase a number of semi-formal "sub-teams" operated – covering policy, data collection / Burghill Road, team and panel administration, and audit. Regular team meetings, away-days and social events helped integrate the different parts of the team.

Recruiting and establishing RAE panels

3.7. Whilst the nominations process for the exercise was very much bottom-up; with around 5000 nominations relating to nearly 3000 individuals received for the different positions available from over 1100 nominating bodies, the process for appointing panel members worked down from the appointments of the fifteen Main Panel Chairs. Unlike sub-panel chairs, members, international members and members drawn from research user organisations, the Main Panel chairs were appointed following an applications process. Just over 100 applications were received and there were a number of suitable candidates for each Main Panel area. The appointments were made by the Chief Executives of the UK funding bodies on the basis of the applications, taking into account the diversity of the UK HE research base. Those appointed represented a wide-range of HEIs and a considerable breadth of research experience, as well as experience in assessment processes such as earlier Research Assessment Exercises.

3.8. Once the fifteen Main Panel chairs were in place, they were asked to make recommendations for sub-panel chairs for their sub-panels, based on the nominations received from nominating bodies and views received from 2001 RAE panel chairs and members. Similarly, once sub-panel chairs had been appointed by the Chief Executives of the HE funding bodies, they were asked to compile a recommended panel membership in conjunction with their Main Panel chair for approval by the funding bodies.

3.9. Sub-panel chairs gave considerable thought to the panel membership attempting to balance a number of considerations. Most importantly, the panels had to provide sufficient disciplinary coverage to ensure that the main body of work likely to be submitted would be covered. In addition, panel chairs considered the disciplinary, institutional, geographic spread of the panel membership, a mix of experience of previous assessments and new appointments whilst at the same time aiming to reflect the diversity of the academic community in the discipline. An equal opportunities monitoring exercise of the panel membership is available on the RAE website.

3.10. Whilst no specific requirement was put in place that each panel should include members from the research user community, strenuous efforts were made to appoint users wherever possible. To assist this, one of the categories of nomination open to nominating bodies was that of "user practitioner". However, this generated only a relatively limited pool to select from as this category accounted for only 3.4% of all nominations received. Bearing this low base in mind the final position of just under 10% of all panel members being affiliated to non HEI organisations at the time of appointment could be regarded as reasonable. Furthermore, and importantly, a large number of panel members had direct experience of collaboration with research users, and in many disciplines academic members had prior experience of working in non-HEI organisations. Thus, a simple analysis of the affiliation of panel members may not do justice to the breadth of relevant expertise on the panels. If greater explicit non-academic

representation was considered desirable in a future assessment process greater flexibility in the terms of such participation would be required.

3.11. It was agreed in discussion with RCUK that one, or at most two, observers from relevant research councils would sit on each Main Panel. In addition observers from the AMRC were appointed to serve on the three health-related main panels. While observers play no part in assessing submissions nor in determining quality profiles, they were asked to undertake two important roles: providing any advice that panels may reasonably request on the research councils' arm of dual support funding; and providing a feedback loop to key stakeholders on RAE process issues. In practice, this activity was perceived to be given a relatively low priority and participation in some main panel areas was much more effective than in others.

Secretariat support during the criteria setting phase

3.12. To support these panels during the criteria setting phase of the exercise, the RAE team recruited a cadre of 15 panel secretaries and 15 assistant secretaries from a pool of about 70 applicants from HEIs across the UK. Those selected were then assigned to work across a Main Panel area, including support for the sub-panels. Where possible, in matching the secretariat to panel areas the team took account of the applicants' knowledge of the subject area and previous work experience as well as potential shared conflicts of interest with panel chairs. The RAE team ran an induction session for the secretariat prior to the commencement of the first round of meetings, and a debrief session at the end of the criteria-setting phase. The arrangements for the secretariat are described in more detail in section 7.

3.13. The appointment of panel members and the arrangements for the first round of meetings was a significant pinch-point in the timetable for the exercise. Given the approvals process required for appointing panels, and the necessity of appointing first Main Panel chairs, then sub-panel chairs, then members in succession, the first round of meetings took place literally as acceptances were being received. Newly appointed panel members displayed great flexibility and commitment in responding positively to invitations to serve and making arrangements to attend the meetings at very short notice.

Key Policy Challenges

3.14. The RAE team was faced with a number of key policy challenges which were addressed through the criteria setting phase of the exercise and beyond. A number of issues had to be considered at the outset in order to provide the panels with the framework within which to develop their criteria. Members of the RAE team routinely attended some or all of each of the Main Panel meetings to support the discussion of these, and other policy issues. This was an effective way of ensuring a good dialogue between the sub-panel chairs, main panels and the RAE team throughout the exercise and was continued throughout the whole RAE.

Making the Quality profile work

3.14.1. First and foremost, the RAE team had to agree with the Steering Group and the panels, an operational structure for the quality profile which was introduced as one of the key changes to the exercise. There were two key elements to this discussion. Firstly, the detailed definitions of the quality levels (4*, 3* etc) needed to be agreed, and secondly, a

way of translation the assessment of RAE submissions into a quality profile had to be developed. The definitions of the quality levels for the exercise were finalised following discussions with the Main Panel Chairs. Although initially descriptors which avoided any geographical references were sought, it was ultimately decided that the "international" and "national" descriptors had sufficient currency from earlier exercises to be meaningful. In the spirit of developing a stretching target for the highest quality work, it was agreed to set the 4* level as "world-leading" quality.

Table 2: Quality Level Descriptors for RAE 2008

4*	Quality that is world-leading in terms of originality, significance and rigour.
3*	Quality that is internationally excellent in terms of originality, significance and rigour but which nonetheless falls short of the highest standards of excellence.
2*	Quality that is recognised internationally in terms of originality, significance and rigour.
1*	Quality that is recognised nationally in terms of originality, significance and rigour.
Unclassified	Quality that falls below the standard of nationally recognised work. Or work which does not meet the published definition of research for the purposes of this assessment.

Source: RAE Guidance to Panels RAE01/2005

3.14.2. Historically, RAE submissions have contained a mixture of quantitative and qualitative information, including research income and research student information, statements about departmental research strategies, achievements and plans, and bibliographic information to allow the assessment of high quality research output produced during the assessment period. Although the initial decisions by the funding bodies did not prescribe the information requirements, it provided clear signals that certain policy objectives would not be disadvantaged through the RAE, notably collaboration, applied and practice-based research and equality of opportunity issues. It was also stated that departmental research strategies would be assessed through the RAE and that panels would have access to a range of "quantitative indicators". Given this, the quality profile needed to reflect the assessment of a broad range of material. As the primary indicators become clearer (and in essence these were the same as in RAE 2001) the assessment model took shape, leading to the three sub-areas of research outputs, research environment and indicators of esteem being used as a framework for the different pieces of evidence captured through the submission.

3.14.3. Informal discussions with panel chairs from the 2001 exercise revealed that in many cases the assessment of outputs was almost totally responsible for the assessment decisions, and that the remaining qualitative and quantitative information was only used in borderline cases. Given the effort required to make accurate and detailed submissions, a system of weighting the different elements of the submission appeared a fair way of indicating the proportionate value of different parts of the submission, not only to indicate the priority that panels would put on different aspects of the assessment but also to signal

to institutions where the majority of their effort should be focused. Furthermore, as the Roberts review had indicated that expert review should remain at the heart of the exercise it was determined that the assessment of research output should always be the single most important component in the submission, so it was to be weighted at a minimum of 50% of the overall assessment.

Research Outputs

3.14.4. A number of issues were raised about the submission and assessment of Research Outputs. Most urgently, there was considerable pressure from HEIs to extend the period during for eligible publications to the end of the 2007 calendar year. Concerns were raised about the ability of auditing a mid-year cut-off date. This was accepted and the final publication period was extended to 1 January 2001 to 31 December 2007. However, the submission date was not moved, as this would have had serious consequences for the completion of the exercise on time, and the RAE team was mindful of the recommendation from the House of Commons Select Committee that the assessment period needed to be lengthened. As a result there was a period of one month when outputs could potentially be included in submissions but might not have been placed in the public domain. Although some institutions raised concerns about how to manage this period of potential uncertainty it was generally accepted that this was a reasonable compromise. It should be noted that submissions included a significant number of "pending" outputs brought into the public domain after the submission deadline but before 31 December 2007, and only a very small proportion of outputs which were listed as pending were subsequently found not to have been published and withdrawn from submissions.

3.14.5. In developing their criteria and working methods, panels were also asked to consider the range of output types which might be submitted and to take account of the deliberately broad scope of the definition of research for the RAE (modified only very slightly from the 2001 definition). Panels were also given discretion to recommend an upper limit of 2, 3 or 4 outputs per researcher from the assessment period.

3.14.6. Further discussion of how these issues were addressed during the criteria setting phase and the consultation on the draft criteria and working methods can be found in section 4.5ff.

Applied and Practice-based research

3.14.7. As with previous exercises, an important principle of the 2008 RAE was that all forms of research should be assessed on a fair and equal basis, and the assessment of pedagogic research fits within this overall framework of the assessment of all types of research the 2008 RAE sought to assess the quality of research of all types, and adopted an inclusive approach both to the definition of eligible research and to the type of research outputs which could be submitted to the exercise. However, throughout the development of the exercise criticisms were levelled at the perceived inability to take account of applied research in an expert review process conducted predominantly by academic colleagues. Three particular areas of concern were noted

- The relatively small number of "research users" on panels and the implication that those with an affiliation to an HEI were somehow unqualified to assess the quality of applied research
- The lack of relevant measures of research impact (note time lag issues, constantly asking people for indicators but very few offered
- Absence of specific assessment of the impact of applied research

In order to address these concerns, all panels were required to include a statement describing how they would assess applied and practice-based research in their criteria and working methods. Some examples are provided below, in respect of particular subject areas and "typologies" of research application.

Policy Research

3.14.8. In addition to concerns surrounding the ability of the RAE to measure the quality and impact of research with commercial or industrial applications, particular concerns were raised about the effect the assessment process might have on the production of high quality work to inform policy. Panels approached this issue, as with the other areas of the applied and practice-based work, with a subject relevant focus. In part this was addressed through the appointment of panel members with experience in undertaking and commissioning policy related work, in part through the adoption of working methods and criteria which encouraged the submission of high quality research regardless of its intended audience or likely utility.

Pedagogic Research

3.14.9. RAE 2008 panels considered issues related to assessing pedagogic research at an early stage, before the assessment period, to ensure that it was not disadvantaged in any way. A workshop was held in 2006 to discuss this, attended by representatives from across a wide range of panels, (notes of this workshop are available on the RAE website). This workshop involved a wide range of panel members and was facilitated by the chair of the Education sub-panel and the Chief Executive of the Higher Education Academy, who was also a member of the Education sub-panel. Panels were encouraged to assess pedagogic research where they felt they had the expertise to do so, but they could also utilise cross referral (in particular to UOA45, Education but in some cases explicitly to other cognate sub-panels) or specialist advice mechanisms, if these were the most appropriate means by which to inform their assessment of the research submitted. Panels' criteria and working methods set out the particular mechanisms they expected to use in assessing pedagogic research, alongside their guidance about other fields of research activity.

Health Research

3.14.10. Particular attention was paid to ensuring that there were consistent approaches across the health related disciplines throughout the exercise. An early meeting took place between the Chairs of Main Panels A-D to help clarify some broad areas of consistency, and representatives of the NHS R&D Directorates for England, Scotland, Wales and Northern Ireland were invited to attend to ensure that the application of healthcare

research on NHS and clinical practice was fully taken into account. Additionally, specific NHS nominees were appointed to each of sub-panels 1-5 and to the Main Panels in the healthcare areas, and in addition to RCUK observers, an observer representing the Association of Medical Research Charities was invited to sit on each of Main Panel A-C. Finally, prior to consulting on the draft criteria, a joint meeting of the Main Panels A and B was held to ensure consistency of approach across issues relevant to medical schools, such as clinical lectureships.

Interdisciplinary and Multi-disciplinary research

3.14.11. As part of the work to support RAE 2001 an analysis of the RAE's treatment of interdisciplinary research was undertaken. This concluded that there was no evidence that the RAE systematically discriminated against interdisciplinary research. The 2001 RAE introduced further processes to ensure that interdisciplinary research received parity of treatment, and the 2008 RAE continued these practices. For example, to assess the quality of such interdisciplinary work effectively, panels often appointed particular members with expertise in interdisciplinary research areas, cross-referred work to experts on other panels, and made use of specialist advisers with particular knowledge of the research area concerned. These procedures, alongside the introduction of the fifteen main panels to coordinate the work of cognate subject areas, helped ensure that the RAE fully recognised the importance of interdisciplinary research.

Equal Opportunities Legislation and Code of Practice requirements

3.14.12. Equality was a key principle of the RAE and each panel member received a briefing document (RAE 02/2005) on equal opportunities issues relating to the RAE drawn up by the Equalities Challenge Unit, who also attended a meeting of each main panel in the first rounds of meetings to personally brief the chairs of all sub-panels and answer questions relating to the briefing.

3.14.13. The Main Panel chairs in particular were especially keen to ensure the vitality and sustainability of their subject areas, and wish to encourage institutions to submit staff at all stages of their career, and those who for good reason, may not have been actively in research for all of the assessment period.

3.14.14. Institutions were also expected to make their submissions in line with an internal code of practice. This required submitting HEIs to confirm that they had complied with all relevant equal opportunities legislation in preparing their RAE submissions. Guidance on how to develop and implement the Code of Practice was provided in the Guidance on submissions, and further elaborated throughout the RAE period. Dedicated sessions on implementing the Code of Practice were held at the RAE roadshows in 2006.

3.14.15. The equalities briefing for RAE panel members and secretariat was updated in 2007 to take account of changes in legislation, and this updated briefing formed part of the training provided to the panel secretariat so that they had the necessary knowledge to advise their panels appropriately on equal opportunities issues relating to the assessment process.

Impact on Staff Mobility

3.15. Concerns were raised by some institutions that the abolition of the A* staff category (staff who changed institution during the 12 months immediately prior to the census date) would encourage a "transfer market" amongst academic staff. However, evidence from the Universities and Colleges Employers Association (UCEA), indicates that staff mobility did not increase significantly during the period prior to the RAE submission deadline. The UCEA report on staff recruitment and retention for 2008[4] notes that turnover rates for the year they collected data from 1 August 2006 and who left between that date and 31 July 2007 were "almost identical to the 2005 survey and point towards a consistently low level of labour turnover in the HE sector". This evidence would appear to contradict the persistent criticism of many that the RAE encouraged institutions to "poach" staff.

3.16. These policy issues were captured in the "Guidance to Panels" document used to brief panels and the secretariat as they developed their draft criteria. This document is available at www.rae.ac.uk/publications .

[4] The UCEA report is available at http://www.ucea.ac.uk/en/Publications/Recruitment_and_retention.cfm

4. Criteria Setting Phase

Key Successes
Panel criteria and working methods effectively balanced the need for subject variation with overall comparability.
Consultation was positive and effective in identifying key issues and ensuring consistency.

Areas for improvement
Developing greater consistency in the draft criteria at an earlier stage.
The RAE team might offer more scope for sharing ideas across different panel areas during the initial criteria setting phase.

4.1. The key decisions which needed to be reached during the first two rounds of panel meetings were:

- The relative weightings of research outputs, environment and esteem
- Where to assess different elements of the submitted data (eg, should research income data be considered as contributing to the research environment or an indicator of esteem).

Where possible agreement on these issues was sought at the Main Panel level. Panels were asked to use the questions set out in "Guidance to Panels" as a framework for their draft criteria statements. The Main Panels provided a forum for sharing emerging ideas from different sub-panels about aspects of the assessment process. The panel secretariat, were also able to transfer possible ways of working across the different sub-panels they supported. However, until the formal consultation was launched there were relatively limited opportunities for transferring ideas across Main Panel areas. Greater scope for sharing emerging draft criteria statements across the panel structure as a whole might have increased the consistency of approach amongst related subject areas at an earlier stage. However, doing so would probably have required panels to give up some of their relative autonomy to develop criteria in a way which would be appropriate for their own subject communities.

4.2. Inevitably, as a new structure within the exercise, the Main Panel groupings took some time to form their own identities, and the Main Panel chairs took time to provide the space for colleagues to develop a shared understanding of the task, and to understand something of the context of previous exercises which informed the view of sub-panel chairs coming together from different disciplines and with different experiences of previous exercises.

4.3. Although a number of panels were concerned about the treatment of monographs and other large scale research outputs, no panels suggested in their draft criteria, or in their final criteria that submissions might only require two or three outputs rather than the maximum of four set by the RAE Team. By so doing, panels immediately increased their maximum workload. When this decision was combined with the desire to assess in detail a greater proportion of submitted output, it is clear that panels were bringing a greater workload on themselves than ever before.

Consultation on Draft Criteria and Working Methods

4.4. The RAE team consulted on the draft criteria during the summer of 2005. The consultation ran from 16 July 2005 and closed on 19 September 2005. Reports from respondents were provided to the panels for a further round of meetings in the Autumn of 2005. 527 responses were received, and a report on the key issues is available on the RAE website[5].

4.5. The main finding of the consultation was that subject groups were broadly happy with the criteria which the panels in their subject areas had developed, but that submitting institutions sought greater consistency around a number of generic themes. With this in mind, the RAE team met with the Main Panel Chairs and worked with the Main Panels to seek consistency in the criteria whilst allowing appropriate subject specific flexibility.

4.6. The following issues, many of which had been subject to considerable discussion during the first two rounds of panel meetings were addressed through the consultation:

- early career researchers
- individual staff circumstances leading to reduced volume of outputs
- descriptors of quality levels
- proportion of material to be assessed in detail
- cross-referral processes
- outputs of significant scale and scope
- multiple citing of co-authored work
- variation in weightings between panels.

4.7. Of these, the processes for handling individual staff circumstances, including those of early career researchers, and outputs of significant scale and scope required particularly careful handling.

Individual Staff Circumstances

4.7.1. Respondents to the consultation indicated that there should be more consistency across panels in the way in which individual circumstances are handled especially regarding the quantity and quality of outputs listed by those citing individual staff circumstances. Following discussion with the Main Panel Chairs it was agreed that RAE published rules should only permit a reduction in output volume not its quality and the criteria were written to reflect this. The RAE team took legal advice to draw up a standard set of circumstances under which panels would be obliged to consider the individual staff circumstances. This standard list was included in the generic criteria statement which accompanied all panel criteria (paragraph 39 of the generic statement in RAE 2006/01). Sub-panels could vary this standard list only to take account of particular discipline/subject issues (eg safety in use of laboratory equipment; unavailability of sites for fieldwork due to war/foot and mouth disease). As was consistent with the exercise as a whole, sub-panels were not permitted to list other normal academic duties or secondment to senior management roles as an individual staff circumstance that mitigates a reduced volume of activity or output. This

[5] http://www.rae.ac.uk/pubs/2005/04/response/

was to be an area which led to a number of audit and verification checks during the RAE period.

Early Career Researchers

4.7.2. As noted above, the main panel chairs were clear that a key success criterion for the 2008 RAE would be its ability to adequately recognise and reward those departments which were contributing to the sustainability of their subject areas through the development of a future generation of researchers. Whilst all panels had shown a strong desire to encourage the inclusion of staff at an early stage of their career, the precise mechanisms and definitions used to achieve this varied quite considerably. For example, concerns were raised about the use and meaning of the term, 'entering the profession', to describe the start of a researcher's career. It was therefore agreed that the definition of Category A staff should be used as the benchmark of entry into the profession. If a staff member is eligible for submission as Category A staff on a given date, then they should be deemed to have entered the *academic* profession at that time. Considerable variation was noted between UOAs on what date of entry into the academic profession qualified an individual to be flagged as an early career researcher. While these differences reflected differences in subjects in the period of time it takes to become established in research, main panel chairs agreed this should be standardised: a single date of entry into the academic profession across the exercise was preferred and the period form 1 Jan 2001 to the census date was considered too long. It was therefore agreed that early career researchers should be defined for all UOAs as individuals entering the academic profession on or after 1st September 2003. Sub-panels were asked to give clear guidance in their statements on subject-specific circumstances that might result in reduced output or reduced evidence in esteem indicators for early career researchers.

4.7.3. Respondents noted the variation in the numbers of outputs normally expected of early career researchers and that in some UOAs, they could be submitted if they have no outputs. Sub-panels were required to specify in their criteria the normally expected number of outputs for early career researchers who are eg 4 years in the academic profession; 2 years in the academic profession. No sub-panel could specify that early career researchers may be submitted with nil outputs. It was noted that it would be helpful if the "normal expectation" could be harmonised across contiguous main panel areas (eg A-D) so as to discourage tactical submission of early career researchers; and that panels would need further guidance in 2008 in the event that any submission included staff citing nil outputs (as had happened in a small number of cases in 2001). Although a number of panels would have preferred to have allowed institutions to submit staff with no research output, this was considered to be unacceptable given that these staff would be subsequently part of a volume measure for research funding even if there was no evidence that they had been research active.

Outputs of significant scale and scope

4.7.4. Many respondents raised issues concerning the treatment of significant outputs, eg large monographs. There was widespread desire for a consistent approach to this area in those panels where such outputs are likely to be submitted.

4.7.5. A number of options were discussed. It was agreed that panels should develop working methods which permitted greater flexibility in the assessment of large-scale works and reduce uncertainty in institutions about whether they should submit fewer than four outputs in respect of submitted staff with substantial outputs.

4.7.6. The RAE Team was mindful of the advice already issued in "Guidance to panels", particularly paragraphs 47 and 48. In particular, paragraph 47e, "In reaching a view on the quality profile, sub-panels may reasonably consider the impact on the emerging profile of the research-active staff (including their listed research outputs and other indicators of excellence) … but the profile denotes something more than the sum of the contribution of individuals."

4.7.7. Those panels which anticipated receiving research outputs of such scale or scope that the production of these works occupied a significantly greater proportion of the assessment period than might normally be expected were encouraged to develop a working method to take account of such outputs by producing a quality profile which reflected the fact that outputs were submitted by the department as a whole, and which recognised those contributions which were deemed by the panel to be exceptional in scale or scope within the normal parameters of expecting four outputs for all members of staff active throughout the assessment period.

4.8. The final panel statements (RAE 01/2006) were made available online from 31 January 2006, and printed copies were dispatched to HEIs to arrive in the first two weeks of February 2006. This gave HEIs almost two years to prepare their RAE submissions, in line with earlier indications from the funding bodies.

5. Data Collection for RAE 2008

Key Successes
External reviews judged the Data Collection system to be fit for purpose, and feedback from the sector indicated that the system was an improvement on that used for 2001.
The RAE repository system worked effectively in supplying outputs to panel members in the least disruptive way for HEIs.

Areas for improvement
There was slippage in the timescales for delivery of research outputs from Burghill Road, especially in late Spring 2008, largely due to the unforeseen demand for supply of journal articles in hard copy. The processes and supply of materials for cross-referrals and specialist advice were subject to delays.

5.1. Developing the mechanisms for collecting the data required as part of RAE submissions was inevitably a major part of the overall RAE project. Work in this area was initiated by the internal Data Collection Working Group which comprised relevant staff from the RAE team, IT services, and the Analytical Services Group. This group included both the core systems development team and those with experience of developing the systems used for the 2001 and 1996 exercises and was invaluable in guiding the development of the system. After their appointment, members of the RAE data verification sub-team joined the working group.

5.2. An important function of the internal working group was to develop materials for review by the external RAE Data Collection Steering Group. This group included representatives of the four UK HE funding bodies and a number of HEIs, representative of the range of size and geographical spread of submitting institutions, and including both research support staff and technical IT staff with responsibility for completing the data collection processes in their institutions. This Steering Group met frequently during the exercise to support the development of a robust data collection system for the RAE.

5.3. The terms of reference of the Data Collection Steering Group were as follows.

- To advise the higher education funding bodies in the UK on the development of and support for data collection for the next RAE
- To identify, recommend and specify the functionality, design features and operating standards required of any software
- To approve the detailed scheme for the programming and testing of the software
- To ensure that the software is fit for purpose for timely dissemination to institutions as a means of returning their submissions, and that the data needs of panels are anticipated in the software development process.

5.4. The Steering Group made recommendations about the functionality of the system and played an active part in testing the software prior to the pilot release.

5.5. The system was initially released in pilot form, following testing by the development team and by members of the Steering Group. Two events were held with RAE data contacts and other HE representatives to cover key issues around the release of system.

5.6. The final system went live in January 2007. A number of further rebuilds were undertaken to implement some changes and fix bugs during the course of the year. A further planned rebuild in June 2007 incorporated the "submission" functionality.

5.7. Load testing and disaster recovery testing of the Data Collection system was undertaken by external consultants and reported to the Data Collection Steering Group. The review of the capacity of the system noted that the system had relatively few points of weakness since;

- There was a disaster recovery site which was continually updated from the live website every 15 minutes. This back up site could be up and running in as soon as one to two hours in the event of a system failure in Bristol.
- To prevent unnecessary downtime in the primary site in Bristol, there was a good level of failover built into the application infrastructure through the provision of backup web and database servers.
- The servers were sized conservatively given the expected data volumes and user numbers.

5.8. Extensive documentation was produced to support the release of the data collection system. In addition to the printed User Guide (also available on the RAE website and online via the data collection system), and several iterations of the Release Guide, there have been substantial additions to the RAE website. Much of the new information helps support the data collection process, and explains the policies and procedures underpinning the data collection system. Detailed FAQs ,based on queries actually received, were placed on the RAE website which helped reduce the number of email and telephone enquiries to the team

5.9. The RAE data collection system was reviewed by external consultants PwC. The main finding of the report was that the Data Collection system was fit for purpose and delivered what was required both for the funding bodies and for submitting institutions. The report also noted the relatively small size and depth of the team developing the system, and highlighted the problems noted above in respect of completing form RA5 through the web-based text editor. A copy of the report following their review is available on the RAE website.

5.10. A further benefit of the online data collection system was that it was relatively straightforward to turn this data collection system into a system which provided panel members with online access to the submissions. When this was linked to the outputs provision (in the case of journal outputs accessed via DOI or PDF) this offered a very useful facility for panel members.

Digital Object Identifiers and Collecting Outputs

5.11. One of the most significant decisions to be taken during the exercise concerned the collection and provision of outputs cited in submissions. For RAE 2001 there had been an expectation that panel members would, in the first instance, seek research outputs which they needed to read for assessment purposes themselves (eg from their own institutional library).

This was supplemented with the introduction of the back up "Research Outputs Sourcing System" which allowed panel members to request outputs on demand but in fact became the default route by which many panel members requested and received outputs for assessment. This set a precedent for 2008 that outputs would be provided to panel members by the RAE Team. As the 2001 system had been used to a capacity greatly beyond its original purpose and specification, it had also caused considerable difficulty to HEFCE and operated less efficiently than panel members hoped. Furthermore, for the 2001 exercise institutions were required through the Research Outputs Sourcing System to provide a hard copy of any output requested by the RAE team within three working days. It was generally agreed that these systems needed to be reviewed, with the following parameters;

- Panel members should not be expected routinely to source outputs for themselves
- The system should reduce the burden on other HEFCE processes as far as possible
- Where appropriate, use should be made of electronic media to capture and distribute outputs

5.11.1. The RAE Team initially indicated (in Guidance on Submissions, RAE 03/2005 paragraph 96, June 2005), that journal articles, chapters in books and published conference proceedings might be required to be submitted electronically, and that the method of submission would be confirmed later, but might involve institutional repositories or deposit on a protected web-site. Plans for implementing this were developed in discussion with the Publishers Licensing Society (PLS) and a number of institutional librarians and RAE contacts.

5.11.2. In order to make this electronic provision possible a licence agreement was put in place with publishers. This was substantively agreed between the RAE team and the PLS and ultimately agreed between the Copyright Licensing Agency (CLA) and HEFCE. The licence agreement permitted panel members and the RAE Team to display articles on screen or to print a copy for assessment; to download and store copies of such material in digital form for assessing RAE submissions; and to link to research outputs referred to in any submission via the article's Digital Object Identifier (DOI). The overwhelming majority of academic publishers supported this initiative[6].

5.11.3. The licence also allowed submitting HEIs to submit a copy in digital form or provide a photocopy of the full text of research outputs in any submission; and provide this information to the RAE Team based at HEFCE. Where an HEI had a subscription permitting access to the full-text of a submitted research output, the HEI was authorised to download the publisher's PDF file for transmission to the RAE Team for assessment purposes. For research outputs available in print, HEIs were permitted by the licence to provide photocopies or (where appropriate) the scanned digital form of the research output required for assessment.

[6] See *Publishers work together to provide electronic access to authoritative publications for the RAE;* Ed Hughes and Alicia Wise: Serials 22(1) March 2009

5.11.4. Electronic submission of journal articles was generally seen as a sensible development – and in principle colleagues in the sector were happy with the idea of using the DOI as a reference, but some concerns were raised about how to identify the DOI for all articles, and it was noted that data entry errors quite likely with a non-obvious numeric string such as a DOI. DOIs were widely available for journal articles published between 1 January 2001 and 31 December 2007 – there were some 18 million journal articles with DOIs on the CrossRef website at the start of 2006. In order to incorporate DOIs in submissions the RAE team liaised with CrossRef to develop a mechanism by which these could be searched by HEIs to check the validity of DOIs against the CrossRef database.

5.11.5. Automatic procedures were developed to retrieve the correct version of the output accessed through the DOI. As the DOI frequently linked to either an abstract or a "splash" page of text it was possible to develop systems which found the PDF versions of research outputs from publisher websites. Where no DOI was available, or in the event that the DOI did not work then a PDF was requested from the submitting HEI

5.11.6. As the use of DOIs in respect of conference proceedings and chapters in books was less widespread it was decided to collect both of these categories of output in hard copy format, though some panels would have preferred these to be made available electronically (particularly in Computer Science).

5.11.7. Functionality to identify and verify in bulk the DOIs of submitted journal articles to the Data Collection system was added to the data collection system before final release and was used by HEIs. An additional system for panels to request research outputs developed by HEFCE IT colleagues for use by the secretariat and RAE team during the assessment phase.

Submission of outputs in physical/hard copy form

5.12. To provide a more effective "Research Outputs Sourcing System" service in 2008 the RAE team therefore took on the burden of collecting all cited outputs from HEIs and storing these, and providing outputs to panel members at their request. This created risks both of a technical and logistical nature relating to the collection and distribution both of hard copies and electronic copies (of journal articles). However, it was felt that such a process would reduce the burden on HEIs and increase the reliability of the service to panels.

5.13. In our discussions with HEIs it became clear that in the case of outputs to be collected in hard copy, supplying the majority of hard copy outputs in bulk early in 2008 was preferable to continuous "drip-feeding" of outputs on demand during the assessment phase. This preference had certain consequences most particularly how to collect and store some 50- 60 000 pieces of research output. It was clear from our discussions with HEFCE that there was no possibility of storing this volume of material at Northavon House, so an alternative location for the repository had to be found.

5.14. After lengthy negotiations with potential landlords and a number of visits to research requirements and identify possible sites, HEFCE leased a building on the RAE team's behalf on a government office site in Bristol for the storage and processing of submitted outputs. The

building, a few miles from HEFCE's offices, was fitted out to our specification and a supervisor recruited to oversee this process and the work of further staff. Although it was necessary to drive between the two sites, the off-site arrangement worked very effectively. The separate location isolated the very heavy volume of deliveries and dispatches from HEFCE's other business, and allowed the workspace to be tailored to our requirements. Being part of a government site added a further degree of security.

Provision of Outputs to Panel Members

5.15. Each panel member was provided with a DVD containing electronic copies of those outputs which were submitted as type D, journal articles. Following the conclusion of the licence agreement, the RAE team and PLS worked with publishers worldwide to gain the appropriate access permissions to make submitted material available for assessment. It was possible to provide electronic copies of over well over 90% of journal articles submitted, though inevitably there were a small number of publications where it was not possible to secure access. Panel secretaries input requests to the RAE team through a web-based system and the RAE team processed and dispatched the requested outputs directly to the panel member concerned by courier.

5.16. Outputs were collected in three main ways in accordance with guidance to HEIs. Journal articles (c75% of the total output submitted) were collected via the DOI where available, or alternatively through the provision of a scanned PDF under the terms of the licence. Non-journal material was collected in physical form and was stored at the RAE repository in Burghill Road. Although the receipt and cataloguing of outputs was undertaken to a very tight timescale in December 2007 and January 2008, the process was efficiently and accurately undertaken so that outputs could be requested by panels from early February 2008.

5.17. Other than journal articles that were collected electronically, the RAE team held one physical copy of each output provided by the HEI. Exceptionally, outputs submitted as "confidential reports" or of particularly high value or rarity were supplied on request by the submitting HEI.

5.18. A number of panels asked to receive journal articles in paper form (rather than electronically) and these were supplied. This service was used much more heavily than anticipated and had a knock-on effect on the repository's ability to service requests for outputs available only in hard copy.

5.19. Those outputs collected electronically via DOI / PDF were made available on the panel members' website and on panel specific DVDs. These DVDs were compiled in house by the data collection helpdesk team with support from a number of temporary staff. The DVDs were dispatched to over 80% panels by 31 January 2008, the date indicated to panels in earlier correspondence. The remainder were dispatched in early February. There were a few difficulties sourcing specific outputs for which publishers have not given permission to download via the DOI, or where the wrong output has been provided by the HEI (due to incorrect entering of the DOI) but this was the exception rather than the norm.

5.20. The Research Outputs Sourcing System (ROSS) was developed in conjunction with HEFCE IT colleagues and allowed panel secretaries to request material for their panel members. A courier service was put in place to deliver and collect these outputs from panel members. The system mostly held up well to the demands of panels, with a target turnaround of 6 working days from receipt of requests to delivery. However, during some busy periods, notably in the spring and early summer, this turnaround slipped to around 12 working days.

5.21. Although there were some concerns about the time it might take to return outputs at the end of the exercise, there was little evidence for loss/damage from those involved in 2001, and it was understood that returning outputs quickly would not have the highest priority, so the RAE team committed to return all outputs by a fixed point early in 2009. The overwhelming majority of outputs were returned at the end of the exercise, and where outputs were missing the HEI was informed and if necessary a replacement could be ordered.

Outputs Repository – Burghill Road

5.22. As noted in paragraph 5.13 above a separate location for the storage and processing of research outputs for the exercise was required. The location at Burghill Road was initially unpromising, but careful refitting supervised by the HEFCE estates team made the building fit for purpose. Estimates of the space requirements for the likely number of outputs complemented detailed consideration of the workflow for processing the outputs in an effort to make the best use of the available space.

5.23. Whilst locating the repository remotely from the main HEFCE offices helped alleviate the pressure on HEFCE's own services, it meant that certain contracts had to be secured to supply the repository with the equipment and services necessary to carry out its function; including IT, telephone and networking provision, photocopying and printing, packaging and ancillary services such as recycling and cleaning. A separate contract was also established to provide courier collection and return services for the repository and panel members. Given the volume of activity in the repository these separate arrangements were clearly necessary as the quantity of material processed would have overwhelmed the regular HEFCE service facilities at Northavon House.

5.24. Due to the efforts of the administrative team, and the Research Outputs supervisor in particular, the physical dislocation of the outputs repository was not a major disadvantage in successfully delivering a high quality service to panel members and submitting HEIs. In general there was very good communication between the two sites which were not so far apart as to make traveling between the two unduly time-consuming. A number of RAE team members spent time at Burghill Road so there was broader familiarity with the processes employed there, and staff based at Burghill Road joined colleagues for regular team meetings. However, any such satellite working presents challenges, and without strong motivation amongst the team at Burghill Road itself, the quality of the service they were able to provide would undoubtedly have been reduced. In future, a challenge for any similar satellite operations should be to improve the sense of belonging to the wider parent organisation (ie HEFCE), as opportunities for interaction at the corporate level were relatively limited.

6. Submission Phase

Key Successes
All submitting HEIs submitted in line with the deadline of noon on 30 November 2007. Communications with HEIs were generally of a high standard and regular, prompt and consistent messages were provided which ensured that all HEIs were given an equal opportunity to make submissions which reflected the quality of their research.

Areas for improvement
The benefits of the submission intention process should be reviewed as the information gathered was not always helpful for panels in their planning.
The joint submission process was overly complex both in terms of IT development and in use by HEIs in view of the very small number of submissions of this type received.

6.1. The census date for the exercise was 31 October 2007. Institutions were invited to provide information on staff in post on that date, and on research outputs brought into the public domain from 1 January 2001 to 31 December 2007. The assessment period for other data was 1 January 2001 to 31 July 2007. The submission deadline was noon on 30 November 2007.

6.2. Throughout the exercise managing communications with key stakeholders was a vital part of the work of the RAE Team. The RAE team aimed to communicate clearly on matters relating to RAE 2008, so that both internal and external stakeholders were informed about what they need to do in relation to the RAE, and the confidence of the HE sector and government that the RAE is being undertaken in a robust, open and fair manner was maintained. The RAE is also an important tool in the work of the funding bodies, and there are necessarily political considerations in the way our communications needed to be presented

6.3. Institutions were asked to provide the team with details of designated RAE contacts and RAE data contacts at HEIs, which were used to communicate direct with HEIs. These were maintained on a regular basis and any updates received from the institutions made immediately.

6.4. With respect to our key "external stakeholders" such as HEIs, government bodies (excluding funding bodies), subject associations, the media, other professional bodies, the RAE team used a range of mechanisms, including:

- frequent presentations to the full range of external stakeholders
- press briefings on significant issues (eg publication of criteria statements and the outcomes)
- RAE website, which included latest news items and regularly updated "Frequently Asked Questions"
- RAE "inbox" (emails sent to info@rae.ac.uk) and telephone queries
- IT support helpdesk (email and telephone).
- regular correspondence with RAE contacts (for policy issues) and RAE data contacts (for data collection) at institutions by e-mail, circular letter
- print distribution of hard copies of key guidance documents.

6.5. The RAE team consulted widely with the sector, mostly using electronic communications, for example by inviting comments on the draft criteria and working methods statements and inviting feedback on the data collection system, which helped to maintain a sector feeling of involvement in the exercise. The RAE inbox was also extensively used by HEIs.

6.6. As part of the process of explaining the RAE process, the team ran a series of "RAE Roadshows" across the UK in the Spring of 2006. Each submitting HEI was invited to send up to three delegates. These roadshows covered the key areas of RAE policy and procedure, equal opportunities and the development of Codes of Practice (led by colleagues from HEIs), an introduction to the Data Collection system and an opportunity to ask questions of the RAE team. A different Main Panel chair offered a perspective on the panel process at each meeting, giving an insight into how the exercise worked in practice. These roadshows were extremely helpful in making contacts with key institutional stakeholders; all but 3 UK HEIs were able to send representatives to these events, and in total, over 500 people were addressed during the six meetings. The team also ran two HEI briefings to accompany the launch of the pilot data collection system in August 2006. Feedback from the PwC review suggests that more such workshops would have been welcomed by the sector.

6.7. Institutions were encouraged to make enquiries via email to a generic email address (info@rae.ac.uk) to allow for consistent responses and to be able to record the questions and responses received. This "RAE inbox" was the primary means of answering queries from HEIs. Not only did this help the team provide a high level of support to institutions as they prepared their submissions but it guided us in the identification of FAQs which were then placed on the website. In responding to queries, the general principle observed was to point colleagues in the sector to the relevant information amongst the published guidance (usually either RAE 03/2005 *Guidance on submissions* or RAE 01/2006 *Panel criteria and working methods*), rather than give specific answers to detailed questions about very particular circumstances. Our intention in so doing was to provide institutions with the information necessary to make the judgments they needed to about how to make their submissions, rather than advise them specifically on how to make the submission. This seemed the most appropriate way by which all institutions could be treated equitably, and though a number of institutions reported that they felt responses to their specific questions could be more directive in general this approach was successful in providing appropriate support to all institutions involved in the exercise.

Submission Intentions and Multiple Submissions

6.8. As in 2001, the RAE team surveyed institutions on their plans for the RAE in the year prior to the submission deadline. This was intended to aid panels in the planning of their workload and in particular to anticipate their requirements for specialist advice based on the likely areas of research work indicated by institutions in the survey. Institutions were invited to use an online tool to report their plans to institutions. The submission intentions survey tool was released on 23 February 2007 for completion of institutional submission intentions by 30 March 2007. Panels were able to discuss the information provided by HEIs in the submission intentions at their meetings in June and July 2007.

6.9. The data provided to the panels following the survey included;

- A list of each submitting HEI and the estimated size of their submission in terms of headcounts and FTEs.
- Subject specialisms;
  - the specialisms as defined by HEIs:
  - specialisms that HEIs intend to submit as Welsh or foreign language output.
  - interdisciplinary specialisms identified by HEIs
- Cross-referrals, the planned cross-referral requests from each HEI, in each specialism, both out from the panel to other UOAs and into the panel from other UOAs.
- Outputs in Welsh, by specialism.
- Outputs in other languages, by specialism.

6.10. On reflection, particularly once the submissions themselves had been received, the usefulness of the submission survey for panel members was somewhat limited. Quite reasonably, there were differences between the intentions and the final submissions. Moreover, the level of detailed required in the survey was not always sufficient to allow the panels to plan their work to the level of detail they wished. However, the submissions survey did help to clarify the broad scale of the final submissions and to make initial assessments of likely workload and was also helpful for the RAE team in planning the processes to support the assessment phase.

Specialist Advisors

6.11. One desired outcome of the survey of submission intentions was the identification of areas where specialist advisors might be required. In line with the policy agreed with the Steering Group, panels were invited to identify areas of expertise and suitable nominating bodies from whom recommendations for specialist advisors could be sought. These were then recruited to be available in the event that the work indicated in the survey of submission intentions was in fact submitted.

6.12. Given the number of specialist advisors appointed during the assessment phase it is doubtful whether the submission intentions survey was a sufficiently discriminatory tool to assist the panels with this task, though it was helpful to panels in judging the likely overall workload and in establishing the process by which advisors would be appointed**.** The operation of the specialist advice process during the assessment phase is described in more detail in section 9 and Annex D.

Joint submissions

6.13. The RAE team was committed to treating submissions by more than one HEI (joint submissions) as fairly as possible, and as far as possible to present the information in joint submissions in a format which mirrored that in single institution submissions. For the funding bodies, particularly the SFC where institutions were collaborating in "pooling" in a number of subject areas, it was important that a process existed for collaborative research activity to be returned in the RAE. These principles were important, and mechanisms to allow joint submissions should be retained. However, on balance, the work required to allow joint

submissions within the RAE data collection system was disproportionate to the number of such submissions (only around 1% of all submissions were joint submissions), and the process by which HEIs made joint submissions were overly complex. Given the relatively low numbers of joint submissions, if similar data collection systems are used it might in future be more efficient to provide a workaround to allow joint submissions to be made which bypassed the main RAE data collection system and reduce the burden on both institutions and the funding bodies without compromising the principle that collaborative research could be submitted through a joint submissions process.

Multiple Submissions

6.14. Although under normal circumstances each submitting HEI could make only one submission to any Unit of Assessment, there were circumstances under which multiple submissions would be permitted. Permission to submit on this basis had to be requested in advance from the RAE Manager against stated criteria of distinctiveness and with a supporting case which was provided to the panel chair. In total 49 applications were made to make multiple submissions to RAE 2008. The requests came from 35 institutions. Requests for multiple submissions were made to twenty three UoAs, and within this the distribution of requests was uneven. For example, UOA 12 ten applications and UOA 63 received five applications. In total, 39 applications were approved and 10 applications rejected. Of the 39 applications approved, two of these were resubmissions following dialogue between the institution and the RAE team about the specifics of a request.

7. Panel Secretariat

Key Successes
A high quality secretariat, predominantly drawn from HEIs, provided excellent support to the deliberations of RAE 2008 panels.
Panel secretariat were recruited and trained in time for both the key phases of activity and enabled consistent decision-making to take place across all sub-panels in their main panel area.

Areas for improvement
The workload for the panel secretariat was too great – tasks could only be achieved through the dedication and commitment of the panel secretariat to work in excess of normal working hours.
The balance of work between administrative functions which could be undertaken centrally and those high level secretariat tasks to be delivered by the panel secretariat could be reviewed.

7.1. After the criteria setting phase, the RAE team reviewed the requirements for the panel secretariat taking into account feedback both from those involved in the 2001 exercise and those who had supported the panels during 2005. It was determined that the support needed in 2008 would be significantly greater than that required in 2005 and that each Main Panel should have dedicated full-time support. Each full-time panel secretary was supported by a part-time (approximately 120 days per year) advisor, who was expected to offer high-level policy advice to the panels, and provided guidance to the panel secretary. Where possible the secretariat was seconded from HEIs. The full-time secretaries were reimbursed as a percentage of Full Economic Cost, up to a threshold, and the Panel Advisor was reimbursed on a daily rate basis. This enhanced level of support cost an additional £764,000 over and above the originally agreed budget.

7.2. The new panel secretariat was recruited in early 2007 so that they could begin their work with the panels during the submission intentions round of meetings in the summer of 2007. This provided a useful opportunity to meet the panels and develop the working relationships which were so important in the busy assessment phase. Unfortunately a number of positions could not be filled during the first round of recruitment and staff from HEFCE were seconded on a temporary basis to cover several vacant positions. These positions were filled later in 2007 in time for the main assessment phase. A number of the secretariat from 2005 were reappointed to work during the assessment phase which gave valuable continuity to the process.

7.3. In addition to the permanent secretariat for each main panel a number of part-time secretaries were recruited to cover "clashes" in the meeting schedule. A reserve cohort of HEFCE staff was also trained to provide emergency cover in the event of illness or other short-term difficulties, which was thankfully rarely required.

7.4. The panel secretariat provided excellent support to all panels despite being required to work extremely hard and often considerably in excess of normal working hours, throughout the assessment phase. The value of a dedicated, professional secretariat was noted by panel chairs and members. Although the structure of the panel secretariat was appropriate to ensure consistency of support future assessment processes should consider whether even greater levels of support should be provided to the panels, particularly whether some processes could be simplified and other tasks centralised.

7.5. The cadre of part-time secretaries also worked effectively in providing cover for overlapping meetings. Fortunately only a small number of "emergency" cover secretaries had to be called upon, so this did not place too much strain on colleagues at HEFCE who had volunteered to provide this support.

7.6. The main functions of the panel secretariat were to produce papers and minutes of panel meetings, provide high level administrative support and guidance to the panel chairs (both in and out of meetings), and to manage a number of processes to support the assessment – in particular requesting outputs for panel members, raising audit queries on behalf of panel members and managing the requirements for cross-referral and specialist advice for their panels. Although the secretariat had access to specific IT tools to assist in these tasks these were time-consuming processes, and future similar exercises might consider changing the balance of clerical support in the work of the panel secretariat.

7.7. Critically, the panel secretariat were responsible for managing the process by which the emerging outcomes were recorded and reported to the RAE team. An electronic workbook was developed to assist the iterative recording of output, environment and esteem sub-profiles and to generate an overall profile in accordance with the published weightings for each panel. Once the assessment phase was completed these workbooks were returned to HEFCE and used to produce the results which were provided to institutions and published.

7.8. In developing guidance for the Panel Secretariat on the retention and recording of outcomes it was essential to address issues relating to Freedon of Information Act (FOIA) / Data Protection Act (DPA) legislation. Since the 2001 RAE changes in legislation made it much more likely that materials developed during the assessment of submissions might have to be released in response to certain enquiries. In order to minimise the risk of panel secretaries having to release information about the assessments panels were asked to develop protocols which would not compromise them in this respect. Bearing in mind the possibility of DPA subject access requests, panels were encouraged not to hold information about the assessment of specific outputs for longer than was necessary to agree the outcome and enter the decision accurately in the workbooks which were provided to help all panels develop the emerging profiles. Whilst for some panels this advice appeared to be heavy-handed, it was felt important that the panel secretariat were not placed in a position where they were responsible for the release of potentially sensitive data. In general, however, panels understood these concerns and recognised the difficulties of operating an assessment process within the legislative environment. It was also fortunate that there were only a relatively small number of requests during the assessment phase, despite statements in the press suggesting that there would be regular mass requests.

7.9. Many panels publicly acknowledged the contribution their secretariat made to the effectiveness of their operation, but it is worth emphasizing that without a suitably resourced and high-quality secretariat the expert review processes which underpin the RAE could not be delivered.

8. Panel and Team Administration

Key Successes
A large and complex process was managed remarkably smoothly with a relatively small staff. The heavily distributed process of organizing the logistics of panel meetings operated efficiently

Areas for improvement
The processes for specialist advice and cross-referral required considerable additional administrative support and in future a more streamlined system might be considered to help speed up the recruitment of specialist advisors and the provision of information.

8.1. An exercise as large and complex as the RAE can only be delivered with the support of high quality administrative processes. The RAE Administrative Team was led by the RAE administrative manager and during the assessment phase comprised three panel administrators, a team administrator, clerical staff to process expense and fees claims and a number of fixed-term and temporary staff supporting the specialist advice and cross-referral processes. Additionally, the process of supplying research outputs to panel members was managed by the Research Outputs supervisor and a team of outputs staff based in the repository at Burghill Road. The administrative team dealt with an enormous quantity of work during the exercise, with very high degrees of accuracy and efficiency. Annex B gives an overview of the changing shape and size of the RAE over time, showing how the team expanded to accommodate the increased workload during the assessment phase.

8.2. In total arrangements were made for just over 1000 days of panel meetings, hotel accommodation for 1100 panel members, secretariat and RAE team staff, and nearly 100,000 transactions with panel members to dispatch outputs.

8.3. The three panel administrators had responsibility for managing the logistical arrangements for a subset of panels and developed good working relationships with the panel chairs and secretariat in the areas for which they were responsible. In addition, the panel administrators were able to leverage the large volume of business which they were placing with meeting venue providers to secure value for money and to rectify any problems which emerged during successive rounds of meetings.

8.4. To prepare for the assessment phase, the RAE administrative team canvassed panel chairs for dates and venues of meetings during 2007 and used this information to schedule all the meetings in the assessment phase before the end of 2007. In planning the meetings, the panel administrators were aware of the need for the panel secretariat to be able to support as many meetings as possible in their main panel area and therefore tried to co-locate meetings when possible. A number of panels had specific meeting requirements which led to this not always being possible, and there were occasions when the panel secretariat had to travel between meetings and also circumstances where overlapping meetings had to be supported by the part-time secretariat.

8.5. Arranging the meetings well in advance was clearly advantageous from the point of the view of planning the administrative arrangements for the exercise. This was only possible because of the relatively long lead-in to the assessment phase afforded by the time between the publication of the criteria and the submission deadline. To some extent the advance planning also worked against having flexibility to change the duration and timing of panel meetings during the assessment phase. However, on balance the advantage of having a complete meetings schedule far outweighed the relative loss of flexibility.

8.6. The administrative team was also responsible for processing the travel and expense claims for each panel member, and in the case of international panel members frequently assisted in making travel arrangements to suit their schedules. Although in the earliest stages of the exercise there were some delays in making expense payments, liaison with HEFCE's finance team led to process improvements which meant that claims were settled quickly and with a high degree of accuracy.

8.7. Whilst the panel secretariat kept records for the minutes of which panel members had been in attendance at given meetings, this information had to be passed to the administrative team to record attendance for the purposes of paying fees. A panel management tool was developed which could be used to manage all the information required about each panel member so that fees and expenses could be paid, and email and postal deliveries sent to the appropriate addresses.

8.8. Given the increased reliance on electronic systems to provide data to the panels it was important that there was adequate support for users of the panel members' website. The RAE team administrator had responsibility for dealing with queries from panel members relating to access to the website from which panel members might download meeting agendas and papers, view submissions or access electronic copies of journal outputs. Over 2,300 queries about using the panel members' website were answered by the panel helpdesk.

8.9. The RAE administrative team built-up considerable experience during the exercise and benefitted enormously from the continuity provided by the RAE administrative manager remaining within the team following the 2001 exercise. It was also beneficial that a number of the administrative team stayed with the exercise over a prolonged period of time. This continuity was helpful in ensuring that lessons could be learned both from the earlier exercise and during the course of the 2008 RAE and contributed to the effective team-working of the administrative team, even during some extremely busy periods.

9. Assessment Phase

Key Successes
Panels were able to reach robust and fair judgments using the published criteria.
All panels concluded their business on schedule.
Main and sub-panel structure worked well for consistency between cognate areas.

Areas for improvement
Although Main Panel chairs met to consider matters of exercise-wide consistency it was difficult to make meaningful comparisons until late in the process and a future structure might wish to formalise this element of the work of the Main Panel Chairs.
Some panels felt impeded by FOI/DPA requirements and close adherence to published analyses.

9.1. Following the receipt of submissions by noon on 30 November 2007, the RAE team committed to provide printed copies of submissions to panel members before the end of December 2007. Panel members were also able to access a searchable electronic copy of the submissions to their unit(s) of assessment via the RAE panel members' website before the end of December 2007. Clear guidance was given about the confidentiality obligations of panel members and the need to be extremely careful in recording information relating to the assessment phase. A contract was placed with an external contractor to print and dispatch the submissions to panel members. Papers relating to the specific members were provided via the panel members' website or in hard copy depending upon the preference of the panel.

9.2. Each of the 67 sub-panels conducted a detailed assessment of submissions within their UoAs, working under the guidance of the 15 main panels. For each submission assessed, each sub-panel provided a provisional quality profile to the main panel for endorsement – iterations of these quality profiles as the assessment process proceeded could be developed using the workbook described above. Panels assessed submissions between January and November 2008 providing a longer time period for assessment than had been possible in 2001. Although this expert review process was resource-intensive it was effective in ensuring a thorough and reliable outcome.

Table 3: Assessment Phase Timetable

Timing	Event	Key Activities
December 2007	Provide submissions to panels	Dispatch hard copy submissions Access to Panel Members' website
January 2008	Meeting Round 5	Orientation for assessment phase Allocate reading responsibilities for submissions and outputs Request outputs Confirm process for and deadlines for notifying RAE team of cross-referrals and seeking specialist advice Benchmarking processes/exercises
March 2008	Meeting Round 6	Panels identify bulk of requests for specialist advice or cross referral (inc. specific outputs) Panels identify majority of audit queries – RA1,3,4,5 Possibly some panels review benchmarking or early review of outputs
April 2008	Main Panel Chairs' meeting	Review progress and identify difficult emerging issues
May 2008	Meeting Round 6.5 (most panels)	Confirm cross-referred advice Advice on cross referrals returned to original panel Specialist advice returned to requesting panel
June/July 2008	Meeting Round 7 Main Panel Chairs' meeting	Panels undertake detailed assessment RAE Team investigates any final audit/verification queries Main Panel Chairs review indicative outcomes
August 2008	Main Panel Chairs' meeting	Main Panel Chairs review indicative outcomes
September 2008	Meeting Round 8	Sub-panels continue assessment, draft quality profiles, begin drafting reasoning/feedback Iteration with Main Panels on draft quality profiles
October 2008	Meeting Round 9	Panels submit final quality profiles to RAE team Panels submit HEI feedback and overview reports to the RAE team
November 2008	Agree final outcomes and feedback Main Panel Chairs' meeting	Main Panels finalise outcomes and feedback Main Panels review final outcomes and provide feedback to RAE team
December 2008	Publish outcomes	Outcomes available in hard copy or via web

9.3. All research, whether applied, basic or strategic, was given equal weight, and all forms of research output were treated on an equitable basis. Panels gave full recognition to the quality of work of direct relevance to commerce and industry, as well as to the health, public and voluntary sectors. Where appropriate, panels included research users and practitioners from these sectors.

9.4. Panels considered the material submitted in sufficient detail to be able to agree an overall quality profile in 5 per cent steps, which represented their assessment of the quality of research in the department described in the submission. In developing the sub-profiles for research outputs, research environment and indicators of esteem, panels considered the information submitted at a level detail necessary to fulfil their published criteria and working methods.

9.5. Each sub-panel indicated in its criteria and working methods the proportion of research outputs included in submissions that would be assessed in detail. The process of recording judgements required that in all cases panels assessed in detail at least the minimum specified in their published panel criteria and working methods. Similarly, where a sub-panel's criteria were explicit that it would attribute a proportion of its assessment of research environment or indicators of esteem to particular features of the submission, this was built into its assessment methodology, and to the workbook.

9.6. Main panels were made up of a chair, the chairs of each of the sub-panels within the main panel area, and a number of international and additional members. The international members of the main panels were appointed to ensure that international standards are maintained consistently across the exercise. International panel members were practising researchers with a high level of knowledge and expertise in research across a broad discipline area internationally, including substantial experience in at least one country outside the UK. As such, they could offer perspectives on the international context for and standards of research in the subjects covered by the main panel. Additional members frequently came from research user organisations and were able to provide oversight of the processes for ensuring that applied and practice based research were given fair and equal treatment. The appointments process is described in detail in section 3 above.

9.7. Main panels guided the sub-panels to exemplify indicators of quality consistently in criteria statements. Examples of indicators used to judge research output, for example might include originality, imaginative range, or significance as demonstrated by the extent to which knowledge or understanding in the field has been or is likely to be improved. These quality indicators were important in ensuring a consistent application of the quality levels across the wide range of work submitted to any given panel.

Consistency

9.8. Main panels worked closely with their sub-panels, and used the international and other main panel members to address issues of consistency across sub-panels within each Main Panel. Many Main and sub-panels undertook benchmarking exercises before the assessment phase using outputs from outwith the current assessment process, and / or a sample of outputs once the assessment phase began. The outcomes of these processes were used to gain a shared

understanding and interpretation of the agreed quality levels amongst all panel members working in similar areas. Most panels appeared to find the contribution of international panel members to be valuable, and although some repeatedly sought clarification about their role, in general the international panel members were valued members of their main panel.

9.9. Regular meetings of the Main Panel chairs were used to check progress, identify and suggest solutions to any perceived bottlenecks in the process, and to discuss emerging outcomes across the exercise as whole. Specifically meetings in the middle of the assessment phase were used to discuss indicative outcomes from each Main Panel. Whilst these were helpful in identifying significant outliers, the different practices and timescales adopted by different panels made absolute "like-for-like" comparison very difficult However, the process did identify some areas where significant variation from the majority of emerging outcomes could be seen, and in these areas the main panel chairs were asked to reflect on this with the sub-panels. These discussions were productive in developing greater consistency across the exercise as a whole. A future process might wish to build in formal indicative reporting of common data to make these comparisons more readily open to scrutiny by the panel chairs.

Cross Referrals and Specialist Advice within the assessment process

9.10. As noted in table 3 above, panels were encouraged to use the early meetings of the assessment phase to identify work for referral either to specialist advisors or for cross-referral. An approval system was put in place to ensure that all requests were reasonable, though in practice the RAE team rarely refused a request from a panel to cross-refer work or seek specialist advice. In order to be consistent with the process of recruiting panel members themselves, it was a requirement that all specialist advisors were nominated or endorsed by an appropriate subject association or professional body. This decision led to some criticism from panel chairs who felt that it imposed unnecessary delays in making appointments and that panels should be given the authority to draw on whatever advice they saw fit. Whilst this created additional work, and indeed added time to the process of making specialist advice appointments, the RAE Steering Group felt this was necessary to provide an assurance of neutrality to those making submissions.

9.11. The volume of cross-referred material and particularly specialist advice requests greatly exceeded the RAE team's expectations and it was necessary to bring in additional temporary support to help keep the turnaround period for these requests manageable. A summary of the specialist advice process is provided at Annex D. Summary data relating to cross-referrals requested by HEIs and undertaken by the panels (as indicated by the Research Outputs Sourcing System data) is provided at Annex E. As this indicates, not all requests made by HEIs for cross-referral were judged necessary by the panels.

9.12. Although the importance of early identification of cross-referrals and specialist advice requests was emphasised to the panels, a number of requests were made very late in the process. Main Panel chairs expressed some concern that the cross-referral advice was not always received within the timescales they were expecting. This was addressed through the recruitment of additional staff to process specialist advice and cross referrals and by providing

electronic access to specialist advisors in the case of the panel which drew upon this facility most heavily, Earth Systems and Environmental Sciences.

9.13. There are, as Annex D indicates, considerable variations in the extent to which different panels used specialist advice. Given these wide variations future assessment exercises might consider both streamlining the process of accessing advice and limiting the number of advisors which could be called upon by any given panel.

Provision of outputs

9.14. In total 215,657 eligible outputs were submitted**.** Annex C provides a breakdown of outputs by type, and Annex E includes a count of these by sub-panel. During the course of the exercise 53,525 outputs were sent to the repository at Burghill Road by institutions.

9.15. Using a contract with a courier some 93,000 items were dispatched by repository staff (including some outputs sent out and returned more than once to different panel members), of which about 50% were PDFs of journal articles printed and dispatched. Very few outputs were lost during this process and institutions who lost physical outputs could claim the cost of replacing them from the RAE team.

9.16. By far the largest collection of work in terms of space related to outputs for sub-panel 63, Art and Design. Given the diverse nature and size of these outputs, arrangements were made to allow panel members to use meeting rooms adjacent to the repository for the detailed assessment of outputs. This reduced the need to send out and return often bulky material and allowed the assessment teams for this UoA to access the material more easily than might otherwise have been possible.

10. Outcomes Phase

Key Successes
Outcomes were published on time, without any technical difficulties, and received generally favourable press coverage.
Strong back-up procedures and risk mitigations put in place for this critical phase.

Areas for improvement
Better liaison with HESA over the publication of proportion of staff submitted data could have avoided unhelpful dispute close to the release of outcomes.
Panels took differing approaches to the production of valuable institutional and sector wide feedback.

10.1. Following receipt of the final completed workbooks, colleagues in HEFCE's Analytical Services Group translated the outcomes into the tables which appeared in RAE 01/2008 *RAE 2008: The outcome* and on the RAE website. Drafts of these were checked by the RAE team. The outcomes were then published according to the timetable below.

Table 4: Timetable of the Outcomes phase

November 2008	Funding bodies receive results for their HEIs
15 December 2008	Funding bodies receive all UK results
17 December 2008	09 00 HEIs access their own results 10 30 Press briefing – results under embargo HEIs access all results
18 December 2008	00 01 Outcomes published HEIs receive "*RAE 2008 The Outcome*"
5 January 2009	HEIs receive feedback (reasoned cases and sub-profiles) Subject overview reports published on RAE website
20 March 2009	Sub-profiles and minutes published on RAE website
30 April 2009	Submissions published on RAE website

10.2. As there were some significant changes to the way the outcomes were to be presented a briefing for HEI press officers was arranged between HEFCE, the RAE team and UUK. This gave an opportunity for those who would be responsible for disseminating the outcomes to understand the main changes to the 2008 RAE, and to consider how to present the outcomes in a sensible way. Following this event, the funding bodies were requested by UUK and others to bring forward the release of all HEI data on the morning of 17 November 2008 from 12 00 to 10 30 to allow institutions more time to prepare for press enquiries. Therefore, the results were provided in advance of publication on 18 December 2008 to HEIs, in England, Wales and Northern Ireland via a download from the HEFCE extranet (or in Scotland via the Scottish Funding Council).

10.3. Informal briefings to key members of the education press allowed for an exploration of the main issues surrounding the release of the results. A formal press briefing was held on 17 December 2008 to coincide with the confidential release of the outcomes to HEIs.

10.4. During the lead up to the announcement of the outcomes there was considerable debate about the absence of authoritative information about the proportion of research active staff submitted to the exercise by each HEI. It was never the intention of the 2008 RAE to collect information about staff not submitted to the exercise, but it was known that HESA would be collected information which would allow comparisons with the 2001 exercise for equalities monitoring purposes, and some institutions requested that they release this information early to coincide with the publication of the RAE outcomes. Although HESA initially agreed to do this, some institutions indicated that they would not be providing the information in accordance with the clear guidance provided in the HESA staff return, resulting in an ambiguity in the data collected which HESA felt it would not be appropriate to release. Whilst unfortunate for those who might have wished to use this indicator in the compilation of league tables, there is no sense in which this devalues the outcomes of the exercise itself. The RAE is an assessment of research quality and institutions should be free to use their resources as they see fit to deliver research alongside the other valuable activities which they undertake. Institutions should not be penalised in a research assessment process for the way in which they deploy their own resources to deliver high quality research, alongside other valuable and appropriate activities.

10.5. From the outset, the Main Panel Chairs had encouraged the RAE team to provide as much feedback as possible to HEIs bearing in mind the need to temper this with the need to have a process which was robust against legal challenges. Ultimately it was agreed that the feedback should take the form of the three sub-profiles for research output, research environment and indicators of esteem, together with some explanatory text under each of these headings and any additional remarks. A template was produced to aid this process. A number of panels were uncomfortable with the prospect of releasing the sub-profiles which they regarded as a change of approach during the exercise, but legal advice had indicated that it was unlikely that these could be withheld indefinitely so the decision was taken to release them firstly in confidence to HEIs, and subsequently to release them publicly in anticipation of any requests to do so. The reasoned cases, including the sub-profiles, were released to institutions on 5 January 2009.

10.6. Each panel was also asked to produce a subject overview report which reflected on the work which had been submitted to the panel, and confirmed the working methods used by the panels. The reports were drafted by the sub-panels and reviewed in the final round of Main Panel meetings. This process ensured that the overview report was considered as a collective endeavour by the panels rather than an afterthought to the assessment work. The final versions of the reports were published on the RAE website at the same time as the reasoned cases were provided to institutions, and offered contextual information about the overall assessments in particular sub-panels.

10.7. Although it was reported in the press that the exercise was shrouded in secrecy[7] the 2008 RAE has been the most transparent such exercise to date. The results are a more fine-grained outcome than previously and the funding bodies are also releasing the second order data underpinning the outcomes (the sub-profiles). Furthermore, the procedural minutes from the assessment phase have released, redacted only in specific circumstances in compliance with Data Protection or Freedom of Information legislation. The sub-profiles for submissions of four or more headcount staff and minutes were published in March 2009; the submissions themselves (without confidential and personal data) were made available on the RAE website on 30 April 2009.

Reasoned Cases and Subject Overview Reports

10.8. Each sub-panel was asked to provide confidential feedback to submitting HEIs on each submission they assessed. This was structured so that feedback was provided for each of the three main components of the assessment – research output, research environment and indicators of esteem. This written commentary was provided to HEIs alongside the sub-profiles for each of these components in January 2009. As noted above, the sub-profiles were subsequently published, though the written commentary has remained confidential to the receiving HEIs. The sub-profiles and reasoned cases stand as the final formal record of the assessment.

10.9. Although the majority of panels were able to develop helpful and informative feedback for their submissions, the constraints of potential legal challenge made some panels more reticent than others. In general there was an appreciation that due to an increasingly litigious environment the feedback could not be as comprehensive as panels might wish, but nonetheless, it was possible to make some helpful points, and particularly to note positive features of submissions. It is perhaps unfortunate that those panels which were less inclined to provide detailed feedback could not be persuaded to approach the process more positively, as the majority of panels were able to craft some helpful feedback, even within the necessary limitations imposed by the RAE team's framework.

10.10. Each sub-panel also produced an overview report which summarised their assessment of the subject area based on the information they had assessed, and which commented on the working methods of the assessment process. These subject overview reports have been made available on the RAE website. Panels were encouraged to use the subject overview reports to make generic observations about the submissions received, and in many cases it is helpful to read the specific reasoned cases alongside the subject overview reports.

10.11. A number of Main Panels wrote overview reports which were appended to the relevant sub-panel reports. There was no requirement to provide a report at Main Panel level – some Main Panels felt there would be little benefit from making generalised observations.

[7] http://www.timeshighereducation.co.uk/story.asp?storyCode=401501&sectioncode=26

11. Audit & Verification

Key Successes
In general, the verification processes demonstrated that submissions had been put together accurately and in accordance with the published guidance.
Where necessary, the audit process was able to identify and address areas of concern as evidenced by the 652 data adjustments made during the assessment phase.

Areas for improvement
The processes for verifying the contribution of Category C staff were sometimes cumbersome and the time expended managing these particular issues was disproportionate to the impact their inclusion or exclusion might have on the overall outcome.
Some additional resource earlier in the assessment phase might have helped keep the different strands of work progressing more evenly and report the outcomes to panels sooner.

11.1. The purpose of data verification in the RAE was twofold. Firstly, it was necessary that data in submissions were correct so that panels could make informed assessments on the quality of each submission based on accurate data. Secondly, it was important for the principle of fairness that no institution should gain advantage in the assessment or subsequent funding calculation on the basis of inaccurate data.

11.2. In principle, any part of a submission could be audited; all data submitted had to be verifiable through accurate records maintained by HEIs.

11.3. The RAE data verification process and any subsequent physical audit of data adhered to principles of good regulation: proportionality, accountability, consistency, and transparency. The audit process balanced the needs of the funding bodies and assessment panels so that the data in submissions was of reliable quality to inform both a quality assessment and subsequent funding calculations; whilst taking account of the desire not to burden institutions unnecessarily with further data requests. Proportionality was understood in terms of the likely risk and consequences of HEIs submitting poor quality or inaccurate data. As a consequence, any auditing of data was targeted.

11.4. The mechanisms for collecting electronically available outputs using DOIs reduced the chances of HEIs making data input errors on bibliographic data on form RA2 than in the previous RAEs: HEIs could use the RAE Data Collection system and CrossRef to cross reference the bibliographic data with the DOI and vice-versa.

11.5. The submission process through the data collection system automatically validated data to ensure responses were provided where mandatory and that the data fell within specified ranges. This gave institutions warning if data was potentially non-compliant, though it could not verify that the data was "correct". Given these checks, the RAE Team did not send back printouts of submissions for HEIs to check and 'sign-off' as accurate, as was done for the 2001 RAE.

11.6. The data verification process had four main strands;

a. **Routine checking**

A proportion of submissions from each HEI were selected randomly as part of the routine checking of RAE data. At least one and up to four UOAs was selected randomly from each HEIs submissions, depending on the number of UOAs submitted by an HEI and the total number of FTE Cat A staff submitted. HEIs were asked to provide evidence to support the inclusion of a sample of staff (eg, extracts from payroll or personnel records such as copies of staff contracts, with salary information deleted); student registration or graduation records (such as extracts from published lists of higher degrees awarded); research grant and contract documentation, and other similarly detailed information. These random sampling audits led to a number of specific data adjustments but also alerted several institutions to systematic reporting errors which were then adjusted in the submissions, particularly in relation to research student and studentship data.

b. **Data comparison**

Data from submissions from all HEIs was compared with other available datasets, including checking RAE data against data held in other datasets, such as Higher Education Statistics Agency (HESA) student, staff and finance data, and data from the Research Councils about "income in kind". This also included internal consistency checks across all submissions and comparisons with 2001 RAE data to ensure that outputs were not submitted to more than one RAE. The most problematic issue raised by the internal consistency checks was that relating to staff returned by more than one HEI with a total FTE in excess of 1.0. Whilst a number of these cases were easily resolved, having arisen as a result of misunderstandings between institutions with staff on fractional contracts, several cases were the result of late and disputed moves by staff from one HEI to another. These were contentious and disproportionately time-consuming given that they related to a handful of individual staff submitted amongst some 55,000 Category A staff. Given the complexity of these cases they were reviewed carefully, and where appropriate colleagues from HEFCE's assurance services team were co-opted to advise the RAE team and provide an independent perspective.

c. **Panel instigated audit**

Any data across the full range of submissions was subject to verification at the instigation of the relevant main and/or sub-panels. In total 832 panel instigated audit queries were investigated by the audit and verification team. The largest number of queries related to staff eligibility, which accounted for 276 queries, including a number of queries about Early Career Researcher status and the contribution of staff on fractional contracts and to research outputs (257 queries including those relating to aspects of the bibliographic data). In terms of complexity, this strand of work was dominated by questions about the eligibility of Category C staff; in total there were 167 queries relating to form RA5c. For the 2008 RAE it was decided that institutions should describe the connection of Category C staff with the submitting department more explicitly and a separate form was included in the Data Collection system to allow this. Nonetheless, a number of panels felt that the information provided was not sufficiently detailed to allow them to make a decision about the inclusion of staff, and several panels took a particularly firm line in determining eligibility of this group of staff. The audit team was placed in a difficult position between HEIs and panels in resolving some of these cases, which often involved staff who had a long-standing, if decreasing, connection with the submitting department. Given that the contribution of Category C staff often

had a relatively limited impact on the final profile, as they were relatively few in number, a more pragmatic approach might in future be more appropriate.

d. **Targeted audit**

In the event that the checks described above indicated the submission of poor quality data, the RAE team were empowered to seek further information in relation to the full range of submissions made by an HEI. Institutions could be required to provide information of the types described above or other appropriate evidence depending on the nature of the enquiry.

Summary

11.7. In total, 692 data adjustments were made, approximately the same number as in the 2001 exercise. Whilst many of these were relatively trivial a number of these data adjustments concerned large amounts of data and feeding these changes back to the panels was a time-consuming process. Changes were made both to the online panel members' view of submissions and shown as amendments in PDF views of the submissions so that those using hard copies could see the changes. The data verification process ran for longer than anticipated in 2008; some additional resource and simpler mechanisms for reporting changes to panels might have alleviated this to some extent.

11.8. Other than in the course of the verification procedures described above, the RAE Team only made changes to submitted data in the event that outputs listed as 'pending' in RA2 were not published during the publication period, or if HEIs discovered inaccuracies in their submitted data after the submission deadline. In such cases, the incorrect data was withdrawn from the submission and therefore not considered in the assessment process.

11.9. Given the wide range of checks undertaken, including comparisons with other datasets, random sampling, and panel-initiated queries described above, those assessing the submissions and using the outcomes for funding purposes could have confidence that overall the data used was robust and fit-for-purpose. Bearing this in mind, the level of data audit for the RAE is probably appropriate. Only with a significantly greater investment in audit and verification processes would more exhaustive data checks be possible in future. As any such change would increase the burden on HEIs as well as the funding bodies, this would only be reasonable if significant doubts were to be raised about the integrity of the data being supplied by HEIs. Although the data verification process highlighted some weaknesses in the data quality these were not indicative of any deliberate failure to comply with the detailed RAE data requirements.

12. Post Implementation

Key Successes
Almost every deliverable was provided on time despite a very demanding schedule of work.
There was only a very small unplanned overspend on the final agreed budget.
Risk was carefully monitored and the key risks mitigated throughout the exercise.

Areas for improvement
A greater appetite for risk might have led to a relaxation of the guidance on recording and retaining records during the assessment phase.
An activity based costing model within HEFCE might highlight the full costs of activities not covered within the RAE budget, such as some areas of IT support and analysis undertaken by HEFCE's Analytical Services Group.

Budget & Value for Money

12.1. The funding bodies' initial decisions document suggested that the operating budget for the 2008 RAE might be in the order of £10m (compared with £5.1m in 2001 and £3m in 1996). In fact, the initial budget for the 2008 RAE agreed by the UK HE funding bodies was £10.9m, which was increased during the course of the exercise on two occasions

12.2. The initial budget was set out using the 2001 exercise as a template, but bearing in mind the costs of the two-tier panel structure, generally larger panels, and an extended assessment phase. In 2006 a further £764k was agreed to ensure funding for the secondment of the panel secretariat and in 2008 a further £235k was agreed to cover the costs of additional meetings and related logistical matters during the assessment phase.

12.3. As with previous exercises, the expenditure on the RAE was very heavily skewed towards the end of the exercise; as indicated by the breakdown of expenditure below.

Table 5: Operating Expenditure for RAE 2008 (as at March 2009)

Year (Financial Years)	**Expenditure (£)**
2004-5	414 757
2005-6	1 817 921
2006-7	435 242
2007-8	2 030 011
2008-9	7 176 069 (forecast)
2009-10	126 000 (forecast)
Total	12 000 000 (forecast)

12.4. A critical dependency in the budget management process was the relationship between the RAE administrative team and HEFCE's finance team, since all requests for payment needed to be routed through HEFCE. The finance team was extremely helpful in developing solutions to issues such as the authorisation and payment of expenses, and the efficiency of this part of the process increased considerably over the course of the exercise. Payments of fees to panel members and specialist advisors was the other significant financial commitment, and the scale of these payments and their relative infrequency meant that this process did not always work as smoothly as panel members might wish.

Project management

12.5. Given the scale of the RAE, robust project management was an absolutely vital consideration, and considerable attention was given to careful planning and delivery of the various phases of the project.

12.6. The RAE Steering Group was the main formal route through which progress was measured. A project plan was drawn up by the RAE Manager at the beginning of the exercise and modified as necessary as the project progressed. The RAE Steering Group considered the project plan at every meeting (on average two-three times a year). Each of the significant sub-projects was subject to similar project planning, and where appropriate these were considered by the Steering Group.

12.7. The Data Collection system was developed through a separate, but interlocking, project plan, which was reviewed by an internal data working group on a monthly basis, and by the external Data Collection Steering Group (which included HEI representatives) as well as the main RAE Steering Group.

12.8. A number of RAE team away days allowed for more strategic, long-term planning of the larger elements of the project, and gave an opportunity to share successes and update colleagues involved in different parts of the project on progress, problems and forthcoming milestones.

12.9. Short-term task management was monitored through weekly team meetings and regular updates between managers and their direct reports.

Risk Management

12.10. The project management process also included a review of risks, undertaken by the RAE team with input from colleagues in HEFCE's assurance service team. As part of HEFCE's ongoing review of risk management, the RAE was the subject of an internal review carried out by HEFCE's Assurance Service.

12.11. The principal conclusions and recommendation of the review were accepted by the RAE team and the Steering Group. In particular it was agreed that the RAE team should formally review the Risk Register at or just before critical points in the RAE process. It was agreed that these formal reviews should be reported to the Steering Group.

12.12. It was agreed that in order to provide assurance to the funding bodies about the risks associated with the RAE the Steering Group should periodically consider these reviews at the meetings prior to the significant milestones in the RAE project.

12.13. Key areas of risk throughout the project were noted to be;

- The Data Collection system, particularly capacity at the key submission phase, dependency on key IT staff and expectations for user support over the period close to the census date.
- The recording and retaining of records during the assessment phase, especially in light of balancing the risks of disclosure of sensitive decision-making information with the requirements upon panels to reach judgements on a wide-range of material.
- The provision of outputs to panels, taking into account the additional burden the RAE team has taken on in storing and providing outputs in comparison to previous exercises.
- The availability of key staff, both in the RAE team and more generally in HEFCE, as well as potentially addressing any shortfall in panel secretariat resource.
- The impact of changes to Research Assessment and funding post 2008, particularly where there may be overlapping timing and staffing requirements**.**

12.14. In comparison with RAE 2001 the RAE team took on considerably greater risk by centralising the RAE data collection process, as the system was essentially a database managed at HEFCE accessed by HEIs via a web interface. Whilst this gave the RAE team greater control over supporting the process it placed responsibility for system maintenance and support on the RAE Team and especially on ITS colleagues in HEFCE. In fact the systems coped very well with the burden placed on it both during the submission and assessment phases, with very limited downtime and generally acceptable operating speed.

12.15. As noted above in relation to the panel secretariat, there were risks concerning the recording and retention of information; principally that the funding bodies might receive subject access requests under the DPA and requests for information under FOIA legislation which would have significant workload implications. Dealing with a large volume of such requests could have destabilised the smooth operation of the RAE in 2008. There were also concerns that RAE panels or HEFCE staff may be required to disclose to individuals information that could be tantamount to an assessment of the quality of their individual research. This would have undermined a principle that the RAE assesses the quality of research submissions in the round, not of individuals. In the event, there were relatively few such requests and most were easily dealt with given panels' adherence to the guidance they had received. However, there was repeated press coverage around issues relating to the RAE policies on retention and destruction of records.

12.16. The high-profile nature of a project such as the RAE inevitably raises the level of risk, but careful planning and clear mitigations for the most likely high impact risks helped minimise the impact of most serious threats to the successful completion of the exercise. There were some areas, such as the availability of key personnel, where mitigations would not have completely eliminated the impact of an adverse impact on progress

13. Conclusions & Recommendations

13.1. Although this report is not a formal evaluation of the exercise it does provide an opportunity to draw some conclusions about the process, particularly from the perspective of one of those most closely involved in its planning and execution.

Recommendations

13.2. Key successes and areas for potential development are highlighted at the start of each section of this report. A summary of these is provided below.

Table 6: Key Achievements and Recommendations for Development

Section	Key Achievements	Recommendations for Development
2	The 2008 RAE built on the success of previous exercises and the findings of Sir Gareth Roberts' review of research assessment and funding. Key innovations crucial to the 2008 RAE were implemented as a result of that review.	The pace of evolution of the RAE was too slow for some stakeholders, resulting in the decision mid-way through the RAE process to make the 2008 exercise the last in its current format. This announcement created uncertainty about the value of continuing with the 2008 RAE.
3	Panel chairs, members and secretariat were recruited in time to start the criteria setting process. Key policy decisions were implemented and promulgated through RAE Guidance to Panels. Key staff were recruited and quickly developed into an effective and outcomes focused team.	The initial timetable was extremely tight, in part due to late recruitment of the core RAE team. The nominations process should be developed with greater thought about how the information will be conveyed to the panel chairs.
4	Panel criteria and working methods effectively balanced the need for subject variation with overall comparability. Consultation was positive and effective in identifying key issues.	Develop greater consistency in draft criteria at an earlier stage. More scope could be provided for sharing emerging ideas across different panel areas.
5	External review judged the Data Collection system to be fit for purpose, and feedback from the sector indicated that the system was an improvement on that used for 2001. The RAE repository system worked effectively in supplying outputs to panel members in the least disruptive way for HEIs	There was slippage in the timescales for delivery of research outputs from Burghill Road, especially in late Spring 2008, largely due to the unforeseen demand for supply of journal articles in hard copy. Supply of materials for cross-referrals and specialist advice was subject to delay.

6	All submitting HEIs submitted in line with the deadline of noon on 30 November 2007. Communications with HEIs were generally of a high standard and regular, prompt and consistent messages were provided which ensured that all HEIs were given an equal opportunity to make submissions which reflected the quality of their research.	The benefits of the submission intention process should be reviewed as the information gathered was not always helpful for panels in their planning. The process for handling joint submissions was overly complex both in terms of IT development and in use by HEIs in view of the very small number of submissions of this type received.
7	A high quality secretariat, predominantly drawn from HEIs, provided excellent support to the deliberations of RAE 2008 panels. Panel secretariat were recruited and trained in time for both the key phases of activity and enabled consistent decision-making to take place across all sub-panels in their main panel area.	Workload for panel secretariat teams was too great– tasks could only be achieved through the dedication and commitment of the panel secretariat to work in excess of normal working hours. The balance of work between administrative functions which could be undertaken centrally and those high level secretariat tasks to be delivered by the panel secretariat could be reviewed.
8	A large and complex process was managed remarkably smoothly with a relatively small staff. The heavily distributed process of organizing the logistics of panel meetings operated efficiently	The processes for specialist advice and cross-referral required considerable additional administrative support and in future a more streamlined system might be considered to help speed up the recruitment of specialist advisors and the provision of information.
9	Panels were able to reach robust and fair judgments using the published criteria. All panels concluded their business on schedule. Main and sub-panel structure worked well for consistency between cognate areas.	Although Main Panel chairs met to consider matters of exercise-wide consistency it was difficult to make meaningful comparisons until late in the process and a future structure might wish to formalise this element of the work of the Main Panel Chairs. Some panels felt impeded by FOIA/DPA requirements and close adherence to published analyses.
10	Outcomes were published on time, without any technical difficulties, and received generally favourable press coverage. Strong back-up procedures and risk mitigations put in place for this critical phase.	Better liaison with HESA over the proposed publication of proportion of staff submitted data could have avoided an unhelpful dispute close to the release of outcomes. Panels took differing approaches to the production of valuable institutional and sector wide feedback.
11	In general, the verification processes demonstrated that submissions had been put together accurately and in accordance with the published guidance. Where necessary, the audit process was able to identify and address areas of concern as evidenced by the 652 data adjustments made during the assessment phase.	The processes for verifying the contribution of Category C staff were sometimes cumbersome and the time expended managing these particular issues was disproportionate to the impact their inclusion or exclusion might have on the overall outcome. Some additional resource earlier in the assessment phase might have helped keep the different strands of work progressing more evenly.

12	Almost every deliverable was provided on time despite a very demanding schedule of work. There was only a very small unplanned overspend on the final agreed budget. Risk was carefully monitored and the key risks mitigated throughout the exercise.	A greater appetite for risk might have led to a relaxation of the guidance on recording and retaining records during the assessment phase. An activity based costing model within HEFCE might highlight the full costs of activities not covered within the RAE budget, such as some areas of IT support and analysis undertaken by HEFCE's Analytical Services Group.

Conclusions

13.3. A number of overarching observations can be drawn from these achievements and areas of development. The exercise achieved its overall objective in providing a robust set of outcomes which could be used for the distribution of funding, and the observations below should be viewed in the context of a successful project.

13.4. The successful delivery of the 2008 exercise was largely due to having a stable and highly professional team with sufficient time to prepare adequately for the very intensive assessment phase. It is therefore recommended that any future exercise should be planned well in advance, and that the team tasked with delivering the exercise is appropriately supported throughout. Serious consideration needs to be given to how all processes can be scaled up and easily replicated across the whole exercise.

13.5. Considerable resource and expertise is required to develop and implement a data collection system which is fit-for-purpose. User requirements, both from the point of view of internal stakeholders and those in HEIs charged with making submissions must be balanced with technical considerations. In developing such systems, a balance should be struck between essential requirements and additional "nice-to-have" features. The move to reform the research assessment process by developing the REF could provide an opportunity to simplify the data collection processes. The effort involved in delivering some aspects of the specification for the data collection system was disproportionate to the benefit delivered.

13.6. Notwithstanding the increased budget for running RAE 2008, there were still some areas which operated on extremely limited resources. Consideration should be given to ways in which the assessment work undertaken by panels can be streamlined without compromising the quality or rigour of the process: the intensive parallel meetings of Main Panel A and its sub-panels might suggest one such model for the future.

13.7. All forms of research, and all types of research output, were treated equitably and appropriately by the panels, though less "applied" work was submitted than might have been expected. There remains a perception that only those currently working in organisations which "use" the outputs of research can contribute to the assessment of its application beyond the academic sphere and that panels might not recognise the quality of such work. A simple analysis of the affiliation of panel members may not do justice to the breadth of relevant expertise on the panels. If greater explicit non-academic representation was considered desirable in a future assessment process greater flexibility in the terms of such participation would be required.

Annex A General principles for RAE 2008

Equity. All types of research and all forms of research output shall be assessed on a fair and equal basis. Panels have been instructed to adopt assessment processes and criteria that enable them to recognise and treat on an equal footing excellence in research across the spectrum of applied, practice-based and basic/strategic research, wherever that research is conducted.

Diversity. Submissions to RAE 2008 will reflect the diversity of excellent research conducted across the UK higher education sector. We are developing processes for the 2008 RAE that are sufficiently flexible to encourage that diversity. Accordingly, we have instructed panels to define appropriate criteria for identifying excellence in different forms of research endeavour, while attaching no greater weight to one form over another; and to make provision to recognise the diversity of evidence for excellent research.

Equality. HEIs are encouraged to submit the work of all their excellent researchers, including those whose volume of research output has been limited for reasons covered by equal opportunities guidelines. To comply with equal opportunities monitoring legislation, we will require HEIs to confirm that they have developed, adopted and documented an appropriate internal code of practice in preparing submissions and selecting staff for inclusion in RAE submissions. We have already briefed panels on all current and pending equal opportunities legislation that will affect RAE 2008 (see RAE 02/2005 'Equality briefing for panel chairs, members and secretaries') and the panel criteria will take account of this.

Expert review is central to the RAE. Widespread confidence in discipline-based expert review founded upon academic judgements was upheld in consultations following Sir Gareth Roberts' Research Assessment (RA) review. To maintain this confidence, we have appointed panels of experts who are currently or have recently been active in high quality research. While these experts will draw on appropriate quantitative indicators to support their professional assessment of RAE submissions, expert review remains paramount.

Clarity. We aim to make all written documents and statements about the RAE clear and consistent. This principle guides the preparation of both written briefing documents from the RAE team and of panel criteria statements.

Consistency. Assessments made in the RAE should be consistent across cognate areas. Following consultation on proposals for the conduct of RAE 2008, we have grouped under the leadership of each of 15 main panels, a group of broadly cognate sub-panels for units of assessment that share broadly similar research approaches. Main panels are working with sub-panels to define and agree criteria and working methods that are appropriate to the unit of assessment and provide for consistent approaches. Main panels will also ensure consistent application of the quality standards in the quality profiles awarded to submissions.

Continuity. The RAE has developed through an evolutionary process, building on and learning from previous RAEs. With every successive exercise a balance has to be struck between continuity and development. Enhancements to RAE 2008 follow from extensive review and consultation, and have been adopted where it is judged they can bring demonstrable improvements which outweigh the cost of implementing them.

Credibility. As was demonstrated through responses to the RA review and the funding bodies' subsequent consultation on the conduct of the RAE, the fundamental methodology, format and processes employed in the exercise – that is, discipline-based expert review founded upon academic judgements – are credible to

those being assessed. We will maintain this credibility through due process, by upholding the integrity of the assessment process through careful guidance to panels and by assuring the integrity of data in submissions through data verification.

Efficiency. The cost and burden of the RAE should be the minimum possible to deliver a robust and defensible process. Previous RAEs have been highly cost-effective given the value of public funds distributed through their ratings (including the estimated cost to HEIs). For example, we estimated the costs of the 1996 RAE in England to be some 0.8 per cent of the value of public research funding subsequently allocated with reference to its results. We will continue to weigh the burden on institutions against the need to ensure accountability in disbursing public funds.

Neutrality. The RAE exists to measure the quality of research in HEIs. It should carry out that function without distorting the activity that it measures and it should not encourage or discourage any particular type of activity or behaviour other than providing a general stimulus to the improvement of research quality overall.

Transparency. The credibility of the RAE is reinforced by transparency about the process through which decisions are made. This principle is central to the funding bodies' work. It has already been applied throughout the RA review and the funding bodies' subsequent consultation. Decisions and decision-making processes will be explained openly.

Annex B RAE Team Structure – Spring 2005 and Summer 2008

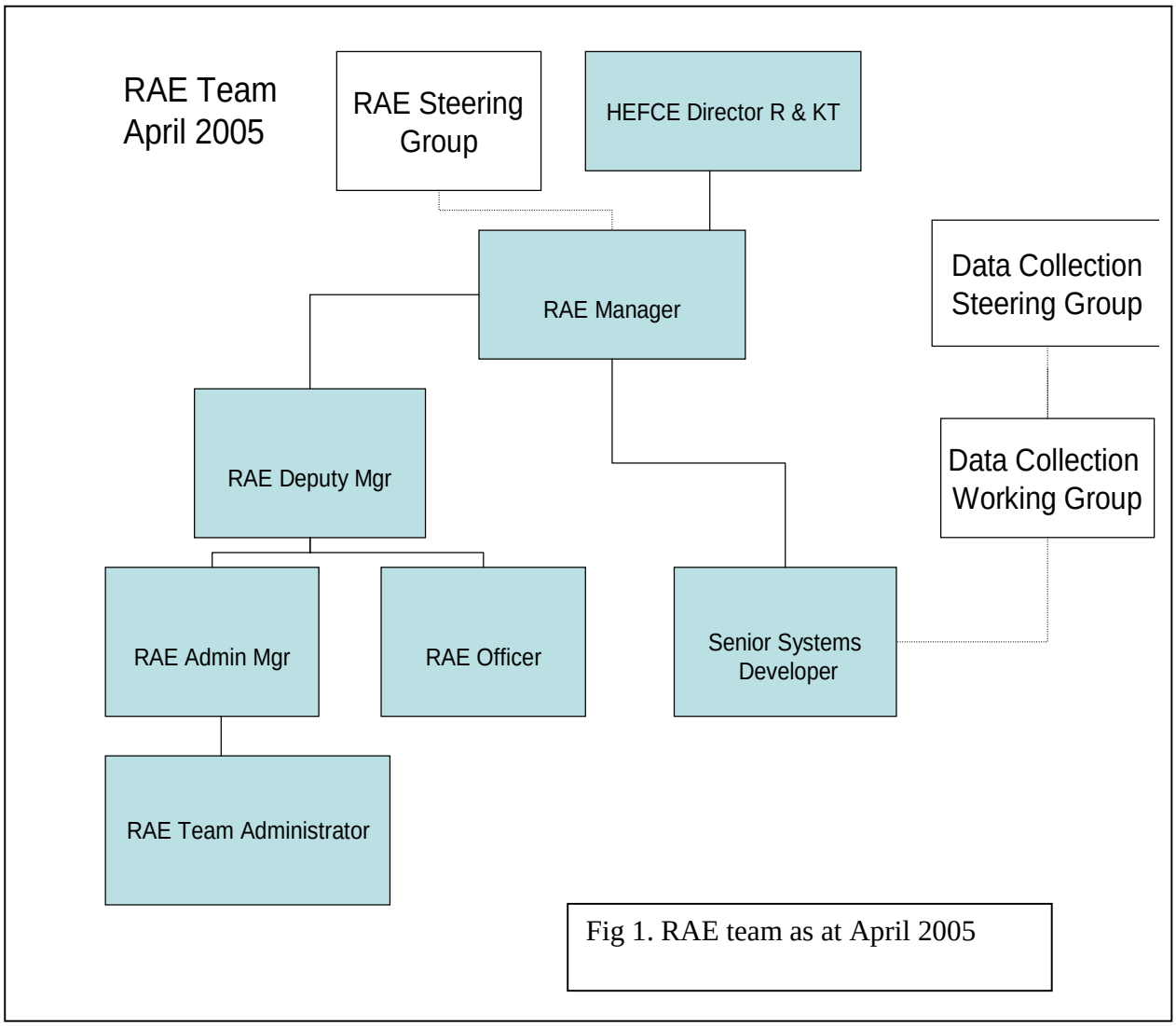
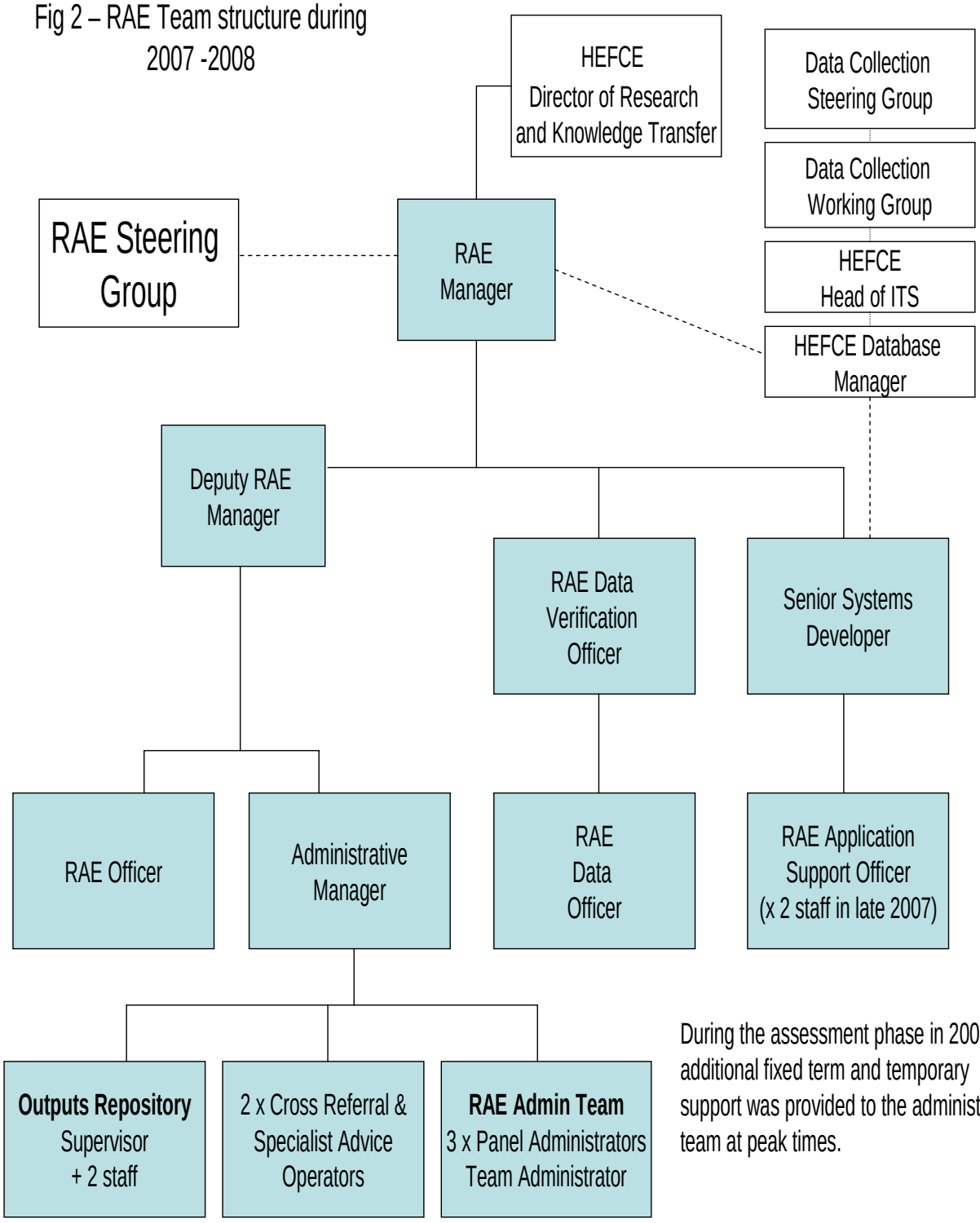


Fig 1. RAE team as at April 2005

Note

The organogram above (Fig 1) shows the structure of the core team during the development phase of the exercise. Figure 2 below shows how the RAE team was structured and resourced during the assessment phase in 2008. Following the end of the assessment phase, the RAE team was slowly disbanded with a number of staff on fixed-term contracts leaving the team, and some staff moving into new roles with HEFCE.

Fig 2 – RAE Team structure during 2007 -2008



During the assessment phase in 2008 additional fixed term and temporary support was provided to the administrative team at peak times.

Annex C– Outputs in RAE 2008 by type

Institutions were asked to identify an output type from a predetermined list for each output included in submissions. The following table shows the distribution by type across all submissions and all subject areas.

Table 7: RAE Outputs by Type

Output type		Percentage	Count
A	Authored book	6.61%	14256
B	Edited book	1.38%	2978
C	Chapter in book	8.50%	18331
D	Journal article	75.29%	162360
E	Conference contribution	1.86%	4001
F	Patent/published patent application	0.11%	241
G	Software	0.05%	115
H	Internet publication	2.01%	4345
I	Performance	0.29%	615
J	Composition	0.34%	736
K	Design	0.21%	454
L	Artefact	0.33%	718
M	Exhibition	1.25%	2691
N	Research report for external body	0.59%	1276
O	Confidential report (for external body)	0.03%	58
P	Devices and products	0.02%	45
Q	Digital or visual media	0.32%	681
R	Scholarly edition	0.28%	605
S	Research datasets and databases	0.06%	132
T	Other form of assessable output	0.47%	1019
Overall total			**215657**

During the course of 2008 some 840 submitted outputs were removed due to a variety of data adjustments. The total originally submitted was 216497.

Annex D Summary of specialist advice process

1. 939 specialist advisors were appointed across all 67 sub-panels.

2. Around 18% of specialist advisors were appointed to sub-panel 17 (Earth Systems and Environmental Sciences) because of its broad remit. Similarly, sub-panel 12 (Allied Health Professions and Studies) had a large number of specialist advisors (around 6%). For a breakdown of numbers of specialist advisors by panel, see table 8 below.

3. Specialist advisors were generally academics or industrialists from the UK, and not on other RAE panels. However, some specialist advisors were from outside the UK, and some were panel members from other sub-panels. Some advisors provided advice for more than one sub-panel.

4. Whilst 939 specialist advisors were recruited to the pool of advisors, not all were used. The names and organisation/institutional affiliation of those advisors used were published in March 2009.

5. Specialist advisors were paid £250 for providing advice; this was increased in cases where advice was provided to more than one sub-panel. Advice could be sought on the quality of a single output or larger groups of outputs from one or more submissions and institutions. Panels took account of conflicts of interest when requesting specialist advice.

6. All requests for specialist advice had to be agreed by the RAE team before the request was passed to the relevant advisor. Although panel members were appointed on the basis of their broad understanding of their subject area, in practice many panels preferred to use specialist advisors if material was peripheral to their areas of expertise. As many panels had committed to assess in detail almost all outputs, this greatly increased the numbers of specialist advisors used in comparison with previous exercises.

The nominations process

6. In summer 2007, the RAE team conducted a survey of submission intention, whereby HEIs could indicate the likely content and size of their RAE2008 submissions. The panels met to review these intentions, and identify any likely areas that may require specialist advice.

7. The RAE team collected details of the areas, and where relevant, suggestions of nominees to provide advice in these areas, from the panels. Around 500 nominations were made at this stage.

8. The RAE team contacted relevant nominating bodies to endorse proposals, or to suggest nominations.

9. An invitation to join the pool of specialist advisors was sent to each nominee whose name had been endorsed by a relevant nominating body and agreed by the panel.

10. This nominations process continued during the assessment phase, taking into account other areas identified in actual submissions, volume of work and any declinations. In total, around 1050 invitations were issued.

11. 96 invited specialist advisors declined to serve; a further 76 did not respond to the invitation.

Table 8: Number of specialist advisor appointments by panel

Sub-panel	Number of specialist advisors	Sub-panel	Number of specialist advisors
1	3	34	1
2	3	35	1
3	1	36	32
4	6	37	1
5	1	38	6
6	6	39	7
7	7	40	11
8	4	41	1
9	4	42	18
10	3	43	0
11	14	44	9
12	64	45	2
13	7	46	7
14	14	47	1
15	8	48	22
16	59	49	17
17	171	50	34
18	0	51	12
19	9	52	24
20	31	53	5
21	15	54	6
22	29	55	13
23	31	56	5
24	0	57	23
25	0	58	19
26	0	59	10
27	2	60	17
28	1	61	21
29	0	62	50
30	13	63	6
31	7	64	1
32	10	65	12
33	3	66	3
		67	16

Annex E Summary of RAE 2008
Cross Referrals and Specialist Advice

Unit of assessment		Total Output Count	Interdisciplinary flagged outputs		Cross referrals requested by HEIs +									
					Output referred		Group referred		Total		Specialist advice*		Cross Referred*	
			Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
1	Cardiovascular Medicine	1,524	20	1.3	4	0.3	0	0.0	4	0.3	0	0.0	0	0.0
2	Cancer Studies	3,046	74	2.4	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
3	Infection and Immunology	2,719	211	7.8	8	0.3	0	0.0	8	0.3	1	0.0	0	0.0
4	Other Hospital Based Clinical Subjects	7,025	215	3.1	123	1.7	0	0.0	123	1.7	261	3.7	0	0.0
5	Other Laboratory Based Clinical Subjects	1,106	309	27.9	0	0.0	0	0.0	0	0.0	4	0.4	3	0.3
6	Epidemiology and Public Health	2,433	136	5.6	64	2.6	0	0.0	64	2.6	3	0.1	18	0.7
7	Health Services Research	2,206	408	18.5	46	2.1	25	1.1	71	3.2	5	0.2	11	0.5
8	Primary Care and Other Community Based Clinical Subjects	670	132	19.7	8	1.2	0	0.0	8	1.2	7	1.0	3	0.4
9	Psychiatry, Neuroscience and Clinical Psychology	3,362	61	1.8	0	0.0	0	0.0	0	0.0	10	0.3	16	0.5
10	Dentistry	1,664	204	12.3	4	0.2	0	0.0	4	0.2	0	0.0	1	0.1
11	Nursing and Midwifery	2,851	335	11.8	81	2.8	0	0.0	81	2.8	13	0.5	32	1.1
12	Allied Health Professions and Studies	6,240	439	7.0	15	0.2	0	0.0	15	0.2	515	8.2	210	3.3
13	Pharmacy	1,843	92	5.0	4	0.2	0	0.0	4	0.2	23	1.2	4	0.2
14	Biological Sciences	9,797	344	3.5	244	2.5	0	0.0	244	2.5	118	1.2	225	2.3
15	Pre-clinical and Human Biological Sciences	2,448	228	9.3	20	0.8	88	3.6	108	4.4	47	1.9	45	1.8
16	Agriculture, Veterinary and Food Science	4,203	72	1.7	44	1.0	0	0.0	44	1.0	666	15.8	18	0.4
17	Earth Systems and Environmental Sciences	5,091	328	6.4	198	3.9	96	1.9	294	5.8	1889	37.1	142	2.8
18	Chemistry	4,930	306	6.2	4	0.1	0	0.0	4	0.1	0	0.0	0	0.0
19	Physics	7,156	313	4.4	44	0.6	20	0.3	64	0.9	742	10.4	111	1.6
20	Pure Mathematics	2,762	108	3.9	16	0.6	58	2.1	74	2.7	717	26.0	36	1.3
21	Applied Mathematics	3,464	156	4.5	167	4.8	52	1.5	219	6.3	315	9.1	84	2.4
22	Statistics and Operational Research	1,481	121	8.1	49	3.3	0	0.0	49	3.3	336	22.6	22	1.5

Unit of assessment		Total Output Count	Interdisciplinary flagged outputs		Cross referrals requested by HEIs +						Specialist advice*		Cross Referred*	
					Output referred		Group referred		Total					
			Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
23	Computer Science and Informatics	7,519	761	10.1	194	2.6	6	0.1	200	2.7	52	0.7	20	0.3
24	Electrical and Electronic Engineering	3,359	173	5.1	0	0.0	29	0.9	29	0.9	0	0.0	8	0.2
25	General Engineering and Mineral & Mining Engineering	6,041	402	6.7	108	1.8	125	2.1	233	3.9	0	0.0	58	1.0
26	Chemical Engineering	988	128	13.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
27	Civil Engineering	2,066	116	5.6	22	1.1	0	0.0	22	1.1	118	5.7	0	0.0
28	Mechanical, Aeronautical and Manufacturing Engineering	4,234	193	4.6	32	0.8	0	0.0	32	0.8	46	1.1	0	0.0
29	Metallurgy and Materials	1,606	47	2.9	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
30	Architecture and the Built Environment	2,652	141	5.3	4	0.2	40	1.5	44	1.7	237	8.9	26	1.0
31	Town and Country Planning	1,721	66	3.8	75	4.3	0	0.0	75	4.3	163	9.4	37	2.1
32	Geography and Environmental Studies	4,595	188	4.1	71	1.5	42	0.9	113	2.5	197	4.3	78	1.7
33	Archaeology	2,142	127	5.9	42	2.0	0	0.0	42	2.0	7	0.3	13	0.6
34	Economics and Econometrics	3,037	42	1.4	82	2.7	0	0.0	82	2.7	4	0.1	4	0.1
35	Accounting and Finance	569	1	0.2	27	4.7	0	0.0	27	4.7	0	0.0	22	3.9
36	Business and Management Studies	12,590	321	2.5	394	3.1	296	2.4	690	5.5	775	6.2	1227	9.7
37	Library and Information Management	1,210	44	3.6	35	2.9	0	0.0	35	2.9	0	0.0	10	0.8
38	Law	6,264	136	2.2	29	0.5	0	0.0	29	0.5	100	1.6	1	0.0
39	Politics and International Studies	4,714	129	2.7	122	2.6	0	0.0	122	2.6	232	4.9	34	0.7
40	Social Work and Social Policy & Administration	5,271	268	5.1	238	4.5	0	0.0	238	4.5	126	2.4	70	1.3
41	Sociology	3,733	118	3.2	195	5.2	69	1.8	264	7.1	0	0.0	15	0.4
42	Anthropology	1,253	64	5.1	19	1.5	0	0.0	19	1.5	236	18.8	10	0.8
43	Development Studies	816	37	4.5	4	0.5	0	0.0	4	0.5	0	0.0	1	0.1
44	Psychology	6,781	442	6.5	82	1.2	0	0.0	82	1.2	88	1.3	1	0.0
45	Education	7,154	173	2.4	153	2.1	0	0.0	153	2.1	48	0.7	83	1.2
46	Sports-Related Studies	2,015	63	3.1	0	0.0	0	0.0	0	0.0	103	5.1	3	0.1

Unit of assessment		Total Output Count	Interdisciplinary flagged outputs		Cross referrals requested by HEIs+						Specialist advice*		Cross Referred*	
					Output referred		Group referred		Total					
			Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
47	American Studies and Anglophone Area Studies	339	0	0.0	24	7.1	0	0.0	24	7.1	2	0.6	11	3.2
48	Middle Eastern and African Studies	657	0	0.0	0	0.0	0	0.0	0	0.0	154	23.3	4	0.6
49	Asian Studies	614	25	4.1	0	0.0	0	0.0	0	0.0	69	11.2	4	0.7
50	European Studies	1,815	78	4.3	103	5.7	0	0.0	103	5.7	133	7.3	135	7.4
51	Russian, Slavonic and East European Languages	467	4	0.9	31	6.6	0	0.0	31	6.6	78	16.7	16	3.4
52	French	1,550	46	2.9	16	1.0	0	0.0	16	1.0	66	4.2	4	0.3
53	German, Dutch and Scandinavian Languages	875	40	4.5	4	0.5	0	0.0	4	0.5	11	1.2	2	0.2
54	Italian	389	10	2.5	4	1.0	0	0.0	4	1.0	36	9.1	2	0.5
55	Iberian and Latin American Languages	916	22	2.4	46	5.0	0	0.0	46	5.0	53	5.7	11	1.2
56	Celtic Studies	418	9	2.1	30	7.1	0	0.0	30	7.1	36	8.5	17	4.0
57	English Language and Literature	7,468	156	2.1	259	3.5	0	0.0	259	3.5	27	0.4	66	0.9
58	Linguistics	1,180	33	2.7	24	2.0	0	0.0	24	2.0	161	13.4	19	1.6
59	Classics, Ancient History, Byzantine and Modern Greek Studies	1,657	22	1.3	45	2.7	0	0.0	45	2.7	83	5.0	20	1.2
60	Philosophy	2,155	41	1.9	79	3.7	0	0.0	79	3.7	179	8.3	53	2.5
61	Theology, Divinity and Religious Studies	1,992	21	1.1	8	0.4	0	0.0	8	0.4	426	21.4	1	0.1
62	History	6,960	72	1.0	181	2.6	0	0.0	181	2.6	1490	21.4	136	2.0
63	Art and Design	7,970	179	2.2	184	2.3	53	0.7	237	3.0	120	1.5	131	1.6
64	History of Art, Architecture and Design	1,365	24	1.8	15	1.1	0	0.0	15	1.1	22	1.6	13	1.0
65	Drama, Dance and Performing Arts	1,797	54	3.0	85	4.7	0	0.0	85	4.7	30	1.7	37	2.0
66	Communication, Cultural and Media Studies	2,177	118	5.4	65	3.0	0	0.0	65	3.0	4	0.2	20	0.9
67	Music	2,545	61	2.4	2	0.1	0	0.0	2	0.1	385	15.1	3	0.1
	Overall total	215,657	9,807	4.5	4,276	2.0	999	0.5	5,275	2.4	11769	5.5	3407	1.6

* As recorded on RAE outputs sourcing system
\+ As requested by HEIs in RAE submissions

Annex F

Key RAE2008 Publications

These publications can be downloaded from the RAE web-site www.rae.ac.uk

- RAE 01/2008 – Research Assessment Exercise 2008: the outcome
- RAE 03/2007 - RAE 2008: Membership of RAE2008 panels
- RAE 01/2006 – RAE 2008: Panel Criteria and Working Methods
- RAE 04/2005 - Consultation on assessment panels' draft criteria and working methods
- RAE 03/2005 - RAE 2008: Guidance on submissions
- RAE 02/2005 - RAE 2008: Equality briefing for panel chairs, members and secretaries
- RAE 01/2005 - RAE 2008: Guidance to panels
- RAE 03/2004 - RAE 2008: Units of assessment and recruitment of panel members
- RAE 02/2004 - RAE 2008: Panel configuration and recruitment
- RAE 01/2004 - RAE 2008: Initial decisions by the UK funding bodies

Further information on the RAE can be found on the RAE web-site www.rae.ac.uk

Annex G

Glossary of RAE terms

Funding bodies	The four UK funding bodies for higher education: the Higher Education Funding Council for England (HEFCE), Higher Education Funding Council for Wales (HEFCW), Scottish Funding Council (SFC), and the Department for Employment and Learning, Northern Ireland.
HEI	Higher education institution (university or college of higher education)
RAE	Research Assessment Exercise
Definition of Research used for the RAE	'Research' for the purpose of the RAE is to be understood as original investigation undertaken in order to gain knowledge and understanding. It includes work of direct relevance to the needs of commerce, industry, and to the public and voluntary sectors; scholarship; the invention and generation of ideas, images, performances, artefacts including design, where these lead to new or substantially improved insights; and the use of existing knowledge in experimental development to produce new or substantially improved materials, devices, products and processes, including design and construction. It excludes routine testing and routine analysis of materials, components and processes such as for the maintenance of national standards, as distinct from the development of new analytical techniques. It also excludes the development of teaching materials that do not embody original research.
Research Councils	There are seven subject-specific Research Councils in the UK. They are funded by the Government to support research in their own establishments and to fund research projects in higher education institutions.
Submission	The complete set of information provided to the RAE by a department within a unit of assessment.
UOA	Unit of assessment – For the purpose of the RAE 2008, each academic discipline was assigned to one of 67 units of assessment (UOAs). Work submitted to the exercise was assessed by panel members, experts drawn from HEIs and the wider research community, and nominated by subject associations and other stakeholder organisations. 67 sub-panels of experts, one for each UOA, worked under the guidance of 15 main panels. Each main panel included sub-panels in broadly cognate disciplines whose subjects have similar approaches to research. In January 2006, panel criteria and working methods were published for each panel.