September 2009/38

Policy development

Consultation

Responses should be e-mailed to HEFCE by Wednesday 16 December 2009

This document sets out proposals for the Research Excellence Framework – the new arrangements for the assessment and funding of research in UK higher education institutions that will replace the Research Assessment Exercise (RAE).

Research Excellence Framework

Second consultation on the assessment and funding of research

September 2009/38

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Second consultation on the assessment and funding of research

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Of interest to those responsible for	Research, Planning
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Enquiries to	e-mail ref@hefce.ac.uk Hannah Chaplin tel 0117 931 7296 Pam Macpherson-Barrett tel 0117 931 7471

Executive summary

Purpose

1. This document sets out proposals for the Research Excellence Framework (REF) – the new arrangements for the assessment and funding of research in UK higher education institutions (HEIs) that will replace the Research Assessment Exercise (RAE).

Key points

2. Following an initial consultation on the REF published in late 2007 (HEFCE 2007/34), we have developed detailed proposals for the REF. The proposals build on a pilot exercise on the use of citation information, consideration of how to assess the impact of research as a key new element in the framework, lessons drawn from the 2008 RAE, and extensive expert advice and discussions with a wide range of stakeholders.

3. This document sets out proposals for all key aspects of the REF. A summary of the proposals is available in the leaflet 'The Research Excellence Framework: a brief guide to the proposals' (shortly to be made available on the web at www.hefce.ac.uk/ref).

4. We invite responses from HEIs and other groups and organisations with an interest in the conduct, quality, funding or use of research. This includes businesses, industry representatives, government and public sector bodies, charities and other third sector, social and cultural organisations.

Action required

5. Responses to the consultation should be made by completing and returning the form at Annex A by e-mail (see paragraph 21) by midday on **Wednesday 16 December 2009**.

Introduction

Background

6. The last UK Research Assessment Exercise (RAE) was completed in 2008. This was the sixth in a series of assessments that started with the Research Selectivity Exercise conducted by the University Grants Committee in 1986. The purpose of the exercises was to provide authoritative and comprehensible quality ratings for research in all disciplines carried out in universities and colleges across the UK, to inform the UK higher education (HE) funding bodies' allocation of grant for research. It reflected the established policy of the UK Government, devolved administrations and funding bodies: that these resources should be allocated selectively according to research quality. The exercises also had important roles in providing information and benchmarks – both for the public and as management information within universities and colleges – and to provide accountability for public expenditure on research in HE.

7. In December 2006 the Department for Education and Skills announced that a new framework for research assessment and funding would replace the RAE after the 2008 exercise in England. The underlying policy of allocating research funding selectively on the basis of quality remained unchanged; the intention was that the mechanisms should become simpler and less burdensome.

8. Since 2007 there has been substantial development work on the new arrangements, now known as the Research Excellence Framework (REF). This work has been led by HEFCE, working in partnership with the other UK HE funding bodies, and overseen by a UK steering group. In this document therefore, 'we' refers to all of the UK HE funding bodies unless otherwise specified.

9. In late 2007 we held initial consultations on key elements of the REF[1], and in May 2008, HEFCE announced a number of changes to those initial proposals, responding to feedback from the sector[2].

10. In developing our proposals we have taken into account the UK Government's aims for the publicly funded research sector and its expectations as to the role that the REF should play in delivering these. The Government has made plain its view that maintaining the capacity of the HE sector to produce world-leading research across a broad range of academic disciplines is essential to underpin economic growth and national well-being; and that to this end the HE sector can and should do more to ensure that its excellent research achieves its full potential impact. The devolved administrations have expressed broadly similar views.

11. In his letter of 22 January 2009 to the HEFCE Chair about funding for 2009-10, the Secretary of State emphasised that the REF should take better account of the impact research makes on the economy and society, and gave further guidance on particular activities that the REF should encourage:

> 'The REF should continue to incentivise research excellence, but also reflect the quality of researchers' contribution to public policy making and to public engagement, and not create disincentives to researchers moving between academia and the private sector.'

12. It remains the funding bodies' aim that the REF should provide a unified UK-wide framework for research quality assessment, recognising that decisions on funding allocations will be taken by each funding body for its own country or territory. In particular:

a. In Wales, the Welsh Assembly Government is requiring higher education institutions (HEIs) to increasingly align their activities with its key policy directions and ambitions for economic growth. In so doing it recognises that Welsh research must continue to stand comparison with that in the rest of the UK and internationally.

[1] These proposals were based on a metrics-driven approach for the science-based disciplines, and the use of light-touch expert review for the arts, humanities and social sciences. For further information, see HEFCE 2007/34, HEFCW W07/48HE and SFC/06/2007C.

[2] The main change was to move away from separate approaches for the science-based and for the other disciplines, and to develop a unified approach across all disciplines. This was announced in HEFCE Circular letter 13/2008 and in HEFCW W08/20HE and SFC/34/2008

b. In Scotland, the Scottish Funding Council (SFC) has yet to take a position on the use of the REF to inform funding.

c. In Northern Ireland the Department for Employment and Learning (DEL) is committed to maintaining a UK-wide quality assessment regime; the way in which assessment outcomes will be used for funding purposes will be determined by DEL following consultation with the Northern Ireland HE sector.

13. This document sets out proposals for the REF and invites responses to the questions at Annex A.

Aims of research assessment

14. The UK funding bodies each aim to develop and sustain a dynamic and internationally competitive research sector in their country or territory that makes a major contribution to economic prosperity, national wellbeing and the expansion and dissemination of knowledge. Research assessment is a key means through which we pursue this strategic aim. In particular, the policy aim of research assessment is to secure the continuation of a world-class, dynamic and responsive research base across the full academic spectrum within HE. This will be achieved through:

- funding: selective funding allocations informed by quality assessment
- benchmarking and information: establishing reputational yardsticks
- accountability: demonstrating that investment in research is effective and delivers public benefits.

15. To this end, the REF as a framework for assessment – and for funding where adopted – will aim to:

a. Drive up quality across the HE research base and in all forms of research.

b. Support and encourage innovative and curiosity-driven research, including new approaches, new fields and interdisciplinary work.

c. Reward and encourage the effective sharing, dissemination and application of research findings and the productive interchange of research staff and ideas between HEIs, business and other research users.

d. Reward and encourage HEIs that deliver benefits to business, the economy and society by building on excellent research.

e. Produce and publish quality assessments that are comprehensible, produced by a transparent process, and benchmarked against international standards and which identify the very best HE research wherever this is carried out.

f. Support better management and sustainability of the research base.

Development of the REF

16. Following the initial consultation exercise that ended in spring 2008 (HEFCE 2007/34), HEFCE, in collaboration with the other UK HE funding bodies, developed proposals for the REF through a programme of work including:

a. A substantive pilot of bibliometrics indicators of research quality, as a significant new element in the framework.

b. Considering lessons learned from the 2008 RAE.

c. Convening Expert Advisory Groups (EAGs) to draw on advice of senior practising researchers from across the range of disciplines, research users and other funders.

d. A wide range of discussions, including with institutions, representative bodies, learned societies, research users and other research funders.

e. Workshops on key issues including impact, accountability burden and research information management.

f. Consultancy advice, including on approaches to assessing impact in other countries.

17. We have worked closely with the UK Research Councils to ensure that our proposals for the REF will be effective in pursuing shared objectives with them, particularly in terms of rewarding excellent research and its impact. Both the Research Councils and the UK HE funding bodies believe that the REF

will complement the work of the Research Councils in a way that strengthens the operation of the dual-support research funding system. We remain in continued dialogue with them, including about the scope for better coordination of our respective data collection requirements.

18. Reports and documents from the development work that have provided the evidence base for our proposals are available on the web at www.hefce.ac.uk/ref. These are listed at Annex B.

19. We are grateful to members of the EAGs who gave of their time to provide constructive advice, and to the considerable efforts of the HEIs that took part in the bibliometrics pilot exercise.

Proposals

20. The sections below set out our proposals for:

- defining research excellence and the key features of the assessment framework
- assessing the quality of research outputs – including the use of citation information
- assessing the impact of research on the economy and society
- assessing the research environment
- the overall outcomes of the assessment
- the configuration of panels and units of assessment (UOAs), and how to achieve appropriate levels of consistency between these
- measures to promote equalities and diversity
- the timetable for implementation of the REF
- the accountability burden implications of the REF.

21. We invite responses to questions on each of these sections. Questions are presented throughout the text. Responses to the consultation should be made by completing and returning the form at Annex A. Respondents should complete the electronic version of the form, which can be found on the HEFCE web-site www.hefce.ac.uk, alongside this document under Publications, and e-mail it by **midday on Wednesday 16 December 2009**.

22. All responses should be e-mailed to ref@hefce.ac.uk. **In addition**:

a. Responses from institutions in Scotland should be **copied to** Pauline Jones, Scottish Funding Council, e-mail pjones@sfc.ac.uk.

b. Responses from institutions in Wales should be **copied to** Linda Tiller, Higher Education Funding Council for Wales, e-mail linda.tiller@hefcw.ac.uk.

c. Responses from institutions in Northern Ireland should be **copied to** the Department for Employment and Learning, e-mail research.branch@delni.gov.uk.

Framework for assessment

Research excellence

23. The primary focus of the REF will be to identify excellent research of all kinds and the impact arising from excellent research, within the UK HE sector. It is not intended to be a comprehensive assessment of all research activity within the sector.

24. For the purposes of the REF, we define research as **'a process of investigation leading to new insights effectively shared'**.

25. The REF will assess excellence at the level of coherent research units that produce substantive bodies of work (hereafter we refer to such research units as 'submitted units'). It will not assess individual researchers, or whole institutions.

26. An excellent submitted unit will be expected to demonstrate the following key characteristics of excellence:

a. Production of a portfolio of high-quality, original and rigorous research, including work which is world-leading in moving the discipline forward, innovative work pursuing new lines of enquiry, and activity effectively building on this to achieve impact beyond the discipline, benefiting the economy or society.

b. Effective sharing of its research findings with a range of audiences.

c. Building effectively on excellent research through a range of activity leading to benefits

to the economy and society, including engagement with a range of stakeholders in developing and conducting its research and applying findings.

d. A high-quality, forward-looking research environment conducive to a continuing flow of excellent research and to its effective dissemination and application.

e. Significant contributions to the sustainability and vitality of the research base.

Key features of the assessment framework

27. We propose the following key features of the assessment framework:

a. The assessment will focus on three distinct elements, which together reflect the key characteristics of an excellent submission:

- **Output quality:** An assessment of a selection of the submitted unit's highest quality research outputs. This is to identify the extent to which staff in the submitted unit have produced excellent research during the assessment period. This is discussed further at paragraphs 28-50.
- **Impact:**[3] An assessment of demonstrable economic and social impacts that have been achieved through activity within the submitted unit that builds on excellent research. This is to assess the extent to which a submitted unit has built upon its strong record of excellent research to make a positive impact on the economy and society within the assessment period. This is discussed further at paragraphs 51-76.
- **Environment:** An assessment of the quality and sustainability of the submitted unit's research environment, its contribution to the vitality of the research base, and its wider engagement beyond the institution and discipline. This is to assess the extent to which the submitted unit has developed a research infrastructure, and a range of supporting activity, conducive to a continuing flow of excellent research and to its effective dissemination and application. This is discussed further at paragraphs 77-81.

b. Overall the REF will give greatest recognition to units that demonstrate excellent research activity (as measured by outputs and environment) as well as achieving the highest impacts. Greatest weight in the assessment will be given to output quality, as the most direct indicator of an excellent submission. Significant weight will also be attached to the other two elements. Reflecting its importance in policy terms, impact will be weighted more highly than environment, and will significantly influence the overall outcomes where strong impacts build on the submitted unit's excellent research.

c. The assessment outcomes will be a product of expert review, informed by citation information and other quantitative indicators where appropriate. We have tested the potential for such indicators to replace expert review (at least in science-based disciplines) but found that they are not sufficiently robust and would not be acceptable to the HE sector if used in this way. Nevertheless quantitative indicators can play a greater role in informing expert review than in previous assessment exercises, and we would expect them to continue to develop over time.

d. The assessment will be undertaken by an expert panel for each subject unit of assessment. UOAs should be defined to cover substantive areas of activity that are academically coherent, and that are at a level of detail that is useful both for the purposes of funding and for providing research management information to institutions.

e. Institutions will provide submissions of evidence for each unit to be assessed; the assessment is tied to units of activity within institutions and they are best placed to explain these. Submissions will include details about research staff, their outputs, and other qualitative and quantitative information about research-driven impacts and the research environment.

[3] Throughout this document, where we refer to 'impact' or 'social and economic impact', we include economic, social, public policy, cultural and quality of life impacts.

f. By continuing the practice adopted in the RAE of assessing bodies of activity at the level of coherent academic groupings, we will be able to use the REF to encourage desirable behaviours at three levels:

- the behaviour of individual researchers within a submitted unit
- research units, as the level at which research activity is primarily managed
- whole HEIs – the level at which the block grant is allocated.

g. In assessing outputs, the REF will focus on the highest quality work produced by submitted units; it will not seek to be a comprehensive assessment of all the research outputs of these units. This reflects the underlying policy to promote and reward excellence. Experience of previous assessments demonstrates that assessing a sample of work of the highest quality is sufficient to provide a robust quality assessment in this context.

h. The criteria and process of assessment will be consistent across all UOAs and expert panels, except where disciplinary differences require flexibility. A consistent approach is required to inform funding, and avoids unnecessary complexity for institutions.

i. Assessment of research will be against internationally benchmarked standards of excellence. We will provide evidence to panels to assist with this, and panels will work together to ensure that the standards are applied with appropriate levels of consistency.

j. The outcomes of the assessment will be sufficiently fine-grained to identify excellence wherever this may be found, including where there are islands of research excellence. The outcomes will be published in the form of a single overall excellence profile for each submitted unit. The overall excellence profile will combine three sub-profiles – one for each of output quality, impact and environment – which will also be published.

k. The assessment will be undertaken periodically, with the first REF exercise due to be completed in 2013. This is because of the scale of such expert review exercises; and the periodic nature provides for stability.

Consultation question 1

Do you agree with the proposed key features of the REF? If not, explain why.

Assessing output quality

Selection of staff

28. We have considered and discussed widely whether the work of all research staff at an institution should be assessed, or whether the REF should focus on the work of selected research staff. We perceive a broad consensus that the outputs of selected academic staff should be assessed within each submitted unit, and that the selection of staff for submission should be done by the employing HEI in all cases. Considering the work of selected staff reflects our underlying policy to identify research excellence. As noted in paragraph 27g, the exercise is not designed to assess all research activity irrespective of its quality, and it is not necessary (even if it were feasible in practice) to consider the work of staff who have not engaged in significant research activity of high quality. Requiring HEIs to select staff whose work will be assessed recognises the reality that only the institution can identify those with substantive research roles. It would be unworkable for the HE funding bodies to try to identify all active researchers through nationally available data, without an element of choice by the institution.

29. We recognise that comparisons between quality profiles based on the work of selected staff in different HEIs will inevitably be coloured by variations in how individual institutions determine which staff to include. However, we anticipate that institutions will wish to include all of their research staff working at high quality levels, and that the quality profiles will thus identify the actual volume of activity at high quality levels within each HEI. Moreover, both the quality ratings and, more recently, the quality profiles produced by previous

research assessment exercises have assessed the work of selected staff; this is something that the funding bodies and other users of the RAE outcomes are accustomed to working with.

30. We have also considered how far the assessment should have regard to variations in the proportion of total academic staff selected by HEIs and submitted units. It remains our view that the proportion of staff selected should not be a significant factor in assessing quality in the REF. A strong research culture can be maintained within a department or unit even if a significant number of its academic staff are not actively engaged in high-quality research. In the event that an assessment panel may feel that the activity of a submitted unit lacks desirable critical mass, this can be taken into account through the assessment of the research environment. Moreover, collection of auditable statistics at the level of submitted units would pose considerable practical problems.

31. Nonetheless we recognise that some HEIs feel strongly that they should be able to demonstrate their research intensivity by reference to statistics for the proportion of academic staff selected across the institution. We plan for the Higher Education Statistics Agency (HESA) to collect data about all eligible staff for the purpose of equal opportunities monitoring, and that these data will also provide statistics about the proportion of staff selected for assessment. While such data are not expected to inform the assessment process, we expect HESA to publish such statistics after the completion of the REF assessment. We will clearly define eligible staff in order to avoid the problems experienced in this regard following the 2008 RAE.

32. We propose to simplify the categories of staff that are eligible for selection by institutions. In the 2008 RAE, institutions could submit the work of a range of individuals whose research was focused in the submitting unit even though they were not employed by the HEI (Category C staff). The work of such staff was taken into account in constructing the quality profiles, though not in the volume measure for funding purposes. Concerns have been expressed about the difficulty of determining whether the submitted unit was indeed the focus for the research activity of such staff, as required by the rules of the RAE, and how far they contributed to its achievements.

33. We propose that in order to reduce complexity in the REF, institutions can select and include the work of the following categories of staff:

a. Academic staff employed by the institution on the census date: these are academic staff employed under a contract of employment with the submitting HEI on the census date, whose primary employment function is research, teaching or both. (These staff would also comprise the volume measure for funding purposes.)

b. Staff employed by another organisation on the census date, who undertake research that is demonstrably focused in the submitting unit, and they are employed to do so. This will permit the continuing inclusion of outputs by some NHS staff and others working in units embedded within the HEI and funded by third party bodies in partnership with the HEI. The research of these staff would contribute to the quality profiles, though not the volume measure.

34. We are aware of some concern about the inclusion of staff on fractional contracts, whose professional research activity may take place mainly outside the HEI, in relation to the contribution that their submitted outputs may be judged to have made to the achievement of the submitted unit overall. We are considering whether there should be some means to establish a connection between the work of such staff and the submitted unit. Respondents to the consultation may wish to comment on this.

35. The assessment process will be designed to encourage institutions to submit any eligible staff who have produced research of high quality during the assessment period but who may not have published outputs spanning the entire period. Staff with particular circumstances that constrained their capacity to undertake research during the assessment period will be able to submit fewer than the maximum number of outputs, without reducing

their contribution to the volume measure for funding purposes. These will include:

- 'early career' researchers who may only recently have established themselves as principal investigators undertaking work of high quality
- part-time staff
- researchers who had spent time away from their academic base for reasons including working in or with businesses or other sectors, or personal circumstances such as maternity leave or ill-health, and might not have published during that period
- established researchers recruited into HE from businesses or other sectors where traditional academic outputs are not normally produced; this is to support greater movement of staff between research user organisations and academia.

Selection of outputs

36. Institutions will select outputs to be submitted for assessment. We propose there be a maximum of either three or four outputs submitted for each researcher. We consider this number to be sufficient to enable panels to form a robust view as to the achievements of individuals and of submitted units while discouraging the submission of individual staff who do not have a sufficiently strong personal research record (subject to the safeguards discussed above). A reduction in the overall maximum from four to three could make a material contribution to reducing the burden on expert panels, especially in fields where citation indices are not well developed, and would in our view be justified if the assessment period were to be set at five years (the anticipated period between the 2008 RAE and a REF exercise in 2013).

37. Panels may also wish to 'double-weight' certain types of output, as discussed at paragraph 50b.

38. All types of outputs from research that meets the Frascati principles (involving original investigation leading to new insights) will be eligible for submission. This includes 'grey literature' and outputs that are not in conventional published form, such as confidential reports to government or business, software, designs, performances and artefacts. Given that we see research as a process of investigation that has led to new insights effectively shared, we would expect all submitted work to include evidence of the research process, as well as presenting the insights in a form meeting the needs of its potential audience both within and beyond the academic community.

Criteria for assessing outputs

39. Outputs will be assessed against criteria of 'rigour, originality and significance'. By 'significance', we mean the extent to which research outputs display the capacity to make a difference either through intellectual influence within the academic sphere, or through actual or potential use beyond the academic sphere, or both. These three generic criteria will be applied to all types of research, and clarifying the meaning of 'significance' in this way should help to encourage institutions to submit high-quality applied and translational research in particular. Panels will also be guided to recognise that while research of the highest quality must meet all three criteria, individual outputs may do so to varying degrees.

40. To assist in assessing user significance (beyond the academic sphere), institutions will be invited to include a short statement with any output for which they believe that such significance may convincingly be asserted.

41. The assessment of outputs will produce a graded sub-profile for each submission, to show the proportion of submitted work meeting defined standards of excellence. We propose to revise the descriptor for four star quality used in the 2008 RAE, to achieve the highest degree of discrimination at the top end of the scale, as set out below. It is our intention that research activity should be assessed at the four star level only where the assessment panel is confident in its view that the activity meets the very highest standards. We envisage that this will result in greater discrimination between research meeting the very highest standards and research which may be excellent but still falls short of these. (We recognise that, in combination with other changes to the framework, this will result in outcomes that are not fully comparable to those from the 2008 RAE.)

Draft definitions of levels for the outputs sub-profile

Four star	**Exceptional:** Quality that is world-leading and meets the highest standards of excellence in terms of originality, significance and rigour
Three star	**Excellent:** Quality that is internationally excellent in terms of originality, significance and rigour but which nonetheless falls short of the highest standards of excellence
Two star	**Very good:** Quality that is recognised internationally in terms of originality, significance and rigour
One star	**Good:** 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 the assessment

Assessment process

42. The expert panels will construct the outputs sub-profiles based on their review of the submitted outputs, informed and supplemented by citation information where appropriate. Panels will need to include a sufficient breadth of expertise for this purpose, and we anticipate that all panels, including those using citation information, will review a substantial proportion of the submitted outputs.

43. In the RAE, many panels reviewed large volumes of outputs and the workload was considerable. Through the bibliometrics pilot exercise (see Annex B) we tested ways in which citation analysis could supplement or replace expert review of outputs. We have also considered other options for reducing panels' workloads, especially where bibliometrics would not be available. These are discussed below.

Use of citation information

44. Based on the bibliometrics pilot exercise and the advice of the EAGs and wider discussions, we have concluded that:

a. Bibliometrics are not sufficiently mature to be used formulaically as a sole indicator or to replace expert review, but there is considerable scope for citation indicators to inform and supplement expert review of outputs in the REF, in certain UOAs.

b. There are several ways in which bibliometrics can be used to inform and supplement expert review to enhance the reliability of the process and to reduce panel workloads. This varies between UOAs, depending on the availability of citation data and the robustness of citation indicators.

c. For the purposes of REF, citation information will be most useful where it focuses on the selected outputs. There would be little additional value within the framework – and considerable additional work – in trying to produce citation indicators for all of an institution's or submitted unit's outputs.

45. We propose that citation information should be used in the REF as follows:

a. Citation data relating to submitted outputs will be provided to panels to inform expert review in UOAs covering the medical, health, biological and physical sciences, psychology, engineering and computer science. For other UOAs, panels should decide whether or not they would use citation information, after consulting their communities. We do not expect that the arts, humanities or many social sciences would opt to use citation information, given the limitations of such data in these subjects[4].

b. For those panels that use citation data, the data will be provided for all submitted outputs that can be matched to the relevant citation

[4] To inform these decisions, we will publish data for each discipline, about the coverage of the available citation databases and patterns of citation (in particular, the average number of times that outputs are cited over time).

database(s). In the pilot exercise we used two databases, the Web of Science and Scopus. For the REF, we will procure one or more databases through a rigorous procurement process with clear criteria to ensure appropriate coverage, data quality, suitability for international benchmarking, transparency, responsiveness to our requirements and value for money.

c. Citation data will be provided to the relevant panels in a standard format, including clear international benchmarks and sufficient information to enable the data to be interpreted. Examples of the kind of information to be provided to panels are at Annex C.

d. The panels will have flexibility to decide how to make use of the data as appropriate to their discipline, depending on the robustness and coverage of the data. For example, they could use the information to **inform** judgements about the quality of individual outputs; or they could use citation information relating to whole submissions as a cross-check against sub-profiles arrived at through reviewing the outputs. Further discussion of the possible uses of the data is at Annex C.

e. We will provide guidance to the panels on how to ensure that whatever approach is taken is robust and free from bias. This will include guidance on:

   i. Ensuring that judgements about the quality of individual outputs are not made solely on the basis of citation information; scoring of individual outputs must always reflect expert judgement.

   ii. Where panels decide to review samples of the outputs, robust sampling techniques should be used and sufficient samples of outputs should be reviewed for each submission.

   iii. Particular caution should be exercised when using citation data for more recently published outputs – and we do not plan to provide any citation information for outputs published in the final year of the REF period (2012).

   iv. Outputs that are not matched to citation databases or are published too recently for citation data to be available must be treated equally, and should be at least as likely to be reviewed in detail, as those outputs for which there is citation data available.

   v. The value of citations as a quality indicator for research with a more applied focus is limited, and the short statements about the 'user significance' of such outputs, where provided, should be taken into account.

f. We intend that panels will specify in their criteria whether they will use citation data; and if so, how they intend to make use of such data (including any criteria for sampling), within the guidelines provided.

46. This approach to the assessment of outputs retains scope for the assessment of grey literature and work published in non-standard forms (for which citation data are unlikely to be available), and to assess the quality of applied and other types of research for which citation indicators may have limited value. This will be important in enabling panels to give full and equal consideration to all outputs of high quality, including from work undertaken directly for or in collaboration with research users and research to inform public policy.

47. In keeping with this approach we will issue clear guidance to institutions advising them to select for submission those research outputs of their staff that best represent the quality of their research, regardless of whether citation information is available for these outputs.

48. Within those UOAs using citation information, institutions will be expected to verify links made between their submitted outputs and the relevant citation database(s). The REF data collection system will provide a means for doing this. The citation statistics associated with the matched outputs will be generated centrally through a standardised process, and added by the REF Team to institutions'

submissions. These data will be made available to institutions prior to the submission deadline and before they are provided to the expert panels. We do not anticipate that institutions would verify the citation statistics; however we will require that the selected database supplier(s) provide facilities to correct errors regarding citation links in the underlying data that institutions may find.

49. Given that a number of expert panels will make use of citation data to inform their judgements, we anticipate that institutions may wish to make use of such data to inform their selection of outputs. In all cases, however, this should only inform decisions made alongside other considerations of quality, and bearing in mind the limitations of citation information (especially regarding recently published outputs, and limitations in the coverage of the citation databases). We will work with JISC Collections and institutions to ensure that citation information is accessible to those institutions that may want it for this purpose, without undue additional cost and in a form that is consistent with the information to be provided to panels. Ideally such data will be available through the REF data collection system, subject to future developments and procurement decisions.

Reviewing outputs

50. We have discussed with the EAGs the wider question of how the burden on panels of reviewing large volumes of outputs could be reduced. One option is to reduce the number of outputs submitted per person from four to three (particularly if the assessment period is five rather than seven years). Further options include:

a. Sampling the outputs to be reviewed in detail, particularly where citation data are available. We propose that panels should specify in their criteria statements the proportion of outputs they expect to review in detail.

b. Explicitly double-weighting more substantive outputs such as monographs that encapsulate several years' work. We propose that panels should consider whether certain types of output should be double-weighted (counting as two submitted outputs) and where applicable to develop criteria for this. The criteria should be sufficiently clear so that when making submissions, the institution can be confident about which outputs will be double-weighted.

Consultation question 2

What comments do you have on the proposed approach to assessing outputs? If you disagree with any of these proposals please explain why.

Comments are especially welcomed on the following proposals:

- that institutions should select research staff and outputs to be assessed
- for the categories of staff eligible for selection, and how they are defined
- for encouraging institutions to submit – and for assessing – all types of high-quality research outputs including applied and translational research
- for the use of citation information to inform the review of outputs in appropriate UOAs (including the range of appropriate UOAs, the type of citation information that should be provided to panels as outlined in Annex C, and the flexibility panels should have in using the information)

and on the following options:

- whether there should be a maximum of three or four outputs submitted per researcher
- whether certain types of output should be 'double-weighted' and if so, how these could be defined.

Assessing the impact of research

Principles

51. Our commitment to taking account of the impact of research in the REF reflects policy aims in all parts of the UK to maintain and improve the achievements of the HE sector both in undertaking ground-breaking research of the highest quality and building on this research to achieve demonstrable benefits to the wider economy and society. Our

starting point is that an excellent department or unit should meet the highest standards in both of these elements, and should be rewarded for delivering strong impacts by building on their portfolio of excellent research activity.

52. In the RAE, panels' judgements about quality were implicitly informed by their assessment of the actual or foreseeable impact of research[5]. In the REF we will make this more explicit by introducing a distinct 'impact' element in the assessment.

53. We propose that the following principles should underlie the assessment of impact in the REF:

a. The REF is a framework for identifying and rewarding research excellence, and the impacts built on excellent research. The assessment of impact should consider economic and social benefits that are built upon research of the highest quality (in terms of originality, rigour and significance). Impact from other activities is supported through other means, such as the Higher Education Innovation Fund in England and comparable funding streams in other parts of the UK.

b. There should be a wide definition of impacts, including economic, social, public policy, cultural and quality of life. We include all these types of impact throughout this document, wherever we refer simply to 'impact' or 'social and economic impact'. (Within the 'impact' element we do not intend to include impact through intellectual influence on scientific knowledge and academia – this is fully recognised within the 'outputs' and 'environment' elements of the REF. Impact on teaching within HE will be taken into account where it can be shown that high-quality research has informed practice, not just course content, well beyond the institution in which that practice was first developed.)

c. We aim to produce a meaningful assessment of impacts that are built on a portfolio of research activity over a period of time, and the assessment of impact should be at the level of the submitted unit as a whole. The assessment process should identify clearly what action was taken within a submitted unit that had impact and what form the impact took. Assessing the impact of individual research outputs or individual researchers would be unworkable, for several reasons (chiefly those discussed at paragraph 55); and assessing the impact of whole institutions would be too coarse for the purposes of the REF[6].

d. The assessment of impact within the REF should be conducted against equally demanding standards – and with a similar degree of differentiation between activities meeting these standards – to the assessment of research outputs.

Challenges in assessing impact

54. The assessment of impact will be an important new feature of the framework and we recognise there are some significant issues to address, including the challenges of time lags, attribution and corroboration. These are well documented in the literature about the evaluation of research impact[7], including a project we commissioned to identify lessons from approaches in other countries[8].

55. We are developing an approach to assessing impact that addresses the key challenges as follows:

a. **Time lags.** There can be lengthy time lags between undertaking the research and its impact becoming evident. This can be addressed by considering the impact of research undertaken over a sufficiently long time frame, and by taking a broad overview of the impact

[5] All types of research, including basic and applied research, were assessed on an equal basis. The criteria for quality were 'originality, rigour and significance', including significance to users of research. The assessment of environment and esteem included indicators relating to collaboration with and income from research users, exploitation of new ideas and products, and influence on public policy advice.

[6] It should be noted that in England HEFCE will undertake a pilot exercise for implementing the recommendation made in Professor Wellings' report to Government on intellectual property issues: that the Council should require each HEI that it funds to produce an annual impact statement for the whole institution.

[7] See, for example, 'The benefits from publicly funded research' by B Martin and P Tang (SPRU, June 2007) and 'Study on the economic impact of the Research Councils' (a report to Research Councils UK by PA Consulting Group, October 2007).

[8] 'Capturing research impacts: a review of international practice' (a report by Rand Europe to HEFCE, to be published shortly).

of the submitted unit as a whole, rather than attempting to identify the impact of each submitted research output (many of which will have been published too recently for their impacts to be identifiable).

b. **Attribution.** The process through which research leads to impact is non-linear, and there can be a number of intervening factors that influence the impact of research. Thus there are challenges in 'attributing' impacts to research activity. Our approach seeks to identify the research-driven **contribution** of the submitted unit to the successful exploitation or translation of excellent research. It recognises that other important factors affect the impacts of research, beyond the influence of the researchers or their institutions.

c. **Limitations of metrics.** There are limitations in the extent to which the impacts of research can be 'measured' through quantifiable indicators. Rather than seek to **measure** the impacts in a quantifiable way, impact will be **assessed** in the REF. Expert panels will review narrative evidence supported by appropriate indicators, and produce graded impact sub-profiles for each submission; they will not seek to quantify the impacts.

d. **Corroboration.** There are challenges in verifying or corroborating claims made about the impact of research. Our approach includes scope for third party corroboration of claims where appropriate. More generally, the submissions will be scrutinised by expert panels (including users) who will be well placed to make judgements about the credibility of the evidence provided.

56. In developing the approach, we are also mindful of the need to avoid excessive burden and complexity for institutions and for the assessment panels.

57. Our proposed approach is set out below. Given the importance of this new and untested element of the REF we plan to run a pilot exercise to test, develop and refine these proposals during 2010 and to take final decisions on our approach to assessing impact in detail only after that. In the meantime, we have already developed proposals for the underpinning framework for assessing impact, which is set out in the following paragraphs.

Impact submissions

58. We propose that each submitted unit should provide evidence of the economic and social impacts of its research, comprising:

- a number of **case studies** detailing specific examples of research-driven impacts (that have become evident during the assessment period), and how the submitted unit contributed to those impacts
- an overarching **impact statement** in a standard form briefly describing the breadth or range of interactions with research users and an overview of the impacts achieved by the submitted unit's research activity as a whole.

Case studies

59. Each **case study**, submitted in a standard format, would set out and provide evidence (including indicators where available) for:

a. The nature and extent of a specific impact – including how far-reaching it was, who benefits and in what way.

b. The submitted unit's contribution to the impact, explaining what the underpinning research was and the unit's efforts to exploit or apply the research findings; and acknowledging any other significant contributory factors.

60. An initial template for the case studies is provided at Annex D and we invite feedback on this.

61. The case studies would provide the bulk of the evidence for the assessment of impact. The number of case studies put forward would need to vary according to the size of the submission. There should be enough evidence for the panel to assess impacts achieved across the full range of the submitted unit's research activity and appropriate contexts, while not asking very large departments to do more work than is necessary. We suggest the number of case studies in a submission should be one for every 5 to 10 full-time equivalent (FTE) staff submitted (bearing in mind that many case studies would cover the work of multiple staff).

62. To address the problem of time lags, the impacts must have become evident during the REF assessment period, though the underpinning research could have been undertaken earlier. There will need to be a time limit for this, and we suggest this should be in the region of 10-15 years. We will test an appropriate time limit in the impact pilot exercise[9].

Impact statements

63. The accompanying **impact statement** for each submitted unit would contain further narrative and appropriate indicators. The impact statement will give a rounded picture of the full range of impacts secured by the unit and illustrated in the case studies. The narrative will be guided by a series of questions on a template, covering in particular:

- how the submitted unit identifies opportunities to exploit its research findings across the full range of its research
- the range of interactions with users and potential users of research
- an overview of the range and significance of research-driven benefits gained
- evidence of a continuing flow of activity to secure future impact.

Indicators of impact

64. Both the case studies and the impact statement will include a range of **indicators of impact** as supporting evidence. Some of the indicators apply to submitted units as a whole, helping to describe the full range of impacts and supporting activity of the unit, and would be included in the impact statement. We propose that these are:

- indicators of research income generated from key categories of research users (such as business, government departments and research charities)
- indicators of the amount and extent of collaboration with the full range of research users
- other indicators that may be particular to specific UOAs, selected from a common 'menu'.

65. A range of other indicators would help to provide evidence of specific impacts described within the case studies. We are developing a menu of such indicators that could be drawn on as appropriate to support individual case studies. The menu aims to cover a wide range of potential research-driven impacts, including indicators of social, economic, policy, cultural, health and quality of life benefits. An initial menu – to be developed further through the consultation and the impact pilot exercise mentioned in paragraph 57 – is at Annex D.

66. For the 2013 REF we expect that indicators of impact will provide supporting evidence within the impact statements and case studies, to help inform panels' judgements. Over time, we intend to review further indicators of research impact that could play a greater role in the assessment in subsequent exercises.

Assessment criteria and process

67. The assessment of impact will focus on the submitted unit's contribution to demonstrable economic and social impacts through activity undertaken within the unit during the assessment period building on excellent research (which may have been undertaken earlier than the start of the assessment period).

68. In claiming credit for a demonstrable impact, it will be important to show clearly how the contribution made by the submitted unit grew out of its research activity. We do not envisage that a unit could claim credit for impact which was based on research undertaken in the unit but which was exploited or applied through the efforts of others, without a demonstrable contribution by the unit to that exploitation.

69. We recognise that the processes through which research leads to economic and social impacts are

[9] An implication of this approach is that the research which underpins the impact case studies may – but need not – be different to the outputs submitted for assessment of output quality. It also enables recent work to be submitted for assessment of output quality in one exercise, and for its impact to be submitted in a subsequent exercise, after there has been time for the impact to be felt.

complex and non-linear. We therefore anticipate challenges in linking impacts to the research activity of the submitted unit. For example, there may be multiple contributors to a particular impact, staff involved in undertaking and building on research will move during the assessment period, and the contribution to an impact could be indirect through influencing further research undertaken elsewhere. We will develop clear criteria for establishing what would count as a significant research-driven contribution to an impact by a submitted unit, through the impact pilot exercise.

70. Judgements about impact will be made by expert panels who understand the nature of research in the discipline and its relationship with users and the wider economy and society.

71. We will aim to involve a majority of research users (broadly defined) in the assessment of impact across the full range of panels. To enable a wider range of users to make the necessary time commitments, we envisage their input would focus mainly on setting the criteria for and assessing the impact element of the REF (although some user members may also wish to review outputs – particularly where the submitted unit provides evidence of the user significance of outputs). Such users could be 'associate members' of panels, playing a full role in assessing impact but not the other elements of the submissions. This is discussed further in paragraphs 95-96.

72. The expert panels will assess the evidence against two criteria for impact:

- their reach (how widely the impacts have been felt)
- how significant or transformative the impacts have been.

They will also consider how far a submitted unit has successfully achieved impact across the full range of activities and contexts appropriate to its field of activity; it should not be possible to achieve the highest score by concentrating narrowly on only a part of the territory that the unit might have been expected to cover. Through the pilot exercise we will refine these criteria.

73. We intend that for each submission the panels will produce a graded sub-profile against four starred levels of impact (and 'unclassified'). Draft definitions of the levels are provided below, and will be refined through the pilot exercise. We intend to establish equally demanding standards for impact to the starred quality levels for outputs.

Draft definitions of levels for the impact sub-profile

Four star	**Exceptional:** Ground-breaking or transformative impacts of major value or significance, relevant to a range of situations have been demonstrated
Three star	**Excellent:** Highly innovative (but not quite ground-breaking) impacts such as new products or processes, relevant to several situations have been demonstrated
Two star	**Very good:** Substantial impacts of more than incremental significance, or incremental improvements that are wide-ranging have been demonstrated
One star	**Good:** Impacts in the form of incremental improvements or process innovation, of modest range have been demonstrated
Unclassified	The impacts are of little or no significance or reach. Or the links between the impacts and excellent research, or a significant research-driven contribution by the submitted unit, have not been demonstrated

74. There are several ways in which panels could assess the evidence to produce the impact sub-profiles, and we will test these in the pilot exercise. At present our preferred approach would be for panels to grade each case study individually to produce a profile, moderated as appropriate by their assessment of the impact statement.

75. Concerns have been raised about the indirect route through which research in some fields leads to social or economic impact; that is, by influencing other disciplines that are 'closer to market' (for example, research in mathematics could influence

engineering research that in turn has an economic impact). We intend to develop an approach that will give due credit for this.

76. We have initiated an impact pilot exercise to test and develop these proposals with a spread of institutions across the UK, making impact submissions to a selection of UOAs spanning the sciences, social sciences and arts and humanities.

Consultation question 3

What comments do you have on the proposed approach to assessing impact? If you disagree with any of these proposals please explain why.

Comments are especially welcomed on the following:

- how we propose to address the key challenges of time lags and attribution
- the type of evidence to be submitted, in the form of case studies and an impact statement supported by indicators (including comments on the initial template for case studies and menu of indicators at Annex D)
- the criteria for assessing impact and the definition of levels for the impact sub-profile
- the role of research users in assessing impact.

The research environment

77. There are several reasons for proposing that research environment be considered as a distinct element in the assessment process. A high-quality research environment underpins excellent research, creates the conditions for strong impact, and supports the vitality of the research base more widely. In recognising and rewarding units with a strong record of achievement in the quality of their research outputs and in their impact more broadly, it will be important also to take into account evidence that they are well placed to maintain this record though the next funding period; and the assessment of environment will provide this forward-looking element.

78. At the same time it is desirable to give explicit recognition to activities undertaken by researchers that may contribute primarily to the sustainability and vitality of their field nationally rather than to the particular achievements of their own HEI. Equally, there are indicators of esteem, pertaining to individuals or groupings, which we should capture as further aspects of the quality and significance of the research in a submitted unit. Some of these have been considered in previous exercises, and many researchers and HEIs would also wish this to continue into REF.

79. We propose that institutions should submit robust and verifiable evidence of the research environment using a generic template, covering the following areas in all submissions:

a. **Resourcing:**
   - what research groups or sub-units are covered by the submission, and how research is structured and managed across the submitted unit; information about research income (including from Research Councils)
   - consideration of critical mass. We propose that panels should determine and provide guidance on the extent to which critical mass should be considered within the environment element of REF
   - infrastructure and facilities.

b. **Management:**
   - strategic aims and goals for research and how they will be taken forward; evidence that the unit has a forward plan for the development of its research activities that is realistic and contributes to its sustainability and to the vitality of the discipline
   - staff development, including support for early career researchers
   - training of postgraduate research (PGR) students, including data about PGR numbers and completions.

c. **Engagement:**
   - arrangements that are in place to support staff working with research users and the public in a way that builds on or draws

upon high-quality research activity; this includes support provided through staff and career development arrangements as well as formal secondments, releasing time from other duties for this purpose (such as participation on government advisory bodies), and the contributions of 'intermediaries' within the institutions to support such interactions

- engagement with the public, including the dissemination of research findings and maintaining a dialogue on a range of related issues
- contributions to the research base, including work with other researchers outside of the submitted unit, support for research collaboration and interdisciplinary research, and indicators of wider contributions to the research base and relevant esteem indicators (such as fellowships and awards, involvement on panels and journal editorships).

80. We aim to develop a standard format for reporting research income and PGR data, and to reduce burden and complexity by aligning the specification, definitions and categories of research income and PGR student data with those used by HESA. This will enable institutions to collect such data once internally, and report it as necessary to HESA and to the REF, without collecting similar data separately for these different purposes. We shall give clear guidance to the panels on interpreting and using these data.

81. We propose that panels will produce a sub-profile for environment by scoring each element in the template against four starred levels, and that the panels will publish criteria about the weighting to be attached to each element. We propose to introduce definitions for the starred levels for research environment in terms of the extent to which resourcing, management and engagement are demonstrably in keeping with or conducive to the continuing production of outputs and achievement of impacts at each starred level.

Consultation question 4

Do you have any comments on the proposed approach to assessing research environment?

Overall assessment outcomes

82. We propose to present the assessment outcomes in the form of an overall excellence profile for each submission, by combining the three sub-profiles for outputs, impact and environment. We will also publish the sub-profiles[10].

83. Overall the REF should give greatest recognition to units that demonstrate a combination of excellent research activity (as measured by outputs and environment) and strong impacts. The three elements will be weighted and combined to reflect this and to create strong but balanced incentives for researchers to build on excellent research activity to deliver strong impacts. To this end, in producing the overall excellence profiles:

a. Greatest weight will be given to the output sub-profile, as the most direct measure that the submitted unit has delivered excellence and as the foundation for building on excellent research to achieve strong impacts.

b. The impact and environment sub-profiles will also have a significant influence. Reflecting its importance in policy terms, impact will be weighted more highly than environment.

c. We propose that the REF should give differentially greater recognition where units demonstrate excellence in all three areas. The REF should avoid a 'trade off' between excellent research activity and impacts. The basis will be recognition of research excellence, with additional recognition for high impact built on that excellence.

84. We propose that the weightings between the three elements should be the same or closely similar across all UOAs, as this allows for greater simplicity and comparability across the exercise, and reduces scope for tactical decision-making about which

[10] The alternative would be to produce separate outcomes for each element, which could each be used separately to inform funding, without producing overall excellence profiles.

UOA to submit work to. Our preference is to have standard weightings for all UOAs, although we welcome views on the case for allowing some variability. As an indication of our current thinking we propose the following weightings:

Outputs: 60 per cent

Impact: 25 per cent

Environment: 15 per cent

85. We envisage taking a final decision on the process for combining the three elements, and on the weightings to be attached to each of these, having regard to the policy considerations already discussed and in the light of findings from the impact pilot exercise in 2010.

86. Both the overall profile and the sub-profiles will be expressed in terms of the proportions of submitted activity found to reach each of four starred levels. Proposed definitions of the starred levels for the overall excellence profile are below. The definitions of the starred levels for each of the three sub-profiles are tailored to reflect the three distinct elements of assessment; at the same time we intend that the standards required for each starred level across the three sub-profiles will be equally demanding.

Draft definitions of levels for the overall excellence profile

Four star	**Exceptional:** Research activity that meets the highest standards of research excellence and impact (supported by an environment conducive to continuing activity at this level)
Three star	**Excellent:** Research activity that is excellent in terms of quality and impact but which nonetheless falls short of the highest standards of excellence (supported by an environment conducive to continuing activity at this level)
Two star	**Very good:** Research activity that is very good in terms of quality and impact (supported by an environment conducive to continuing activity at this level)
One star	**Good:** Research activity that is good in terms of quality and impact (supported by an environment conducive to continuing activity at this level)
Unclassified	Activity that falls below the standard required for one star; or insufficient evidence has been provided; or the activity is not eligible

Consultation question 5

Do you agree with our proposals for combining and weighting the output, impact and environment sub-profiles? If not please propose an alternative and explain why this is preferable.

Panel structure and consistency

87. Assessment will be undertaken by expert panels covering coherent research disciplines. Panels will include leading experts in their fields as well as people with experience in commissioning and using research – in businesses, the public and third sectors. Panel members will be appointed by the UK funding bodies after consulting widely with national associations, learned societies and other research bodies, research funders, and a range of bodies with a research user interest.

Panel configuration

88. We propose to retain a two-tiered structure in which groups of sub-panels work together under the guidance of main panels, to ensure consistency both in terms of process and standards of assessment. This will however incorporate significant new elements in the structure and management of the panels and in their working methods.

89. In previous assessment exercises there were a number of comparatively fluid boundaries between UOAs. This provided institutions with substantial discretion about where to submit and how to divide up their work into discrete submissions. The panel structure also resulted in uneven panel workloads, with the number of FTE staff submitted to each UOA ranging from less than 100 to more than 3,000. For the REF we propose to have

substantially fewer UOAs with fewer fluid boundaries between them than in previous assessment exercises; and to reduce the number of main panels – to as few as four – to achieve greater consistency.

90. The proposed UOAs and panel structure are at Annex E.

91. Within this structure we propose that sub-panels will be responsible for:

- preparing statements of relevant criteria and working methods – but with limited scope to vary these (only varying where justified by specific disciplinary differences)
- undertaking the assessment
- making recommendations to main panels on the outcomes for each submission.

92. The main panels will be responsible for:

- reviewing and endorsing the criteria and working methods to be used by the sub-panels
- co-ordinating across sub-panels to ensure consistent application of assessment standards
- deciding on the outcomes to be awarded to each submission
- maintaining a good level of communication and joint working with the other main panels.

93. A REF steering group, to be established by the UK funding bodies, will have oversight of the conduct of the exercise; will issue clear guidance to the panels on key elements in the assessment process, with particular reference to elements that we wish to be common to all panels; and will sign off the criteria and working methods of the panels.

94. The proposed panel structure results in some UOAs covering a number of related though discrete fields; and a number of sub-panels that would be expected to receive large volumes of material for assessment. Nevertheless we believe that the proposed breadth and scale of coverage of the proposed UOAs are manageable. UOAs with a similar scale and breadth of material were dealt with by a number of the 2008 RAE sub-panels. Some RAE sub-panels effectively covered diverse fields of research, by ensuring an appropriate mix of expertise and to some extent working in informal 'sub-groups'. Some sub-panels managed very large volumes of material, and have provided feedback about how this could be done more effectively in future.

95. We propose that the sub-panels, particularly those covering relatively large and diverse UOAs, will operate by:

- varying or increasing the number of members to reflect the scale and breadth of material to be assessed
- appointing 'associate members' to provide additional expertise in reviewing outputs and to ensure full user involvement in assessing impact
- where appropriate, working in informal sub-groups
- reducing the workload of assessing outputs, through the options discussed at paragraph 50
- using specialist advisors to advise on the assessment of particular outputs for which members and associate members do not have sufficient expertise (although we propose more limited use of specialist advisors than in the 2008 RAE).

96. By way of illustration, a typical REF sub-panel could receive submissions for around 2,000 staff (a maximum of 6,000-8,000 outputs and 200-400 impact case studies), and could operate as follows:

a. Around 20 panel members would be involved in reviewing all aspects of submissions (this would include any user members who are willing to review outputs).

b. These members could be assisted by around 15-20 'associate members': around half of these would be additional practising researchers to assist with reviewing the breadth and volume of outputs; the other half would be additional user members to focus on assessing impact.

c. Although there would be more academic members on panels overall (this is necessary to cope with the volume and breadth of outputs), the impact submissions would be reviewed mainly by the user members.

d. The members could organise themselves into informal sub-groups if appropriate, to assess particular fields or types of research. The panel could provide guidance to institutions about the sub-groups and request that institutions indicate which sub-groups are relevant to their submitted research.

97. We invite feedback on the proposed panel structure at Annex E, in relation to:

- its possible implications for the management of the exercise
- the assessment of work in discipline fields, especially in particular UOAs where there may be potential alternative options to consider. (A number of these are highlighted in Annex E.)

98. In commenting on specific UOAs, respondents should note that we are committed to substantially reducing the number of UOAs (and the number and fluidity of boundaries between these) and to ensuring that all REF panels are of substantial size, even if this means combining relatively discrete fields into a single panel (which could operate with informal sub-groups). We do not wish to consider arguments for retaining comparatively small discrete UOAs.

Consultation question 6

What comments do you have on the panel configuration proposed at Annex E? Where suggesting alternative options for specific UOAs, please provide the reasons for this.

Consistency across panels

99. We intend to achieve greater consistency in the standards of assessment between panels than in the RAE, with fewer elements in the assessment process left open to panels' discretion. We propose to achieve this through:

a. Determining key elements of the criteria and assessment processes – and producing more detailed guidance – centrally; and by allowing flexibility for panels to supplement the guidance or vary the process only in specific defined areas and where differences in research in the discipline can be shown to justify this.

b. Having fewer broader main panels, with a clear responsibility to ensure consistency in the process and comparability of outcomes among their sub-panels. Feedback from the 2008 RAE indicates that the main panels had a significant influence in achieving consistency across their fields, and we see scope to build further on this.

c. Providing panels with information at an early stage in their work to support the consistent application of internationally benchmarked standards of assessment. This will build on the type of data used by the Government to monitor its public service agreement targets for the international performance of the UK research base[11] and any other information of sufficient authority such as discipline reviews by international experts commissioned by the Research Councils. This will include bibliometric indicators where available, comparing the citation performance of disciplines in the UK as a whole with other key competitor countries.

d. A continued role of international members on main panels and/or sub-panels.

100. We propose that the following aspects of the assessment be standardised across all UOAs, with generic guidance provided centrally:

a. The assessment of the three elements (outputs, impact and environment) against generic criteria and definitions of four starred quality levels; the same weightings between the elements; and a consistent approach to forming sub-profiles and combining them into an overall profile.

b. Definitions of staff eligibility and output types; and the criteria for and treatment of individual staff circumstances. This is discussed further at paragraph 112.

c. The role of sub-panels and main panels, processes for nomination and appointment, the role of user members, and processes for cross-referring material and using special advisors, including for handling interdisciplinary research.

[11] See 'International comparative performance of the UK research base' (July 2008) available on the Department for Business, Innovation and Skills web-site.

d. The format and core data for submissions, including the maximum number of outputs submitted per researcher; generic templates for submitting evidence about impact and environment; a common menu of indicators; and standardised reporting of PGR student and research income data.

e. Census dates and the timetable for submissions and assessment.

f. Provision of citation data in a standard format to all sub-panels that make use of citation data.

101. There will be discretion given to panels only where they have identified significant features of research activity in their disciplinary area that require some flexibility in the assessment. We propose that these are:

a. The panel's working methods, to manage variable workloads (this varies according to both the volume and type of outputs – for example, monographs are more time-consuming to assess than journal articles). Panels could, for example, sample outputs, organise themselves into informal sub-groups, make greater use of 'associate members', or decide that certain types of output would be double-weighted, as appropriate to the volume and diversity of material to be assessed.

b. Whether the panel will make use of citation information to inform the assessment of outputs; and if so, how they will make use of such data (although for all panels making use of citation data, the data will be provided in a standard format, and there will be guidelines on their use).

c. Guidance on what information should be included in the short statements that may be provided with outputs, to demonstrate the output's significance to users or, for example, explain the individual's contribution to a co-authored output.

d. Preferred indicators of impact. Panels could identify particular indicators from the common menu that they would want to include in the impact statements or emphasise within case studies, or provide additional guidance on how some specific indicators should be presented, as may be appropriate to their disciplines.

e. Assessment of environment: although all UOAs would use a standard template for the assessment of environment, panels could determine the extent to which critical mass would be taken into account, place more or less emphasis on particular elements in the template, or provide guidance on specific indicators to be included within it (in addition to the standard reporting of PGR and research income data).

Consultation question 7

Do you agree with the proposed approach to ensuring consistency between panels?

Nominations to panels

102. We propose to follow similar processes for appointing panel members as in previous assessment exercises. We will identify a list of nominating bodies, to put forward nominations for chairs, members and associate members. A draft list of nominating bodies (Annex F) is available on the HEFCE web-site alongside this document under Publications. We invite suggestions for additions or amendments to this list - particularly for additional bodies that represent users of research or that could nominate research users as potential panellists.

103. Main panel and sub-panel chairs will be appointed by the funding bodies through a robust and transparent process, with clear criteria for appointment reflecting the demands of the role.

104. Following this consultation exercise, we will publish the finalised panel configuration and details of the panel recruitment process, and seek nominations for panellists.

Consultation question 8

Do you have any suggested additions or amendments to the list of nominating bodies? (If suggesting additional bodies, please provide their names and addresses and indicate how they are qualified to make nominations.)

Interdisciplinary research

105. In general, members of 2008 RAE panels felt they were able to assess interdisciplinary research without difficulty, given the breadth of panel membership and use of specialist advisors, although some noted practical difficulties with the cross-referral process. We are looking at how to build on the RAE approach to ensure the REF encourages interdisciplinary research.

106. In revising the panel structure, we aim to ensure that whichever panel interdisciplinary research is submitted to, there will be effective mechanisms for ensuring it is reviewed fairly by people with appropriate expertise. The proposed broader sub-panels and main panels will assist with this as will our proposals for expanding the breadth of expertise within panels, by the addition of associate members. We also propose to retain specialist advisors where necessary, although we anticipate more limited use of such advisors than in the previous assessment exercise, given the proposed changes to the panel structure.

107. Within the environment element we will ask submitted units to explain how they support interdisciplinary and collaborative research. Within the impact element they will be given credit for impact achieved where interdisciplinary research contributes to solving real-world problems.

108. We anticipate that this approach to interdisciplinary research will help to dispel any perceptions that the assessment process acts to discourage activity of this kind, including high-priority areas such as research linked to sustainable development and a low carbon economy.

Consultation question 9

Do you agree that our proposed approach will ensure that interdisciplinary research is assessed on an equal footing with other types of research? Are there further measures we should consider to ensure that this is the case and that our approach is well understood?

Researcher mobility

109. Significant benefits can flow from the movement of researchers between HE and other sectors, including business and industry and the public and voluntary sectors. This movement may take several forms, including the secondment of academic researchers to work in other sectors for a significant period and the recruitment in HE of people with significant experience in research while working elsewhere, as well as less formal arrangements for people to spend time working outside their normal research environment. Its benefits can include the achievement of more frequent and more significant outcomes, harnessing research findings to real world problems, and the development of a culture within HE that values and supports interactions of all kinds. Encouraging researcher mobility is a specific policy aim of the REF and we wish to ensure that the framework creates a positive environment for researcher mobility.

110. We propose to ensure that the REF encourages and supports researcher mobility, chiefly by securing that:

a. Research undertaken outside HE during the assessment period by staff whose outputs are submitted for assessment is considered on an equal footing and against appropriate criteria for excellence in all cases where an assessable output can be identified, including where this may not be published in a form generally adopted by academic researchers in its field.

b. Staff who had spent time in industry or other sectors undertaking research or other work that builds on their research expertise, will be able to submit fewer than the maximum number of outputs. We propose to make this a specific category of 'individual staff circumstances' to be taken into account.

c. In their submissions institutions are encouraged to identify cases where movement of staff between HE and other sectors has contributed to the impact of their research during the assessment period.

d. In assessing research environment, credit is given where departments can show that they have a strong record in encouraging and supporting researcher mobility and interactions of all kinds with other sectors.

Consultation question 10

Do you agree that our proposals for encouraging and supporting researcher mobility will have a positive effect; and are there other measures that should be taken within the REF to this end?

Equalities and diversity

111. The Equality Challenge Unit (ECU) led a review of the equalities measures taken in the 2008 RAE, and HEFCE has conducted an analysis of staff selection in the 2008 RAE[12]. The findings indicate that we should continue with similar equalities measures to those adopted for the RAE, but also identify several areas where improvements should be made. We propose that for the REF:

a. Institutions will be required to implement codes of practice for the selection of staff. The ECU review highlights areas of good practice, and areas with scope for improvement (for example, in terms of communicating the codes to staff and enabling individual staff circumstances to be disclosed in confidence).

b. We will provide guidance to institutions and panels, strengthening some aspects of this, as highlighted in the review.

c. Staff with particular circumstances that adversely affected their capacity to undertake research during the REF assessment period will be enabled to submit fewer than the maximum number of outputs. This includes early career researchers, staff working part-time, staff who had career breaks, staff who spent time working in business or other research user sectors, and those who had prolonged absence due to ill-health.

112. A key recommendation from the review by ECU is that there should be a more consistent and ideally simplified approach to the treatment of individual staff circumstances. To achieve this, we propose to centralise the guidance on and process for handling individual staff circumstances to a greater extent than in the 2008 RAE. We propose to establish a central group involving equalities specialists, REF team members and panel representatives to develop a standard set of criteria and guidance for individual staff circumstances, and to provide consistent advice to panels about – or centrally adjudicate on – individual cases.

113. We are also analysing data from the bibliometrics pilot exercise, to explore whether there is bias in terms of citations to papers authored by different groups of researchers, including early career researchers; the findings could inform the way citation data are interpreted by expert panels.

Consultation question 11

Are there any further ways in which we could improve the measures to promote equalities and diversity?

Timetable and submissions

114. In order to complete the first REF exercise in 2013 to inform funding from 2014[13], we would need to work to the following timetable:

Sep – Dec 2009	• Consultation exercise • Initiate impact pilot exercise
Spring 2010	• Announce high level consultation outcomes • Invite nominations for panels • Start developing REF data collection system
Autumn 2010	• Conclude impact pilot exercise • Publish guidance on submissions
Late 2010	• Appoint panels

[12] See 'Impact of the process to promote equality and diversity in the Research Assessment Exercise 2008' (Equality Challenge Unit, 2009) and 'Selection of staff for inclusion in RAE2008' (HEFCE 2009/34).

[13] As determined by each of the four UK higher education funding bodies – see paragraph 12.

2011	• Panels consult on and publish criteria • Complete REF data collection system
2012	• HEIs make submissions
2013	• Panels assess submissions
Dec 2013	• Publish outcomes
Feb 2014	• Determine funding outcomes

115. We are no longer planning to undertake an exercise in 2010 to produce quality assessments for certain disciplines based on bibliometric analysis. This element in our previous proposals cannot be carried through following our conclusion that bibliometric indicators alone cannot provide a sufficiently robust measure of quality to drive funding allocations in any discipline at present.

116. For the REF exercise completing in 2013, we propose the following census dates:

a. Selected staff in post on a census date in autumn 2012.

b. Selected outputs (to be assessed for output quality) which have been published or otherwise made publicly available for non-published output types, between 2008 and 2012 inclusive.

c. Research students and research income associated with selected staff, and other evidence about the research environment, relating to the period 2008 to 2012.

d. Research impacts that become evident during the period 2008 to 2012; though the underlying research that contributed to these impacts could have been undertaken previously, within a specified limit.

117. We are in the process of convening workshops and a steering group to advise on the specification and development of the REF data collection system. These will include representatives from institutions and other agencies with a role in collecting research data.

Consultation question 12

Do you have any comments about the proposed timetable?

Accountability burden

118. The policy priorities in developing the REF have evolved since 2006. The initial intention was to reduce significantly the burden involved in large-scale peer-review exercises, while continuing to allocate research funding with reference to research excellence. This arose from concerns that the RAE had become overly complex as it evolved through successive exercises. Initial consultations about reform of the research assessment and funding arrangements (in 2006 and 2007) therefore focused on substantially reducing burden by replacing expert review with metrics.

119. Through those initial consultations – and the more recent bibliometrics pilot exercise – a widespread consensus has emerged that while metrics should inform expert review they are not sufficiently robust to replace expert review. While we remain concerned to reduce the burden of assessment, we believe we have exhausted the main options for any radically different alternative approach. The REF will be driven by a process of expert review, informed by metrics, and we must strike an appropriate balance between:

- ensuring the process is robust and acceptable to a range of key stakeholders
- operating efficiently and avoiding undue complexity.

120. In developing the REF, HEFCE commissioned a review of the accountability burden of the 2008 RAE, and we have identified a number of specific areas in which we could streamline the process.

121. The review of the RAE accountability burden on the HE sector in England undertaken by PA Consulting concluded that although the RAE was high cost, it was also high value and the burden involved was proportionate to the benefits[14]. It estimated the additional cost to the sector in England of the 2008 RAE at £47 million over the

[14] The report, 'RAE 2008 accountability review', is available on the web at www.hefce.ac.uk/pubs/rdreports/2009/rd08_09/

seven-year cycle. The cost to HEFCE of running the 2008 RAE was £9.7 million[15]. Thus the total estimated cost of the 2008 RAE in England was £56.7 million and the estimated annualised cost was £8.1 million (£56.7 million divided by seven years). This is approximately a half of 1 per cent of the £1.5 billion of QR research funding – driven by the outcomes of the 2008 RAE – that HEFCE allocated in 2009-10.

122. We expect the costs to the UK funding bodies of conducting a full REF assessment cycle to be similar to the overall costs of the 2008 RAE (£12 million over a five-year period). In terms of burden on institutions and on panels, although there will be additional work in assessing impact in particular, we will seek to make reductions in a number of specific areas:

a. Substantially reducing the number of UOAs and ensuring greater consistency between them (as discussed in paragraphs 88-98). Together, these changes should reduce the complexity for HEIs of responding to differing criteria, and reduce tactical decision-making about which panels to submit to.

b. Simplifying the categories of staff that are eligible for selection.

c. Aligning the specification for research student and income data with those used by HESA, to avoid duplication of effort within HEIs. We will also work with HESA, Research Councils and other major funders to coordinate our research data requirements; our working principle is that HEIs should be able to collect research data once internally and report this as necessary for various (internal and external) purposes.

d. Phasing out the annual Research Activity Survey in England.

e. Using generic templates and a common menu of indicators for the impact and environment elements of REF.

f. Reducing panels' workload through some combination of reducing the number of outputs per person from four to three, sampling the outputs to be reviewed in detail, and double-weighting certain types of output.

g. Establishing a centralised group to develop consistent guidance on, and advise or adjudicate individual staff circumstance cases.

123. Other possible measures that we have considered but ruled out at present include:

a. Reducing the amount of information that is collected in relation to research environment. Based on our informal consultations so far, we believe that institutions generally would wish all of this information to be available to the panels despite the effort required to provide it.

b. Discouraging or ruling out very small submissions. Our proposals for reducing the number of UOAs will lead to fewer very small submissions. We are aware that any proposal to introduce a rule on minimum size would raise questions in relation to strategically important and vulnerable subjects, as well as the general question of what constitutes critical mass in different fields and types of research activity.

124. The PA Consulting report suggests that unnecessary burden can also be reduced by increasing the extent to which the processes are internalised within institutions. Following the 2008 RAE, many institutions have been actively developing their research information systems, partly in anticipation of the REF but also for internal and other reasons. We are working with JISC and others to support sector-wide improvements in research information management. Such improvements (for example, more systematic collection of data about research publications) should reduce the amount of additional work required to prepare REF submissions, as well as lead to wider management benefits.

Consultation question 13

Are there any further areas in which we could reduce burden, without compromising the robustness of the process?

[15] This is 81 per cent of the total cost to the four UK funding bodies (£12 million).

Annex A

Consultation questions and response form

1. Responses to the consultation should be made by completing and returning the form below. Respondents should complete the electronic version of the form, which can be found on the HEFCE web-site www.hefce.ac.uk, alongside the consultation document under Publications, and e-mail it by midday on **Wednesday 16 December 2009**.

2. All responses should be e-mailed to ref@hefce.ac.uk. **In addition:**

a. Responses from institutions in Scotland should be **copied to** Pauline Jones, Scottish Funding Council, e-mail pjones@sfc.ac.uk.

b. Responses from institutions in Wales should be **copied to** Linda Tiller, Higher Education Funding Council for Wales, e-mail linda.tiller@hefcw.ac.uk.

c. Responses from institutions in Northern Ireland should be **copied to** the Department for Employment and Learning, e-mail research.branch@delni.gov.uk.

3. We will publish an analysis of responses to the consultation. Additionally, all responses may be disclosed on request, under the terms of the Freedom of Information Act. The Act gives a public right of access to any information held by a public authority, in this case HEFCE. This includes information provided in response to a consultation. We have a responsibility to decide whether any responses, including information about your identity, should be made public or treated as confidential. We can refuse to disclose information only in exceptional circumstances. This means responses to this consultation are unlikely to be treated as confidential except in very particular circumstances. Further information about the Act is available at www.informationcommissioner.gov.uk. Equivalent legislation exists in Scotland.

Respondent's details

Are you responding: (Delete one)	On behalf of an organisation As an individual
Name of responding organisation/individual	
Type of organisation (Delete those that are not applicable)	Higher education institution Academic association or learned society Professional body Business Government body Charity/third sector organisation Other type of organisation (please specify):
Contact name	
Position within organisation	
Contact phone number	
Contact e-mail address	

Consultation questions

(Boxes for responses can be expanded to the desired length.)

Consultation question 1: Do you agree with the proposed key features of the REF? If not, explain why.

Consultation question 2: What comments do you have on the proposed approach to assessing outputs? If you disagree with any of these proposals please explain why.

Comments are especially welcomed on the following proposals:

- that institutions should select research staff and outputs to be assessed
- for the categories of staff eligible for selection, and how they are defined
- for encouraging institutions to submit – and for assessing – all types of high-quality research outputs including applied and translational research
- for the use of citation information to inform the review of outputs in appropriate UOAs (including the range of appropriate UOAs, the type of citation information that should be provided to panels as outlined in Annex C, and the flexibility panels should have in using the information)

and on the following options:

- whether there should be a maximum of three or four outputs submitted per researcher
- whether certain types of output should be 'double weighted' and if so, how these could be defined.

Consultation question 3: What comments do you have on the proposed approach to assessing impact? If you disagree with any of these proposals please explain why.

Comments are especially welcomed on the following:

- how we propose to address the key challenges of time lags and attribution
- the type of evidence to be submitted, in the form of case studies and an impact statement supported by indicators (including comments on the initial template for case studies and menu of indicators at Annex D)
- the criteria for assessing impact and the definition of levels for the impact sub-profile
- the role of research users in assessing impact.

Consultation question 4: Do you have any comments on the proposed approach to assessing research environment?

Consultation question 5: Do you agree with our proposals for combining and weighting the output, impact and environment sub-profiles? If not please propose an alternative and explain why this is preferable.

Consultation question 6: What comments do you have on the panel configuration proposed at Annex E? Where suggesting alternative options for specific UOAs, please provide the reasons for this.

Consultation question 7: Do you agree with the proposed approach to ensuring consistency between panels?

Consultation question 8: Do you have any suggested additions or amendments to the list of nominating bodies? (If suggesting additional bodies, please provide their names and addresses and indicate how they are qualified to make nominations.)

Consultation question 9: Do you agree that our proposed approach will ensure that interdisciplinary research is assessed on an equal footing with other types of research? Are there further measures we should consider to ensure that this is the case and that our approach is well understood?

Consultation question 10: Do you agree that our proposals for encouraging and supporting researcher mobility will have a positive effect; and are there other measures that should be taken within the REF to this end?

Consultation question 11: Are there any further ways in which we could improve the measures to promote equalities and diversity?

Consultation question 12: Do you have any comments about the proposed timetable?

Consultation question 13: Are there any further areas in which we could reduce burden, without compromising the robustness of the process?

Consultation question 14: Do you have any other comments on the proposals?

Annex B

Development of the REF: further information

1. This annex outlines the development work we have undertaken during 2008 and 2009, which has informed our current proposals. All the reports listed below are available online via www.hefce.ac.uk/ref:

a. **Bibliometrics:** During 2008-09 we ran a pilot exercise with 22 HEIs across the UK to test and develop bibliometric indicators of research quality. As well as analysing the results we have taken extensive feedback from the pilot institutions and from the REF Expert Advisory Groups on the outcomes. The following reports are available:

   - 'Pilot study of bibliometric indicators of research quality: Development of a bibliographic database' (a report by Evidence Ltd on the data collection process, July 2009)
   - 'Lessons learned by institutions participating in the Research Excellence Framework bibliometrics pilot: Results of the Round One consultation' (a report on institutions' experience of the data collection process by Technopolis Group Ltd, May 2009)
   - 'Lessons learned by institutions participating in the Research Excellence Framework bibliometrics pilot: Results of the Round Two consultation' (a report on institutions' reactions to the outcomes by Technopolis Group Ltd, September 2009)
   - 'Interim report of the REF bibliometrics pilot exercise' (a report of the emerging outcomes and implications for the use of bibliometric indicators in the REF, June 2009)
   - 'Report on the pilot exercise to develop bibliometric indicators for the Research Excellence Framework' (a final report of the outcomes and further analysis, HEFCE 2009/39).

b. **Impact:** We developed proposals for how the REF could take account of the impact of research through workshops, consultancy advice, and discussions with the Research Councils, the REF Expert Advisory Groups (see below) and other key stakeholders. The following reports are available:

   - 'Capturing research impacts: a review of international practice' (a report by Rand Europe, to be published shortly)
   - 'Assessing the impact of research workshop: discussion summary' (a summary of discussion at a workshop held in July 2009 with a range of public, private and third sector research user representatives).

c. **Assessment framework:** We established REF Expert Advisory Groups which included over 100 members comprising senior practising researchers, chairs and members of RAE panels from across the spectrum of disciplines, a range of research users, and key funders of research. We held a series of meetings with these groups to discuss and take advice on all key aspects of the REF proposals. The following report is available:

   - 'Outcomes of the REF Expert Advisory Group meetings' (a report including the membership and terms of reference of the groups and a summary of discussions at all three rounds of meetings that took place between February and June 2009).

d. **Equalities and diversity:** We worked with the Equality Challenge Unit to review the equalities measures taken in the 2008 RAE, undertook a quantitative analysis of staff selected for the 2008 RAE and took advice from the REF Expert Advisory Groups. The following reports are available:

   - 'Impact of the process to promote equality and diversity in the Research Assessment Exercise 2008' (a report published by the Equality Challenge Unit, September 2009)
   - 'Selection of staff for inclusion in RAE2008' (HEFCE 2009/34)

   We are currently analysing the bibliometrics pilot data to identify equalities issues and will publish this during autumn 2009.

e. **Accountability burden:** We commissioned a review of the accountability burden of the 2008 RAE, and discussed the options for reducing

burden in the REF with the Expert Advisory Groups and other key stakeholders, including at a workshop with a range of pro vice-chancellors and other senior staff responsible for research in their institutions. The following reports are available:

- 'RAE 2008 accountability review' (a report by PA Consulting, May 2009)
- 'REF and accountability burden workshop: discussion summary' (a summary of the discussion at a workshop held in March 2009).

f. **Other work:** We worked with the Research Information Network who commissioned a study on the influence of research assessment on researchers' publication behaviours; and with JISC, HESA, the Research Councils and a number of institutions to develop and support improvements to research information management. The following materials are available:

- 'Publication, dissemination and citation behaviour of researchers' (a report published by the Research Information Network, September 2009)
- resources relating to research information management are available on the JISC web-site, www.jisc.ac.uk/whatwedo/themes/informationenvironment/ResearchInfoMgt.aspx

g. In addition we held a wide range of informal discussions with a range of stakeholders including government departments, the CBI, Research Councils, medical research charities, leading learned societies and academic associations, HEI representative bodies, mission groups and groups of research managers.

Annex C

Expert panels' use of citation information

1. Those panels that make use of citation information in the REF will do so to inform their review of output quality. The extent to which they can place reliance on citation data varies considerably depending on patterns of publication and citation in different disciplines, coverage of the databases, the type of research being assessed, and other factors. We propose to allow panels flexibility in the way they use the data to inform their review of outputs, within a set of guidelines. Based on expert advice so far, we envisage the main possible uses would be some or all of the following:

a. To inform judgements about the quality of individual outputs.

b. To sense-check or provide an external 'challenge' to the panel's output sub-profiles for whole submissions.

c. To inform borderline decisions about individual outputs or submissions.

d. To assist calibration within sub-panels, to support consistency of assessment standards.

e. To inform discussions at main panel level about consistency of marking standards between sub-panels.

2. We would expect panels to specify in their criteria whether they will use citation data; and if so, how they intend to make use of it.

3. For those panels that do make use of citation information, we propose to provide it in relation to submitted outputs that are:

- matched to the relevant citation database(s); and
- are published at least one year prior to the submission deadline (this leaves a period of time for citations to accumulate before the submission deadline).

4. We propose to provide the citation information in a standard format, both for each individual output, and in aggregate form for all outputs in the submission as a whole.

5. We propose to provide a range of information including citation counts, worldwide benchmarks for the relevant fields, and contextual data about the sources of citations, as illustrated below. The examples below are based on real data from the bibliometrics pilot, but are anonymised and partly fictionalised. We welcome feedback on these indicators and the way they are presented. We are aware that there is a wealth of citation information presented here, and panels may wish to focus their attention on some parts of the information.

Example citation information – for an individual output

Bibliographic details

Output title:	A cosmology paper
Author(s):	A N Other
Journal title:	Physical Review D
Year of publication:	2002
Document type:[16]	Article
Field category(ies):[17]	Mathematical Physics; Astronomy and Astrophysics; Nuclear and High Energy Physics

Citation data

Citation count:	26
Percentile within the UOA:[18]	55%

	Normalisation factor[19]	Normalised citation score[20]	Percentile (top)[21]
Average (all associated fields)	**11.3**	**2.3**	–
Mathematical Physics	9.0	2.9	8%
Astronomy and Astrophysics	11.7	2.2	11%
Nuclear and High Energy Physics	13.3	2.0	14%

Sources of citations

Citing papers with authors from:

• The same institution	12%
• Other UK addresses	54%
• Overseas addresses	46%

16 Document type as recorded in the citation database. We would only include articles, review papers, and potentially conference proceedings. We would not provide citation information for other document types such as letters.

17 Field category or categories as assigned by the citation database (the examples given here are partly fictionalised). These are dependent on the journal in which the paper is published. Where the journal is assigned to the 'Multidisciplinary' category, we will reassign this to an appropriate field based on the journals that the paper cites.

18 This shows where the citation count for this paper features in the distribution of citation counts to all papers submitted to the same UOA, published in the same year, and of the same document type.

19 This is the average number of citations to all papers worldwide in the same field, published in the same year, and of the same document type.

20 This is calculated by dividing the citation count (26) by the normalisation factor.

21 This shows where the citation count for this paper features in the distribution of citation counts to all papers in the same field, published in the same year, and of the same document type.

Example citation information – for a whole submission

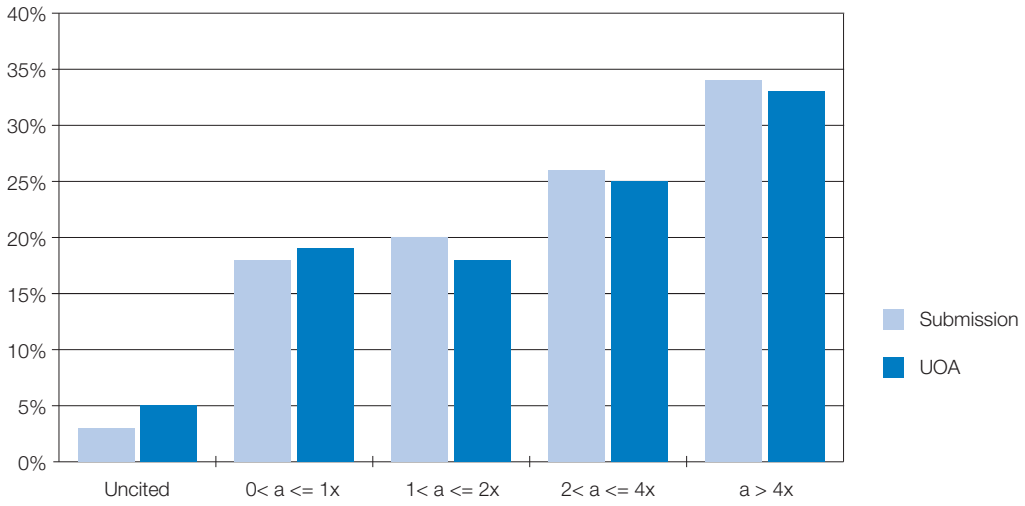
Institution: University A
UOA: Physics

	This submission	Whole UOA
No. of outputs submitted:	645	5,210
No. of outputs matched to citation database:	532	3,291

Normalised citation scores

Figure 1 shows the percentage of outputs in the submission and the whole UOA that have normalised citation scores between the values shown.

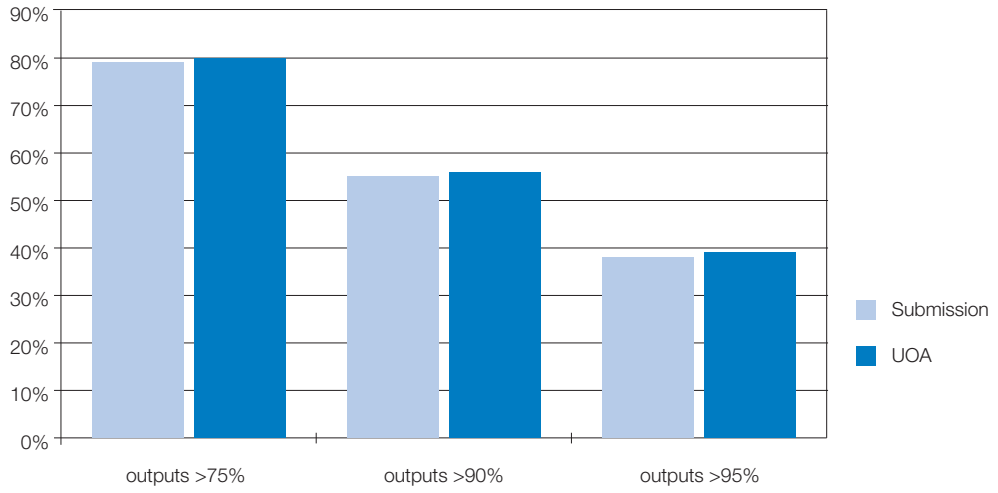
Figure 1 **Normalised citation scores for outputs**



Percentiles

Figure 2 shows the percentage of outputs in the submission and the whole UOA whose citation counts are within the centiles shown for all outputs in the citation database (within the same field(s), published in the same year, and of the same document type).

Figure 2 **Percentage of outputs in centiles**



Percentiles within the UOA

This table shows the percentage of outputs in the submission whose citation counts are in the top 5, 10 or 25 per cent of citations to all outputs submitted to the whole UOA (published in the same year, and of the same document type):

Centiles	Proportion of submitted outputs
Top 5%	4%
Top 10%	8%
Top 25%	26%

Sources of citations

Citing papers with authors from:	This submission	Whole UOA
• The same institution	10%	9%
• Other UK addresses	47%	45%
• Overseas addresses	52%	53%

We are also considering additional indicators about who and what is citing the submitted outputs. It might be useful to include information about which journals or fields the citing papers were published in. However, such data for individual outputs are likely to be sparse, and if they are provided in summary form for all outputs in a submission as a whole it is not clear how informative this would be. It may be useful to include data about the extent to which the citing papers have themselves been cited – however the time frame is such that few of the citing papers will have had sufficient time to generate useful information about this. A simple example of information about what is citing the submitted outputs is provided below.

Journals most frequently citing the outputs in this submission

Journal title	No. of citations to this submission	% of total citations
Astrophysical Journal	1,573	9.0%
Astronomy and Astrophysics	1,097	6.3%
Monthly Notices of the Royal Astronomical Society	1,057	6.0%
Physical Review D – Particles, Fields, Gravitation and Cosmology	926	5.3%
Physical Review B – Condensed Matter and Materials Physics	687	3.9%
Physical Review Letters	567	3.2%
Physical Review A – Atomic, Molecular, and Optical Physics	495	2.8%
AIP Conference Proceedings	369	2.1%
Journal of Geophysical Research D: Atmospheres	288	1.6%
Journal of Chemical Physics	266	1.5%

Annex D

Evidence of impact to be submitted

1. This annex provides further details of the evidence about impact that we propose should be included in submissions. We propose that each submission provide an impact statement (using a standard template) to describe the range of impacts and supporting activities of the submitted unit as a whole; and a number of case studies (using a common template) detailing specific examples of impact achieved by the submitted unit. Both the impact statement and the case studies should include appropriate indicators of impact as supporting evidence.

2. This annex provides an initial template for the case studies and menu of indicators of impact. These are presented as work in progress, and we invite comments and feedback to help refine these. We will develop them further through the impact pilot exercise.

Impact statement

3. Through the pilot exercise we will develop a generic template for the impact statement, with sections to cover the following key issues:

- how the submitted unit identifies opportunities to exploit its research findings across the full range of its research
- the range of interactions with users and potential users
- the range and significance of benefits gained
- evidence of a continuing flow of activity to secure future impact.

4. We propose that the impact statement will include a small number of key indicators of impact that help to describe the full range of impacts and supporting activity of the unit as a whole. We propose that these are:

- indicators of research income generated from key categories of research users (business, government departments, medical research charities)
- indicators of the amount and extent of collaboration with the full range of research users
- other indicators particular to specific UOAs selected from a common menu.

5. We will test and develop these through the impact pilot exercise (see paragraph 57 of the main text).

Case studies

6. We propose that each submitted unit would provide one case study, using the generic template, for every 5 to 10 FTE staff included in the submission.

7. Each case study should explain a specific impact on the economy, society, public policy, culture or quality of life, to which the submitted unit has made a significant research-driven contribution. The impact must have become evident within the period of assessment of the REF (2008 to 2012), though the underpinning research could have been undertaken earlier.

8. The template below has been designed to enable panels to make judgements about the reach and significance of the impact and to identify the specific research-driven contribution of the submitted unit research towards achieving the impact. It has also been designed to keep the burden on institutions to the minimum that is necessary for this purpose.

Draft template for impact case studies

1. Title of case study.

2. Describe and provide evidence of the specific benefit or impact (maximum 500 words), including:
   - explanation of the nature of the impact; how far-reaching it is/who the beneficiaries are; and how significant the benefits are
   - appropriate indicators of the impact (drawing from the common menu) – see paragraph 12 of this annex.

3. Explain how the unit's research activity contributed or led to the impact (maximum 500 words), including:
   - an outline of what the underpinning research was, when this was undertaken and by whom (references should be provided in section 4)
   - what efforts were made by staff in the unit to exploit or apply the findings or secure the impact through its research expertise
   - acknowledgement of any other significant factors or contributions to the impact.

4. Provide references to:
   - key research outputs that underpin the impact
   - external reports or documents, or contact details of a user, that could corroborate the impact or the unit's contribution (as described in sections 2 and 3).

Impact indicators

9. Both the impact statement for the submitted unit as a whole and the case studies would comprise narrative explanations, with indicators provided as supporting evidence. We aim to develop a common menu of indicators that can be drawn on and used within the impact statement and case studies, as appropriate. An initial menu – to be developed further – is provided below.

10. Other than a small number of standard indicators to be included in the impact statement, we do not envisage specifying or defining the indicators in detail. Panels may wish to provide further guidance on particular indicators that they would want to emphasise, or on how specific indicators should be presented, as may be appropriate to their disciplines. Otherwise the onus will be on institutions in their submissions to provide evidence by drawing on a small number of indicators as appropriate to the context of each case study.

11. It should be noted that some indicators in the common menu below relate to outcomes (for example, improved health outcomes or growth in business revenue). Others provide an indication that the submitted unit's research has value to user communities (such as research income), or that there is clear evidence of progress towards positive outcomes (such as the take-up or application of new products, policy advice, medical interventions and so on; or a change in policy, practice or behaviours). This reflects the practical difficulties in measuring outcomes, and the role of indicators in providing supplementary (rather than definitive) evidence to inform the assessment by panels.

12. The draft menu is not exhaustive and we welcome feedback and suggestions for additions.

Draft 'common menu' of impact indicators

Type of impact	Possible indicators
Delivering highly skilled people	• Staff movement between academia and industry • Employment of post-doctoral researchers in industry or spin-out companies
Creating new businesses, improving the performance of existing businesses, or commercialising new products or processes	• Research contracts and income from industry • Collaborative research with industry (for example, measured through numbers of co-authored outputs) • Income from intellectual property • Increased turnover/reduced costs for particular businesses/industry • Success measures for new products/services (for example, growth in revenue) • Success measures for spin-out companies (for example, growth in revenue or numbers of employees) • Patents granted/licences awarded and brought to market • Staff movement between academia and industry
Attracting R&D investment from global business	• Research income from overseas business • Collaborative research with overseas businesses
Better informed public policy-making or improved public services	• Research income from government organisations • Changes to legislation/regulations/government policy (including references in relevant documents) • Changes to public service practices/guidelines (including references in guidelines) • Measures of improved public services (for example, increased literary and numeracy rates) • Staff exchanges with government organisations • Participation on public policy/advisory committees • Influence on public policy debate (for example, as indicated by citations by non-government organisations or the media)

Improved patient care or health outcomes	• Research income from the NHS and medical research charities • Measures of improved health outcomes (for example, lives saved, reduced infection rates) • Measures of improved health services (for example, reduced treatment times or costs, equal access to services) • Changes to clinical or healthcare training, practice or guidelines (including references in relevant documents such as National Institute for Health and Clinical Excellence guidelines) • Development of new or improved drugs, treatments or other medical interventions; numbers of advanced phase clinical trials • Participation on health policy/advisory committees • Changes to public behaviour (for example, reductions in smoking)
Progress towards sustainable development, including environmental sustainability	• Application of solutions to sustainable development (new technologies, behavioural change and so on) • Measures of improved sustainability (for example, reduced pollution, regeneration of natural resources)
Cultural enrichment, including improved public engagement with science and research	• Increased levels of public engagement with science and research (for example, as measured through surveys) • Changes to public attitudes to science (for example, as measured through surveys) • Enriched appreciation of heritage or culture (for example, as measured through surveys) • Audience/participation levels at public dissemination or engagement activities (exhibitions, broadcasts and so on) • Positive reviews or participant feedback on public dissemination or engagement activities
Improved social welfare, social cohesion or national security	• Application of new ideas to improve social equity, inclusion or cohesion • Measures of improved social equity, inclusion or cohesion (for example, improved educational attainment among disadvantaged groups, or increased voting rates in lower participation communities) • Application of new security technologies or practices
Other quality of life benefits	• Please suggest what might also be included to this list

Annex E

Panel structure

1. This annex presents the proposed REF units of assessment (UOAs), sub-panels and main panels, alongside the relevant 2008 RAE UOAs (with numbers of submitted staff FTE), as an indication of the coverage and potential scale of each REF UOA.

2. We do not intend that the REF UOAs are simply combined RAE UOAs, in terms of the specific fields of research covered by each. The REF panels will need to develop UOA descriptors, ensuring that all fields of research are covered across the UOAs as a whole. There are cases where we envisage that fields that had been submitted to a particular RAE UOA would be split as appropriate between REF UOAs. For example, work previously submitted to Development Studies could in the REF be submitted to Economics, Geography, Area Studies or to other UOAs as appropriate. Work previously submitted to Sports-Related Studies could in the REF be submitted to the proposed Pre-clinical, Human Biological and Sports Science UOA, or to the Business and Management Studies UOA (if related to the sports and leisure industry, for example).

3. In seeking to reduce the overall number of UOAs and the fluid boundaries between them, and to some extent even out panel workloads, we are aware that there are a number of proposed UOAs for which there are alternative options worth considering; we particularly welcome views on these. They include:

a. Engineering – this would be a very large group but we consider it preferable to have a single panel and avoid the fluid boundaries that would result from having multiple engineering panels. We suggest that a single Engineering panel (as well as others with very large volumes such as Business and Management Studies, and Clinical Medicine) could operate with a relatively large number of members working in informal sub-groups.

b. Earth Systems and Environmental Sciences; and Geography and Environmental Studies – we envisage that these two UOAs would fall within two different main panels. Does this pose any particular difficulties and is there a better alternative (for example, combining them into a single UOA)?

c. European Studies – does this align better with European Languages or with Area Studies?

d. History, Classics and Archaeology – we regard Classics and Archaeology as too small in terms of volume to merit discrete UOAs within the new structure. However, although they would appear to be reasonably cognate with History, this grouping might risk becoming too diverse. Alternative options include separating this into two units (History; and Archaeology and Classics) or combining Classics and/or Archaeology with other UOAs.

e. Linguistics – does this align better with English Language and Literature or with European Languages?

4. In commenting on these or any other UOAs and suggesting alternative options, respondents should note that we are committed to substantially reducing the number of UOAs and we do not wish to consider arguments for retaining comparatively small discrete UOAs.

Proposed panel configuration

REF main panel	REF Units of assessment	Total FTE submitted to 2008 RAE	2008 RAE Units of assessment	No. FTE submitted to 2008 RAE
A	Clinical Medicine	3,568	1 Cardiovascular Medicine	361
			2 Cancer Studies	679
			3 Infection and Immunology	650
			4 Other Hospital Based Clinical Subjects	1,625
			5 Other Laboratory Based Clinical Subjects	253
	Public Health, Health Services and Primary Care	1,202	6 Epidemiology and Public Health	545
			7 Health Services Research	506
			8 Primary Care and Other Community Based Clinical Subjects	151
	Allied Health Professions, Dentistry and Nursing	2,939	10 Dentistry	399
			11 Nursing and Midwifery	642
			12 Allied Health Professions and Studies	1,458
			13 Pharmacy	440
	Psychology, Psychiatry and Neuroscience	2,440	9 Psychiatry, Neuroscience and Clinical Psychology	780
			44 Psychology	1,660
	Biological Sciences	2,357	14 Biological Sciences	2,357
	Pre-clinical, Human Biological and Sports Science	1,081	15 Pre-clinical and Human Biological Sciences	581
			46 Sports-Related Studies	500
	Agriculture, Veterinary and Food Science	1,016	16 Agriculture, Veterinary and Food Science	1,016

REF main panel	REF Units of assessment	Total FTE submitted to 2008 RAE	2008 RAE Units of assessment	No. FTE submitted to 2008 RAE
B	Earth Systems and Environmental Sciences	1,179	17 Earth Systems and Environmental Sciences	1,179
	Chemistry	1,151	18 Chemistry	1,151
	Physics	1,686	19 Physics	1,686
	Mathematics and Statistics	1,933	20 Pure Mathematics	685
			21 Applied Mathematics	852
			22 Statistics and Operational Research	396
	Computer Science and Informatics	1,846	23 Computer Science and Informatics	1,846
	Engineering	4,459	24 Electrical and Electronic Engineering	842
			25 General Engineering and Mineral & Mining Engineering	1,455
			26 Chemical Engineering	235
			27 Civil Engineering	513
			28 Mechanical, Aeronautical and Manufacturing Engineering	1,039
			29 Metallurgy and Materials	375

Proposed panel configuration

REF main panel	REF Units of assessment	Total FTE submitted to 2008 RAE	2008 RAE Units of assessment	No. FTE submitted to 2008 RAE
C	Geography and Environmental Studies	1,121	32 Geography and Environmental Studies	1,121
	Architecture, Built Environment, Town and Country Planning	1,035	30 Architecture and the Built Environment	631
			31 Town and Country Planning	404
	Economics and Econometrics	839	34 Economics and Econometrics	839
	Business and Management Studies	3,501	35 Accounting and Finance	160
			36 Business and Management Studies	3,341
	Law	1,673	38 Law	1,673
	Politics and International Studies	1,269	39 Politics and International Studies	1,269
	Social Work and Social Policy & Administration	1,244	40 Social Work and Social Policy & Administration	1,244
	Sociology and Anthropology	1,257	41 Sociology	929
			42 Anthropology	328
	Education	1,697	45 Education	1,697

REF main panel	REF Units of assessment	Total FTE submitted to 2008 RAE	2008 RAE Units of assessment	No. FTE submitted to 2008 RAE
D	Area Studies	571	47 American Studies and Anglophone Area Studies	87
			48 Middle Eastern and African Studies	133
			49 Asian Studies	151
			43 Development Studies	200
	European Languages and Studies	1,935	50 European Studies	457
			51 Russian, Slavonic and East European Languages	118
			52 French	387
			53 German, Dutch and Scandinavian Languages	223
			54 Italian	100
			55 Iberian and Latin American Languages	236
			56 Celtic Studies	106
			58 Linguistics	308
	English Language and Literature	1,853	57 English Language and Literature	1,853
	Philosophy, Theology and Religious Studies	1,049	60 Philosophy	577
			61 Theology, Divinity and Religious Studies	472
	History, Archaeology and Classics	2,688	62 History	1,763
			59 Classics, Ancient History, Byzantine and Modern Greek Studies	415
			33 Archaeology	510
	Art and Design	2,036	63 Art and Design	1,702
			64 History of Art, Architecture and Design	334
	Music, Drama, Dance and Performing Arts	1,005	65 Drama, Dance and Performing Arts	433
			67 Music	572
	Library, Information, Communication, Cultural and Media Studies	845	37 Library and Information Management	297
			66 Communication, Cultural and Media Studies	548

Annex F

Draft list of nominating bodies

This list is available alongside the rest of the publication on the HEFCE web-site, www.hefce.ac.uk under Publications.

Annex G
Glossary of terms

Bibliometrics

A range of methods for studying or measuring publications and the relationships between them (including the analysis of citations).

Citation information

Data about the extent to which research has been cited by subsequent research publications, within a given time period. In the REF, we propose that citation information should be used by some of the expert panels to inform their review of the quality of research outputs. Annex C proposes a range of citation information that would be provided to these panels.

Economic and social impact

For the purposes of this document, we use the terms 'impact' and 'economic and social impact' interchangeably, to refer to the full range of research-driven benefits to the economy, society, public policy, culture and quality of life. (Our use of these terms in this document does not include impacts on academia and scientific knowledge.)

Expert Advisory Groups (EAGs)

A group of more than 100 senior practising researchers and users and funders of research from across the breadth of fields, that were convened for a fixed period from February to June 2009 to advise the funding bodies on the development of our proposals for the REF.

Expert review

In the context of the REF, expert review refers to the assessment of submissions to subject units of assessment, by panels of people with expertise relevant to research in the subject and the wider uses or impact of the research. Expert review involves the application of expert judgement based on the submitted evidence – including any quantitative indicators – in determining the assessment outcomes.

Expert panels (including sub-panels and main panels)

Panels of experts that will be responsible for assessing institutions' submissions and determining the assessment outcomes. For the REF we propose a two-tier structure involving 30 sub-panels (one for each unit of assessment) working under the guidance of four main panels. The sub-panels will assess institutions' submissions and recommend the outcomes to the main panels; the main panels will decide the outcomes and will be responsible for coordinating the work of sub-panels to achieve an appropriate level of consistency between them.

Eligible staff

Staff that may be selected by the institution for submission to the REF. We propose that these are either:

- academic staff employed by the institution on the census date and whose primary employment function is research, teaching or both; or
- staff employed by another organisation (such as the NHS) on the census date, to undertake research that is demonstrably focused in the submitting unit.

Environment

The infrastructure and range of activities that support the conduct of research and its effective dissemination. We propose that this should be one of three distinct elements to be assessed in the REF, contributing 15 per cent of the overall assessment outcome.

HESA

The Higher Education Statistics Agency, which annually collects data from HEIs regarding their students, staff and finances. We propose to align the specification of data collected for the REF (relating to research staff, research students and research income) with those used by HESA.

Impact	For the purposes of this document, 'impact' refers to the full range of research-driven benefits to the economy, society, public policy, culture and quality of life (not impacts on academia and scientific knowledge). We propose that this should be one of three distinct elements to be assessed in the REF, contributing 25 per cent of the overall assessment outcome.
Individual staff circumstances	Personal circumstances that negatively impacted on the ability of an individual to undertake academic research during the REF period of assessment, and which should be taken into account by enabling them to be selected with fewer than the maximum number of outputs.
Outputs	Publications or other outcomes of a research process (including, for example, grey literature, confidential reports, artefacts and performances). For the purposes of the REF, outputs should provide evidence of the research process and present the research insights in a form that meets the needs of its potential audiences. We propose that institutions should submit a selection of research outputs to be assessed as one of three distinct elements in the REF, contributing 60 per cent of the overall assessment outcome.
Quality of research	The quality of research outputs will be assessed in terms of their rigour, originality and significance.
Quality profiles (including sub-profiles)	The outcomes of the assessment will be presented in the form of profiles, to show the proportion of overall research activity within a submission that meets each of four defined levels of quality. We propose that the overall excellence profile is to be constructed by combining three sub-profiles (one for each of the distinct elements to be assessed – outputs, impact and environment).
Research	For the purposes of the REF, we define research as a process of investigation leading to new insights effectively shared.
Research income	Research grant and contract income from a range of sources (including Research Councils, businesses, charities and government departments). We propose that data about research income from a range of sources over the REF period be included in submissions, to inform the assessment of the environment and impact elements of the REF.
Research user	For the purposes of the REF, we use this term to mean any non-academic individual, group, organisation or community from the private, public or third sector that directly or indirectly utilises or draws on research findings or research expertise.
Submission	A portfolio of evidence compiled by an institution and presented in a standard format, to be assessed by an expert panel in a specific unit of assessment. Submissions will include details about the research staff and outputs selected by the institution, and evidence about research-driven impacts and the research environment.
Submitted unit	The research staff and associated activities and structures that are included in a submission to a specific unit of assessment. Previously in the RAE, we used the term 'department' to refer to this; our change in terminology to 'submitted unit' recognises the diversity of structures and administrative units that may be reflected in submissions.
Unit of assessment (UOA)	One of 30 proposed discipline areas to which institutions may make submissions to the REF; one sub-panel will assess submissions made to each of the UOAs. (In the RAE there were 67 UOAs.)

List of abbreviations

DEL	Department for Employment and Learning, Northern Ireland
EAGs	Expert Advisory Groups
FTE	Full-time equivalent
HE	Higher education
HEFCE	Higher Education Funding Council for England
HEFCW	Higher Education Funding Council for Wales
HEI	Higher education institution
HESA	Higher Education Statistics Agency
JISC	Joint Information Systems Committee (of the UK higher education funding bodies)
PGR	Postgraduate research
QR	Quality-related research (funding)
RAE	Research Assessment Exercise
REF	Research Excellence Framework
SFC	Scottish Funding Council
UOA	Unit of assessment

HIGHER EDUCATION FUNDING COUNCIL FOR ENGLAND

Scottish Funding Council
Promoting further and higher education

Cyngor Cyllido Addysg Uwch Cymru
Higher Education Funding Council for Wales

Department for Employment and Learning
www.delni.gov.uk

Higher Education Funding Council for England
Northavon House
Coldharbour Lane
BRISTOL
BS16 1QD

tel 0117 931 7317
fax 0117 931 7203
www.hefce.ac.uk