

Research Assessment Exercise 2014

Panel 03 – Physical Sciences **Specific Criteria and Working Methods**

(August 2013)

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Introduction

1. Panels of the Research Assessment Exercise (RAE) 2014 have formulated panel-specific guidelines to provide advice on the criteria and working methods in assessing submissions to the RAE 2014. This document sets out the specific criteria and working methods that the Physical Sciences Panel will apply. It should be read alongside the General Panel Guidelines. In areas where the panel-specific criteria do not provide further information, this is because the provisions in the General Panel Guidelines prevail and apply to the Panel without further elaboration or amplification.

2. The panel-specific guidelines may also assist institutions and staff members with the process of arranging submissions for assessment. These guidelines do not replace or supersede the requirements for submissions that are set out in the Guidance Notes for the RAE 2014.

3. The RAE 2014 is an expert review exercise. Panel members will exercise their knowledge, judgement and expertise to reach a collective view on the quality profile of research.

Section A: Submissions

Cost Centres under the Panel

4. The Physical Sciences Panel acknowledges the mapping of cost centres in Appendix B of the General Panel Guidelines, also in Appendix F of the Guidance Notes. The Panel covers the following cost centres:

- 11 physics & astronomy
- 12 chemistry
- 13 materials science
- 14 earth sciences (incl. oceanography, meteorology)
- 15 other physical sciences (incl. environmental science)
- 32 mathematics & statistics

Weighting the Elements of the Assessment

5. The Panel will attach the default weighting to the three elements of the assessment as follows when determining the overall quality profile for each cost centre:

- Research outputs : 80%
- External competitive peer-reviewed research grants : 10%
- Esteem measures : 10%

Research Strategy Statements

6. Following paragraphs 2.15, 2.16 and 3.2 of the Guidance Notes and paragraph 15 of the General Panel Guidelines, Research Strategy Statements submitted by each institution and individual cost centres of each institution will provide contextual information for the Panel when assessing the submissions.

Output Types

7. The Physical Sciences Panel will consider the eligibility of research outputs as described in paragraph 18 of the General Panel Guidelines and paragraphs 5.8 to 5.12 of the Guidance Notes.

8. The Panel will assess the quality of each eligible item on its own merits and not in terms of its publication category, medium or language of publication. The Panel will study each item in detail and will not assess outputs mechanistically according to the medium of publication. The Panel

recognises that there can be work of the highest quality in various output forms, and no distinction will be made between types of output submitted nor whether the output has been made available electronically or in a physical form.

9. Forms of research outputs that are admissible and specifically relevant to the Physical Sciences Panel include the following examples. This should not be regarded as an exhaustive list. Equally, there is no implication of priority or importance in the ordering of examples in this list:

- books, book chapters and research monographs
- published conference papers and reports
- new materials, devices, products and processes
- patents awarded or published patent applications
- published papers in peer-reviewed journals (including electronic journals) and in open-access repositories
- software, computer code and algorithms

10. Research outputs will be assessed for the quality of original research they include. The Physical Sciences Panel will give credit for books and review articles only where they contain a significant component of previously unpublished research or new insight. Such outputs will be judged only on their original research or novelty of insight.

Co-authored/Co-produced Outputs

11. The Panel confirms the principles on assessing co-authored/co-produced research outputs as set out in paragraphs 31 to 33 of the General Panel Guidelines.

Double-weighted Outputs

12. Paragraphs 29 and 30 of the General Panel Guidelines and paragraphs 5.13 to 5.14 of the Guidance Notes indicate that in exceptional cases an academic may request that outputs of extended scale and scope be double-weighted in the assessment. However, given the publication patterns in its cost centres, this Panel does not expect to receive any items proposed for double-weighting.

Section B: Assessment Criteria: Research Outputs

Criteria and Quality Levels

13. Panel members will use their professional judgement with reference to international standards in assessing research outputs.

14. In assessing outputs, the Panel will look for evidence of originality, significance and rigour, and will grade each item into one of the five categories of quality level as set out in paragraph 19 of the General Panel Guidelines. The Panel will use the generic description of the quality levels as set out in paragraph 20 of the General Panel Guidelines.

Additional Information on Outputs

15. Other than the data as specified in the Guidance Notes, and unless specifically required by the Panel, no other information should be provided, and the Panel will take no account of any such information if submitted.

Metrics

16. While the Panel will study each item in detail for the assessment, the Panel may informally use citation data to inform its consideration of individual items. However, such data will not be used in any algorithmic or deterministic way for the evaluation of research quality. The Panel is aware of the limitations of citation data, in particular their variability within as well as between disciplines, and the need to consider that some excellent work takes time to achieve its full impact.

Section C: Assessment Criteria: External Competitive Peer-reviewed Research Grants

17. This Panel will review the completed proforma on external competitive peer-reviewed grants and the listing of the competitive peer-reviewed grants as described in paragraphs 7.2 to 7.4 of the Guidance Notes.

18. Pursuant to paragraphs 45 to 47 of the General Panel Guidelines, factors relevant to the Panel's evaluation of the submitted data are as follows:

- a. The value of research grant per staff member as an important indicator.

- b. That the difficulty of gaining funding from various sources may be taken into account within the assessment.
- c. The trajectory of funding (relative growth or decline through the period).
- d. That some areas of research within its remit require less resources than others.

Section D: Assessment Criteria: Esteem Measures

19. This Panel will assess esteem measures according to the generic criteria in paragraphs 7.5 and 7.6 of the Guidance Notes. Esteem measures should be recognition conferred by an external body. They may include, but are not limited to, editorship of academic journals, research-based awards, honours or prizes, significant grants or donations for research which are not competitive or peer-reviewed (e.g. industry research grants); prestigious research visits, conference plenaries or papers, authorship of definitive reviews, etc. Each esteem measure should be a single instance of its kind (e.g. a particular editorship or invited conference talk), not a quantification of a number of instances.

20. Similarly, examples of research group or cost centre level esteem indicators are the following:

- Exemplars of collaborations with industry or other end-users of research, including in particular long-standing partnerships and knowledge transfer
- Exemplars of commercialisation activity in terms of patents awarded, creation of spin-outs or other forms of wealth creation
- Exemplars of the impact of research activity on policy, practice and the quality of life.

21. This Panel will make an overall judgement about the indicators of esteem relating to individual academics and groups according to paragraphs 48 to 50 of the General Panel Guidelines. Group and individual indicators will be given equal weight and there is no constraint on the balance between the two types of indicator to be submitted for assessment.

Section E : Working Methods

Allocation of work

22. The Convenor, consulting the Deputy Convenor and other panel members as appropriate, will allocate work to members and if necessary external reviewers in light of their expertise and workload, and taking into account any potential conflicts of interest. All panel members will take account of the requirements of the General Panel Guidelines to ensure that the exercise is conducted fairly and transparently.

Use of Sub-Groups

23. Some of the assessment may be undertaken by subject-specific subgroups but the overall gradings will be decided by this Panel as a whole.

Assessment Process

24. Panel members will examine the submitted outputs in detail, and put forward a recommendation to the panel or sub-group (if a panel decides to have sub-groups for assessment) for a collective decision on the final grading. To ensure fairness and consistency, each research output will be assessed in detail by at least two members, one of whom should be a non-local member to the extent possible. Similarly, for those cost centres which are only housed at one or two local institutions, submissions should be assigned to at least one non-local member in order to ensure fair and impartial assessment.

25. Subject to conflicts of interest, the assessment of external peer-reviewed research grant and esteem measures will be undertaken by each member of the Panel and grading will be a collective decision of the Panel.

External Reviewers

26. This Panel will follow the procedure in paragraph 42 of the General Panel Guidelines when referral to external reviewers becomes necessary for panel assessment.

Cross Referral

27. This Panel will follow the process described in paragraphs 37 to 41 of the General Panel Guidelines when initiating and assessing cross-referrals by another panel or by cost centre(s) within the Panel.

28. Generally, research on pedagogy and education issues submitted to this Panel will be assessed by panel members or external reviewers with expertise in pedagogy. Exceptionally, such work may be cross-referred to Panel 13, Education.

Trial Assessment

29. Following paragraphs 67 and 68 of the General Panel Guidelines, the Panel will conduct a trial assessment covering a sample of about 12 outputs across institutions and disciplines, together with a sample of data on external competitive peer-reviewed grants and esteem measures submitted to the Panel. The sample submissions will be trial assessed by all members of the Panel, understanding that those members from other disciplines may not be able to come to firm conclusions.