

## EVALUATION OF NERC CENTRES 2013: PROCESS

### Introduction

1. NERC's Chief Executive commissioned an independent evaluation modelled on the Research Excellence Framework (REF) that the higher education funding bodies use to evaluate HEIs<sup>1</sup>. The purpose of the evaluation was to provide evidence on the science excellence and impact of NERC Centres, to inform:
  - Treasury, the Department for Business, Innovation and Skills (BIS) and other external stakeholders, including evidence for the Spending Review;
  - Council: to inform overall allocations to NERC funding streams (although no formulaic allocation), including sustained funding for long-term research in Centres. ;
  - Centres: to aid external marketing, collaboration and competitiveness; and to aid the internal promotion and management of excellence and impact.

### Scope

2. The evaluation covered five NERC Research Centres: British Antarctic Survey (BAS), British Geological Survey (BGS), Centre for Ecology and Hydrology (CEH), National Centre for Atmospheric Science (NCAS) and National Oceanography Centre (NOC)<sup>2</sup>. The assessment period was 2007-2012.
3. The scope included a) the quality of research outputs, regardless of funding source; b) the impact of the Centre's activities, regardless of funding source and across all activities; and c) the Centre's approach to research and impact. It excluded infrastructure and facilities, service provision (including support for Responsive Mode projects and Research Programmes) and Centre management.

### Methodology

4. The evaluation was designed by the NERC Executive Board (which includes all of the Centre directors). The design was guided by the following principles:
  - **Comparability:** to ensure that the results were comparable with REF results for HEIs, the design was as similar to the REF as possible, while taking into account key differences between Centres and HEIs;
  - **Transparency:** the rules and criteria were clearly stated and applied consistently; and
  - **Fairness:** all Centres submitted evidence under the same criteria and were judged equally. Measures taken to ensure fairness and transparency are summarised at **Annex B**.
5. The evaluation was conducted by two independent Panels: one Panel for Research Excellence, one for Impact. The Panels were asked to provide a robust, objective assessment of the research outputs and environment submission from each of NERC's Research Centres based on the evidence provided, and using the scoring criteria and level definitions provided. Panel members are listed at **Annex A**. The exercise was managed by the Swindon Office Evaluation Team.

---

<sup>1</sup> [www.ref.ac.uk](http://www.ref.ac.uk)

<sup>2</sup> [www.bas.ac.uk](http://www.bas.ac.uk), [www.bgs.ac.uk](http://www.bgs.ac.uk), [www.ceh.ac.uk](http://www.ceh.ac.uk), [www.ncas.ac.uk](http://www.ncas.ac.uk), [www.noc.ac.uk](http://www.noc.ac.uk)

6. The evaluation comprised three components: research excellence, impact and ‘research and impact environment’. The components were assessed as follows:
  - **Research Excellence:** research outputs submitted by each eligible staff member (four each) were assessed by the Research Excellence Panel using the REF scoring criteria of originality, significance and rigour (more detail at **Annex C**). All types of research output were eligible and judged equally. Staff eligibility criteria were designed to deliver a set of staff analogous to the REF (i.e. to academic research staff in HEIs);
  - **Impact:** impact case studies were assessed by the Impact Panel using the REF scoring criteria of reach and significance (**Annex C**). Centres chose how many case studies to submit, within a minimum of 5 and maximum of 15; and
  - **Research and impact environment:** this component was assessed by both Panels using the REF scoring criteria of vitality and sustainability (**Annex C**), based on a contextual narrative submitted by each Centre, and a brief presentation from the Centre followed by questions at the Panel meetings.
7. Centres submitted their list of eligible staff in October 2012, and their evidence in February 2013. Each Panel had a one-day induction meeting in February 2013, and a main meeting (Impact Panel - April, two days; Research Excellence Panel - May, two and a half days).
8. The evaluation results were discussed by NERC Council in July 2013. A written response from each Centre will be considered by NERC Council in February 2014.

### Comparison with the REF

9. Although modelled closely on the REF, there were a few key differences that should be borne in mind when interpreting the results:

Feature	Difference from REF
Preparation period	To produce the evidence when needed, Centres had considerably less time to prepare submissions than HEIs (7 months)
Research excellence component	For simplicity, transparency and consistency between Centres, all eligible staff were submitted (REF: HEIs choose which staff to include)
Impact component	Because Centres have broader roles and broader portfolios of activities than HEIs, impacts may have arisen from any research/activity conducted by the Centre (REF: impacts must have arisen from excellent research)
	Because some Centre activities are long-term, impacts may have arisen from activities conducted at any time (REF: research must have been conducted in the last 20 years)
	As impact is included in the Environment component, the Impact Profile is made up of case study scores only (REF: profile is 80% case study scores, 20% ‘approach to impact’ narrative)
Environment component	Because impact is a key part of Centres’ missions, this component includes impact environment (REF: this is part of the Impact Profile)
	The Panels were asked to provide a single environment score, which was agreed through discussion (REF: sub-components are weighted; a profile is generated)



## ANNEX A: PANEL MEMBERSHIP

---

Note: Panel members with major potential vested interests in a Centre (e.g. staff member, member of Centre's Advisory Board), did not assess any evidence from that Centre and were not present for the Panel's discussion of that Centre.

### Research Excellence Panel

1. Chair: Professor Huw Davies, Emeritus Professor, Institute for Atmospheric and Climate Science, ETH Zurich
2. Professor Mary Fowler, Master, Darwin College, Cambridge
3. Professor Gwyn Griffiths, Chief Technologist, NOC until retirement November 2012
4. Professor Alan Jenkins, Deputy Director, CEH
5. Dr Peter Kille, School of Biosciences, Cardiff
6. Professor Stuart Lane, Faculty of Geosciences and Environment, Lausanne, Switzerland
7. Professor Peter Liss, School of Environmental Sciences, UEA
8. Professor David Marshall, Department of Physics, Oxford
9. Professor EJ Milner-Gülland, Department of Life Sciences, Imperial College
10. Professor Nick McCave, Emeritus Professor, Department of Earth Sciences, Cambridge
11. Professor Barry Parsons, Department of Earth Sciences, Oxford
12. Professor Denis Peach, Chief Scientist, BGS
13. Professor Monty Priede, Oceanlab, Aberdeen
14. Professor John Pyle, Co-Director of Global Composition and Climate, NCAS and Department of Chemistry, Cambridge
15. Professor Dave Raffaelli, Environment Department, York
16. Professor David Sugden, School of Geosciences, Edinburgh
17. Professor David Thomas, School of Ocean Sciences, Bangor and Arctic Centre, Aarhus University, Denmark
18. Professor Marjorie Wilson, School of Earth and Environment, Leeds and NERC Council member
19. Professor Eric Wolff, Science Leader (Chemistry and Past Climate), BAS. At University of Cambridge Centre for Climate Science since June 13

Professor Mike Bickle, Department of Earth Sciences, Cambridge, was recruited as an additional assessor for a small number of research outputs.

Professor Fowler is a member of the Research Excellence Framework (REF) Earth Systems and Environmental Science sub-panel. Professors Fowler, Liss and McCave have served on/chaired Earth Systems and Environmental Science Research Assessment Exercise (RAE) sub-panels (the RAE was the precursor to the REF).

#### *Attending ex officio*

Mr Nigel Sully, Head of NERC Swindon Office (induction meeting only)

Dr Pamela Kempton, Interim Director of Research, NERC Swindon Office (replaced on final Panel meeting day by Dr Mike Webb, Head of Ocean Sciences, NERC Swindon Office)

#### *Panel secretaries*

Mrs Fiona Goff, Evaluation Programme Manager, NERC Swindon Office

Mr Will Thomas, Evaluation Project Manager, NERC Swindon Office

## **Impact Panel**

1. Chair: Dr Peter Costigan, Defra Environmental Science Co-ordinator until June 2012
2. Dr Ian Bainbridge, Head of Science, Scottish Natural Heritage
3. Dr Bryony Butland, Science & Research Impact, Innovation Infrastructure & Impact team, BIS
4. Dr Phil Christie, Scientific Advisor, Schlumberger Gould Research
5. Mr Matthew Eagle, Regional Director, Willis Re
6. Mr Gordon McGregor, Energy and Environment Director, Scottish Power
7. Mr David Pye, Lead Analyst- Commissioning & Research, Local Government Association
8. Mr Tony Rachwal, Managing Partner, Tony Rachwal & Associates
9. Dr Steve Smith, Associate Director Policy & Appraisal, URS Infrastructure & Environment UK Limited
10. Dr Jim Wharfe, Senior Scientific Advisor, Environment Agency
11. Professor Tim Wheeler, Deputy Chief Scientific Advisor, DFID

Dr Costigan is a member of Research Excellence Framework (REF) Main Panel B. Professor Wheeler is a member of the REF Agriculture, Veterinary and Food Sciences sub-Panel, and was a member of the Earth Systems and Environmental Science Expert Panel for the REF Impact pilot study.

### *Attending ex officio*

Dr Phil Heads, Head of Impact Evidence, NERC Swindon Office

### *Panel secretaries*

Mrs Fiona Goff, Evaluation Programme Manager, NERC Swindon Office

Mr Will Thomas, Evaluation Project Manager, NERC Swindon Office

Miss Rose Burden, Evaluation Officer, NERC Swindon Office

## ANNEX B: TRANSPARENCY AND FAIRNESS PROCEDURES

---

Transparency and fairness were key guiding principles from the outset. This Annex briefly summarises the main procedures followed.

To ensure that Centres were treated equally:

- Centre directors took a leading role in the evaluation design;
- The same eligibility criteria and grading criteria were used for each Centre;
- Both Panels undertook a calibration exercise: a small number of research outputs/impact case studies were scored, and the results and issues/questions arising were discussed at the Panel's induction meeting;
- Panel members assessed their sample research outputs/case studies in alphabetical order of submitting staff member/impact case study, not in Centre alphabetical order; and
- The variation of each Panel member's scores from the average for the research outputs/case studies that they had scored was scrutinised by the Panel (and was extremely small in all cases). This point also applies to the topic below.

To ensure that Panel members' vested interests did not unduly influence proceedings:

- All members signed a strict confidentiality policy (modelled on the REF policy) before undertaking any work. This included the requirement to declare any potential vested interests, and to treat all Panel business in strict confidence;
- Members were asked to declare potential vested interests before the induction meeting (and update them during the process where necessary), using the REF guidance on vested interests;
- A major vested interest was where a Panel member was employed by a Centre, or was serving or had recently served on the Centre's Advisory Board. Panel members with major interests did not assess any of that Centre's submission, and withdrew for the Panel's discussion of that Centre;
- A minor interest included a Panel member collaborating with a submitted staff member, having recently worked with them, or having supervised their PhD. As in the REF, Panel members with minor interests remained for the discussion of that Centre, but did not assess any research outputs/impact case studies submitted by the staff with whom they had a potential vested interest; and

A register of vested interests was circulated prior to each meeting, and any issues discussed at the meeting. The Chair reminded the Panel at the start of each meeting of the importance of transparency.

## ANNEX C: ELIGIBILITY CRITERIA AND GRADING CRITERIA

---

To ensure comparability of findings, the REF eligibility criteria and scoring criteria were used, with minor modifications where necessary (where HEIs differ from Centres). The 4\*-1\* grading scale replaced with A-D for the Research Excellence and Impact profiles, to differentiate the two exercises.

### Research Excellence

The research output eligibility criteria were, briefly summarised:

1. Each submitted research output must be the product of research (as defined in Box 1). All research within NERC's remit is eligible, regardless of funder;
2. Each submitted output must have been first made publicly available during the assessment period 1 January 2007 to 31 December 2012;
3. The submitting staff member must be an author or co-author;
4. Review articles, textbooks or edited works will be accepted only where they contain a significant component of unpublished research or new insight. Such outputs will be judged only on original research or new insights reported;
5. Theses, dissertations or other items submitted for a research degree are not eligible; and
6. The REF procedures were used for co-authored outputs, outputs with significant material in common, duplicate outputs, and outputs where all or part of the material had been previously published (too detailed to report here).

#### Box 1: REF definition of research

1. For the purposes of the evaluation, research is defined as a process of investigation leading to new insights, effectively shared.
2. It **includes** work of direct relevance to the needs of commerce, industry, and to the public and voluntary sectors; scholarship<sup>3</sup>; the invention and generation of ideas, images, performances, artefacts including design, where these lead to new or substantially improved insights; and the use of existing knowledge in experimental development to produce new or substantially improved materials, devices, products and processes, including design and construction. It **excludes** routine testing and routine analysis of materials, components and processes such as for the maintenance of national standards, as distinct from the development of new analytical techniques. It also **excludes** the development of teaching materials that do not embody original research.
3. It **includes** research that is published, disseminated or made publicly available in the form of assessable research outputs, and confidential reports.

The following scoring criteria and level definitions were used<sup>4</sup>:

Generic criteria:

- **Originality:** the extent to which the output introduces a new way of thinking about a subject, or is distinctive or transformative compared with previous work in an academic field.

---

<sup>3</sup> Scholarship is defined as the creation, development and maintenance of the intellectual infrastructure of subjects and disciplines, in forms such as dictionaries, scholarly editions, catalogues and contributions to major research databases.

<sup>4</sup> Part 2B, paragraph 64 of [www.ref.ac.uk/pubs/2012-01/](http://www.ref.ac.uk/pubs/2012-01/)

- **Significance:** the extent to which the work has exerted, or is likely to exert, an influence on an academic field or practical applications.
- **Rigour:** the extent to which the purpose of the work is clearly articulated, an appropriate methodology for the research area has been adopted, and compelling evidence presented to show that the purpose has been achieved.

In assigning a category, the Panel will expect to see evidence of, or potential for, some of the following:

Category	Contribution to field	Contribution to knowledge, concepts, techniques or results	Changes to policies and practices	Influence on processes, production and management	Influence on user engagement
A	Agenda-setting, research that is leading or at the forefront of the research area	Developing new paradigms or fundamental new concepts for research, new techniques or novel results	Major	Major	Major
B	Importance contributions at an international standard	Contributes important knowledge, ideas and techniques that are likely to have a lasting influence, but are not necessarily leading to fundamental new concepts	Significant	Significant	Significant
C	Useful knowledge, influences the field	Incremental advances, which might include new knowledge which conforms with existing ideas and paradigms, or model calculations using established techniques or approaches	Some	Some	Some
D	Useful but unlikely to have more than a minor influence in the field	Minor	Minor	Minor	Minor
Unclassified	Outputs that do not reach the 'D' standard, or are not eligible				

## Impact

The case study eligibility criteria were, briefly summarised:

- The impact must meet the REF definition of impact;
- The impact must have occurred during the period 1 January 2007 to 31 December 2012, i.e. case studies must describe impacts that have already taken place, not future impact potential;
- The impact may have been underpinned by any Centre activity/research that occurred at any time;



- The work must have been conducted by staff who were employed by the Centre doing work for the Centre;
- The activity must have made a distinct and material contribution to the impact taking place; and
- Impacts that occurred outside the UK are valued equally.

The following grading criteria and level definitions were used<sup>5</sup>:

- **Reach:** the extent and breadth of the beneficiaries of impact (not geographical reach); and
- **Significance:** the degree to which the impact has enabled, enriched, influenced, informed or changed the products, services, performance, practices, policies or understanding of commerce, industry or other organisations, governments, communities or individuals.

The categories were:

Category	Definition
A	Outstanding impacts in terms of their reach and significance
B	Very considerable impacts in terms of their reach and significance
C	Considerable impacts in terms of their reach and significance
D	Recognised but modest impacts in terms of their reach and significance
Unclassified	Impact is of little or no reach or significance; or impact was ineligible

## Research and Impact Environment

The Environment component was assessed by both Panels using the REF Environment grading criteria and level definitions, amended slightly to include the approach to impact<sup>6</sup>:

- **Vitality:** the extent to which the Centre provides an encouraging environment for research and impact, has an effective strategy, is engaged with national and international research and user communities, and is able to attract excellent postgraduate and postdoctoral researchers; and
- **Sustainability:** the leadership, vision for the future and investment in people and infrastructure and, where appropriate for the subject area, the extent to which the activity is supported by a portfolio of research funding.

The level definitions were:

Category	Definition
4	An environment that is conducive to producing research and impact of world-leading quality, in terms of its vitality and sustainability
3	An environment that is conducive to producing research and impact of internationally excellent quality, in terms of its vitality and sustainability
2	An environment that is conducive to producing research and impact of internationally recognised quality, in terms of its vitality and sustainability
1	An environment that is conducive to producing research and impact of nationally-recognised quality, in terms of its vitality and sustainability
Unclassified	An environment that is not conducive to producing research and impact of nationally recognised quality

<sup>5</sup> Part 2B, paragraph 88 of [www.ref.ac.uk/pubs/2012-01/](http://www.ref.ac.uk/pubs/2012-01/)

<sup>6</sup> Annex A of [www.ref.ac.uk/pubs/2011-02/](http://www.ref.ac.uk/pubs/2011-02/) and part 2B, paragraph 98 of [www.ref.ac.uk/pubs/2012-01/](http://www.ref.ac.uk/pubs/2012-01/)