



Natural
Environment
Research Council

GUIDANCE FOR REVIEWERS OF DISCOVERY SCIENCE PUSHING THE FRONTIERS OF ENVIRONMENTAL SCIENCE RESEARCH PROPOSALS

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The Pushing the Frontiers funding opportunity invites proposals from our best environmental researchers to be truly adventurous, ambitious and enable them to pursue curiosity-driven, high-risk, high-reward projects that push the frontiers of environmental science. Up to £26 million is available to fund projects at a maximum cost per grant of £1 million (FEC)

This scheme will support researchers' curiosity and imagination to enable discoveries that unlock new knowledge with a degree of adventure previously unrealised. We are seeking to invest in our best environmental researchers to be truly adventurous and ambitious in the pursuit of curiosity-driven, high risk, high reward projects. We welcome, and are increasingly supporting, multi- and interdisciplinary research, designed, supported and delivered in partnership with other research funders and research users.

This funding opportunity has a different structure to the long-standing NERC Discovery Science Standard Grant scheme, with which you may be familiar. NERC have implemented a streamlined application process, as part of the UKRI-wide approach to support less bureaucratic demands of the research community. Thus, the proposed transformational research description is shorter (5 pages), we ask for information about the applicants' skills and capability to deliver, demonstrating the ability of the team to conduct ground-breaking, innovative research and that they have the capability to successfully execute the project. This should be a narrative, drawing on the [Royal Society's Résumé for Researchers](#), explaining the team's suitability to undertake and deliver high quality, innovative science. A detailed costing is not required until a proposal is being considered for funding. **As such, reviewers should understand that some detail typical of a longer application may not be included and look beyond this**, focusing on whether the proposed research will push the frontiers of knowledge, and consider the applicants' ideas and contributions, relative to career stage, to their field of science, the wider research and innovation community and users of research and not be solely based on metrics (publications, income, etc.).

The funding opportunity is also using a different peer review form to standard NERC calls.

Conflicts of Interest: Before you complete a review please ensure that you do not have a conflict of interest with the proposal. NERC maintains a [conflicts of interest policy](#), available at **Annex A**. Please make yourself familiar with the policy and let us know as soon as possible if you have, or are unsure whether you have, any conflicts of interest with the proposal you have been asked to review.

Important information about completing the review

Your review form as completed (minus the confidential sections) is provided to the applicants as part of the applicant response process. The review is also provided to the Research Organisation after the decision stage. The confidential sections of the form with your personal details, your expertise and the suggested reviewers will not be fed back to applicants or their organisation. **Your review comments should NOT include any comments that could identify you, or your level of expertise.** For example, if you

need to cite your work then say “the” rather than “my” paper. All comments made should be in a manner suitable to be fed back to the applicant. If you think a comment could be misinterpreted or cause offence, please do not include it.

We are committed to the [San Francisco Declaration on Research Assessment](#). You should not use journal-based metrics, conference rankings and metrics such as the H-index or i10-index when assessing UKRI grants. The content of a paper is more important than publication metrics, or the identity of the journal, in which it was published, especially for early-career investigators.

Please consider the value and impact of all research outputs (including datasets, software, inventions, patents, preprints, other commercial activities, etc.) in addition to research publications. You should consider a broad range of impact measures including qualitative indicators of research impact, such as influence on policy and practice.

In completing the review, you will be asked to self-assess your level of expertise for the proposal. Please only complete the review if you consider that you have an appropriate level of expertise in the area – i.e. ‘medium’ or ‘high’.

For multidisciplinary proposals, it is unlikely that you will be familiar with all the aspects associated with the programme of research. You may have been approached as a reviewer because of your expertise in one aspect, and reviews will also be sought from experts in the remaining aspects. If you only feel confident to comment on elements of the proposal, please restrict your comments to these, and tell us what they are. This will greatly assist the panel in placing your comments in context.

Please ensure that you fully justify all scores given by providing clear and comprehensive comments in the accompanying text boxes. The scores that you give will be fed back anonymously to the applicant and their research organisation so you should ensure that your score corresponds to the definitions given below and matches the comments you have made.

Please note that any technical assessments, detailed costings and quotes will be assessed by NERC should the proposal be deemed to be fundable by the moderating panel.

Please have regard to the Equality Act and be careful to avoid any bias in your assessment on the grounds of a protected characteristic such as age, disability, gender reassignment, marriage/civil partnership, pregnancy/maternity, race, religion/belief, sex or sexual orientation. Also, base your review on the proposal and not on your previous knowledge of, or the reputations of, the applicant or their host organisation.

Assessment Criteria and Scoring System

The Pushing the Frontiers grant proposals will be scored against two criteria: i) Research Excellence; ii) Capability to Deliver.

Each proposal will receive a score from each reviewer from 1-3, where for both elements of the assessment 1 is non-competitive and 3 is outstanding. **Only integer scores are allowed.**

Reviewer scores and accompanying comments will then be moderated by panel members, who will agree final scores (between 1 and 3) for each proposal against each of the two criteria.

Reviewers and panel members should base their assessment and scores (1-3) on the following criteria, evidencing their score by cross-referral to the application:

Research Excellence

- To what extent does the proposed research address an important environmental challenge, and involve objectives that are ambitious and beyond the state-of-the-art (e.g. novel concepts and approaches or development between or across disciplines)?
- To what extent does the proposal push the frontiers of knowledge and have the potential to lead to ground-breaking, high-risk, high-reward, innovative scientific discovery?
- To what extent is the outlined scientific approach feasible, bearing in mind that the proposed research is high risk/high gain?

Score	Research Excellence (Primary Criterion)
3	Outstanding The proposed work is of excellent scientific quality. It is world-leading, at the forefront of the field internationally. It meets outstanding standards in terms of the initiation of ground-breaking, high-risk, high-reward, innovative scientific discovery and/or the development of technology or methodology, to address an important environmental challenge. High priority for funding
2	Good The proposed work is of high scientific quality (possibly with aspects of excellence). It is internationally competitive, at the forefront of the field nationally. It meets high standards in terms of the initiation of ground-breaking, high-risk, high-reward, innovative scientific discovery, and/or the development of technology or methodology, to address an important environmental challenge. Fundable
1	Interesting/non-competitive The proposed work has insufficient merit to be considered ground-breaking and innovative and/or is not addressing an important environmental challenge and/or is not considered feasible. Not a priority for funding/not fundable

Proposals do not need to be hypothesis-driven and may instead focus on an exploratory approach or the development of a new technology. Pushing the Frontiers may require risky research and so we would not consider risk to undermine a proposal if it is in pursuit of ground-breaking new discovery. **The streamlined application process may limit detailed**

process description, and this too should not undermine a proposal.

Capability to Deliver

The Capability to Deliver document should be a narrative which explains how the team's relevant experience and expertise demonstrates their ability to successfully deliver the proposal (note that proposals can be submitted by solo applicants, in which cases 'team' would refer to the individual applicant). Applicants have been advised to draw on the [Royal Society's Résumé for Researchers](#) when completing their Capability to Deliver statement.

Reviewers should assess Capability to Deliver by considering to what extent:

- has the team made an outstanding contribution to the generation of new understanding and demonstrated the key skills required to do this?
- does the team demonstrate appropriate expertise and capability to successfully execute the proposed project, including evidence for capacity to support and mentor researchers involved as appropriate?
- does the team demonstrate capability to contribute to the wider research community, for example contributions to improving research culture or advocacy for better research integrity?
- does the team demonstrate capability to contribute to broader society, for example through engagement?

The assessment process will consider the applicants' ideas and contribution, relative to career stage, acknowledging that not all team members will have evidence against all criteria.

We have not been prescriptive on how much space should be allocated to addressing each of the questions above, as this will vary depending on the relevant expertise of each team and the focus of the proposed work.

Reviewers should bear in mind that it is the team's capability to deliver the proposal and not the excellence of individual applicants that is being assessed. Reviewers should not be tempted to lower their score where the applicants do not have a long-standing track record in the particular research area (e.g. early career researchers, a discipline-hopping proposal, cutting-edge research areas) as long as sufficient evidence of suitable support mechanisms has been provided.

Upon consideration of this assessment criterion, a score of between 1 and 3 should be awarded according to the scoring system below.

Score	Capability to Deliver (Primary Criterion)
3	Outstanding The team has made an outstanding contribution to the generation of ground-breaking new ideas, demonstrates visionary expertise and excellent capability to successfully execute the proposed project. The team demonstrates a strong capability to contribute significantly to the wider research community and broader society. The team has illustrated an outstanding capability to deliver ground-breaking research through this project.
2	Good The team has made a contribution to the generation of ground-breaking new ideas, demonstrates appropriate expertise and capability to successfully execute the proposed project. The team demonstrates the capability to contribute to the wider research community and broader society. The team has illustrated the capability to deliver ground-breaking research through this project.
1	Has potential / Not competitive The team has shown insufficient evidence of contributing to the generation of ground-breaking new ideas, appropriate expertise and/or capability to successfully execute the proposed project. The team has not demonstrated the capability to contribute to the wider research community and broader society. The team has

While this criterion should be scored for the overall capability of the team, we provide here additional guidance on how reviewers' expectations of a strong capability to deliver could be adjusted to take into account individual team members' career stage. This list is by no means exhaustive, nor is it expected that every team member will be able to illustrate each example. Please remember that the streamlined application process may limit detailed capability to deliver narratives and full track records for all team members cannot be expected.

Early career	Established career (in addition to those indicated for early career)
<ul style="list-style-type: none"> demonstrates an ability to generate new ideas, technologies or methodologies, with examples of previous breakthroughs, the initiation of ground-breaking discovery, or advancements in a relevant field of environmental science research 	<ul style="list-style-type: none"> demonstrates a significant contribution to the generation of new ideas, technologies or methodologies, with examples of previous breakthroughs, ground-breaking discovery or advancements that have transformed a field of environmental science research
<ul style="list-style-type: none"> demonstrates an ability to deliver and communicate excellent research, with examples of relevant outputs that are considered of international quality, such as open data sets, publications, conference presentations, policies, patents etc. 	<ul style="list-style-type: none"> demonstrates delivery and communication excellent research, with examples of a significant volume of contributions that are of international quality that has widely influenced the research agenda

<ul style="list-style-type: none"> demonstrates a high level of expertise, with examples of the previous application of relevant key skills or training received, or evidence that they are, or have capability to become, a recognised leader in the field. 	<ul style="list-style-type: none"> demonstrates a very high level of expertise, with examples of contributing to the advancement of techniques or training given, or evidence that they are recognised as a world-leader in the field.
<ul style="list-style-type: none"> demonstrates capability to successfully execute the project, with examples, relevant to the needs of the proposed research, of effective project management, team leadership and collaborative relationships 	<ul style="list-style-type: none"> demonstrates capability to successfully execute the project, with examples of effective project management, visionary leadership in shaping the direction of a team or organisation, or significant collaborative networks
<ul style="list-style-type: none"> understands the importance of the development of team members and demonstrates the capacity and experience for supervision, training, teaching or mentoring, including students and post-doctoral researchers. 	<ul style="list-style-type: none"> demonstrates significant contributions to the support and development of other researchers, recognised as a role model for the community
<ul style="list-style-type: none"> shows evidence of engagement with the wider research community, including contributions to improving research culture and integrity, with examples of peer review commitments, committee memberships, and positions of community responsibility 	<ul style="list-style-type: none"> shows evidence of significant engagement with the wider research community, with examples of advocacy roles for research culture and integrity, utilising influence to shape broader policy across the research and innovation landscape.
<ul style="list-style-type: none"> shows evidence of engagement with broader society and knowledge exchange across sectors, with examples of public outreach, or contributions to policy development, new practices or business innovation 	<ul style="list-style-type: none"> shows evidence of significant engagement with broader society and knowledge exchange, with examples of public advocacy roles, championship, engagement with high-level policy makers, or business community

Helpful reminders:

- We are seeking to invest in our best environmental research teams to be truly adventurous and ambitious. Pushing the Frontiers may require risky research and so we would not consider risk to undermine a proposal.
- Proposed research can be pure, applied, technology-led or policy-driven, as long as it addresses, or provides the means to address, clearly defined scientific questions predominantly within NERC's remit. Proposals do not need to be hypothesis-driven and may instead focus on an exploratory approach or the development of a new technology.
- NERC supports multi-and interdisciplinary research and welcomes proposals from applicants that can demonstrate a capability to collaborate with experts from other disciplines to generate innovative research.
- Pushing the Frontiers grant proposals will be scored, where 1 is not competitive and 3 is outstanding, against two criteria only: i) Research Excellence; ii) Capability to deliver.
- We have reduced the length of the proposal to allow the focus to be on the scientific benefit and encourage reviewers not to reduce their score due to technical detail missing from the shorter project description.

- The focus of the assessment of capability to deliver will be on the team as a whole, who will be trusted to involve other collaborators as required to enable them to deliver the research project.
- Reviewers are reminded to consider all evidence under capability to deliver **relative to career stage**.

Annex A

Handling Conflicts of Interest in Peer Review - Guidance for NERC Reviewers and Panel Members

A conflict of interest occurs when an individual involved in the assessment of a proposal for funding has a personal, professional or organisational relationship with the applicants, affecting their ability to undertake their role in an objective and unbiased way. If you are asked to take part in NERC peer review, either to review a NERC proposal or be a member of a NERC moderating or assessment panel then you need to be aware of the [NERC policy on conflicts of interest for members of NERC boards, advisory groups and peer review panels](#).

The NERC policy defines a conflict of interest as being associated or involved in any way with:

- *An institution, department or individual that has submitted a funding proposal or would otherwise benefit from a decision*
- and/or
- *the development or implementation of proposals seeking NERC/UKRI funds or in the evaluation of research investments*

You will have connections and collaborations both formal and informal with a range of organisations and individuals. In order to help you interpret the broad definitions above, this advice aims to set clear expectations of the specific situations considered to represent a material conflict of interest, and when conflicts of interest need to be declared to NERC so that appropriate action can be taken. Definitions of the individuals that may be involved in a proposal (investigators, project partners etc) can be found in the [NERC Grants Handbook](#).

NERC will try to avoid asking you to review or introduce proposals where you have conflicts that can be identified from our own records, but many will not be obvious to us. The final responsibility for identifying and reporting conflicts of interest must therefore rest with the individual. Timing is very important as late notification is much more difficult to manage. A conflict for a panel member identified when the panel is being set up is straightforward to manage, the same conflict identified on the day of the meeting can create major problems, so please check the proposals assigned to you carefully as soon as you receive them.

What Constitutes a Conflict of Interest?

Due to the complexities of relationships between researchers it is challenging to provide definitive and exclusive definitions. Some cases will be clear cut, others will be less so and will require a judgement call. We expect researchers who work in the same field to know each other, and this doesn't bar you from commenting on their proposals. The test should be 'will a neutral observer have confidence in the impartiality of any advice provided' and in any case where there is significant doubt the relationship should be treated as a conflict. The NERC Executive have the final decision in any case where there is debate about whether a conflict of interest exists.

The following are examples of conflicts of interest considered material by NERC for a proposal you have been asked to review or introduce:

	Conflict	Action Required
1	You are a named investigator, staff member or project partner involved in the proposal or have signed a letter of support	NERC should identify these conflicts please tell us if an error has been made
2	<p>You have a formal affiliation to any Research Organisation or Project Partner organisation involved in the proposal.</p> <p>This generally means you are a current member of staff at the organisation. You also have a formal affiliation if you are a Professor Emeritus, or Visiting Professor, or have signed a contract of employment or receive personal remuneration in excess of £5,000 per annum from the organisation.</p> <p>For Fellowship proposals conflicts apply to both the organisation where the applicant is currently based and the organisation where the fellowship would be held.</p> <p>[Association with an organisation that has provided a letter of support but is not a Project Partner is not a conflict]</p>	<p>NERC should identify staff conflicts please tell us if an error has been made. Please inform us of other relationships e.g. visiting professor which may not be obvious to us.</p> <p>If you are moving to a new organisation please inform us as this will create new conflicts.</p>
3	You are directly involved in the work proposed and would benefit from it being funded and/or have assisted the applicants with their proposal for funding and/or have agreed to be a member of an advisory committee connected with the project.	Please inform us NERC may not have received complete information.
4	You have an existing business or professional partnership with any of the investigators or staff named in the proposal	Please inform us NERC does not hold this information.
5	You are a close relative - spouse, child, sibling or parent - of any of the investigators or staff named in the proposal.	Please inform us NERC does not hold this information.
6	You are a close friend of any of the investigators or staff named in the proposal and think that might affect your judgement or be seen as doing so by a neutral observer familiar with the relationship.	Please inform us NERC does not hold this information.

7	You are in close regular collaboration with any individuals named in the proposal, including investigators, research staff, collaborators, subcontractors and project partners, to an extent where you feel uncomfortable being involved in the discussion or you feel unable to give an unbiased opinion.	Please inform us NERC does not hold this information.
8	On Fellowship proposals: you have been the applicant's supervisor within the last eight years.	Please inform us NERC does not hold this information.
9	You have had any involvement in the development of the proposal, at any stage of its preparation, including providing comments or advice to the applicants.	Please inform us NERC does not hold this information.

Managing conflicts

Reviewers - NERC aims to avoid selecting reviewers where a conflict of interest is clear, or applicants have requested that specific reviewers are not used. This will include anyone with a personal or organisational association with the proposal identifiable from the information available to NERC. In the peer review of funding calls with a specific research scope NERC will also avoid selecting reviewers that have submitted a proposal to the same call. Anyone asked to provide a review should check to ensure they have no other material conflicts, if so, they should decline the request citing 'conflict of interest' as their reason. Please contact NERC quickly for advice if you are unsure. Where a material conflict is identified after a review is submitted that review will be classed as unusable and excluded from the process.

Panels - Panel members are reminded to identify any material conflicts of interest, especially with proposals they have been asked to introduce, as early as possible in advance of the meeting. Where a conflict of interest is identified, panel members' meeting papers will be edited to remove relevant information regarding the conflicted proposal and the member will be asked to leave the meeting room when it is discussed. The meeting record will note all instances where a conflict of interest was identified and managed at a panel. For some panels, particularly where these are interview panels, the standard practice of members leaving the meeting for a conflicted proposal may not be practical. However, they will never participate in the discussion of that proposal or be permitted to influence the final ranking of a proposal where such a conflict exists. In the peer review of calls with a specific research scope NERC will avoid appointing anyone to a panel that is a named investigator on any proposal to be considered by that panel. For Discovery Science panels, where the research scope can be broad, NERC will only involve applicants in panels when their expertise is critical, the meeting procedures will prevent them being able to influence or receive immediate information on the score or ranking of their proposal.

NERC staff

NERC staff may also have connections with applicants that constitute a conflict of interest. Although their opportunity to influence outcomes is limited, in such circumstances staff will not be involved in reviewer selection or any decision stage for proposals where a material conflict exists.