## EXECUTIVE SUMMARY
Research objectives and methodology .......................................................... 3
Key findings ........................................................................................................... 3
ECR challenges ..................................................................................................... 3
Support and training opportunities ....................................................................... 4
Gaps in support / training .................................................................................... 5

## CONCLUSIONS AND RECOMMENDATIONS ......................................................... 6

## OBJECTIVES & METHODOLOGY ..................................................................... 10
Research objectives ............................................................................................... 10
DJS Research ......................................................................................................... 11
Methodology & sample ........................................................................................... 11
Data collection and Survey promotion ................................................................. 12

## SETTING THE SCENE ..................................................................................... 15
Demographic Profile of ECRs ................................................................................ 15
Discipline spread & grant allocations ..................................................................... 17
Career History ........................................................................................................... 18
Career Aspirations .................................................................................................. 19
Employment/Contract Status .................................................................................. 20

## EVALUATION OF ECR SUPPORT .................................................................. 23
Overall quality of support ..................................................................................... 23
Areas where support is lacking ............................................................................ 24
Availability of support / training opportunities .................................................... 29
Priority areas for support ..................................................................................... 30
Priority improvements of support ......................................................................... 34
Who should provide support in priority areas? ................................................... 37
Gaps in support / training for ECRs. ..................................................................... 38

## CHALLENGES FACING ECRS ........................................................................ 40

## AVAILABLE FUNDING OPPORTUNITIES .......................................................... 44

## IMPROVING ECR SUPPORT .......................................................................... 46

## THE EMPLOYER PERSPECTIVE ..................................................................... 48
Most valuable skills ............................................................................................... 48
Lacking skills .......................................................................................................... 49
Lacking skills: priority areas .................................................................................. 50
Desired support ...................................................................................................... 51
Executive Summary

Research objectives and methodology

The Natural Environment Research Council (NERC) commissioned this research with the following core aims:

• Determine whether current strategy and activities are effective for maintaining a healthy research base for the environmental sciences.
• Ensure that the training and opportunities available for NERC Early Career Researchers (ECRs) are appropriate for facilitating success in the broad range of careers they enter.

The first phase of the research consisted of an online survey which was completed by a total of 329 ECRs and 69 ECR employers / managers.

The second phase of the research consisted of 10 qualitative follow-up telephone interviews with ECRs and ECR employers / managers who had completed the online survey.

For the purpose of this research, an ECR was defined as: An individual employed in a non-permanent position within a postdoctoral research capacity with fewer than 8 years full time postdoctoral experience.

More details on the methodology are included in the Objectives and Methodology section of this report.

Key findings

Following analysis of the online survey data and open-end text, along with the follow-up telephone interviews, a number of key themes were identified.

ECR challenges

Data collected in regards to working history and career aspirations found that the vast majority of ECRs surveyed aspire to remain in academia (and these aspirations have remained relatively stable from before PhD study to now); whilst the majority of ECRs are working full-time, most are currently employed on a fixed-term contract basis. Both the desire to remain in academia and a fixed-term nature of employment pose a number of challenges for ECRs:

• Career instability / limited to short-term contracts: a limited number of permanent academic posts means ECRs are jumping from one short-term contract to the next, and are unsure what or when their next post will be. Many state that they often feel they have to abandon their work in order to start looking and applying for their next position, impacting on their ability to progress their career, and on their personal lives (difficult maintaining a stable home / relationship / family).
• Mobility: an expectation to move institutions frequently is often spontaneously cited as a key challenge for ECRs; many feel they are sacrificing their personal life in order to progress in their career (and would feel at a disadvantage if they did not move institutions for each new contract). A lack of job security combined with a frequent need to move around affects ECRs ability to plan for the future, both financially and in terms of starting / maintaining a family, and hence has the potential to cause stress and impact on wellbeing.

• Perception of limited funding opportunities: many discuss a high degree of competition in regards to funding with limited chance of success (particularly when combined with demand management). Secondly, a heavy workload can leave ECRs with very limited time to apply for grants in the first place; this can be especially difficult if an ECRs’ line manager / PI is unsupportive and would prefer their time to be spent completing research. Thirdly, when ECRs are involved in grant applications on many occasions there is no acknowledgement of their involvement, causing ECRs to feel undervalued and demotivated

Although slightly more female ECRs responded to this survey compared to males, there is a large drop off of female researchers from NERC student to NERC research fellow and NERC research grant PI level. Challenges in regards to career instability, short-term contracts and mobility are likely to contribute to this large drop-off (potential for greater difficulty maintaining a family due to these challenges for female researchers compared to male researchers).

Support and training opportunities

A large proportion of this research focussed on support and training opportunities available to ECRs; availability is perceived to be limited, where equality and diversity and public engagement / outreach are the only opportunities perceived to be available by over half of ECRs (55% and 51% respectively). All other types of support / training opportunities (such as career development, research management, publishing etc.) ranged from 46% to 8% in regards to perceived availability.

When asked to rate the overall quality of support currently available to ECRs, just under half rated it as poor; those rating the quality as poor most often reference a lack of support targeted at ECRs (though a lack of support with career progression and feelings of exploitation / supply of ECRs exceeding demand are also frequently mentioned).

However, it is possible that a perceived lack of support available for ECRs is due to a lack of awareness; feedback from the follow-up telephone interviews suggested that those rating overall support as good and perceiving a high degree of available support / training opportunities are made aware of opportunities more frequently, i.e. they highlight frequent communication of opportunities via multiple
channels such as careers centres and their email lists, department-wide emails, ECRs forums or via supportive PIs / supervisors.

Grant writing skills is considered the most important area of training by ECRs, and just over half who state they have access to this type of training rate it as good (and is actually one of the best performing trainings overall); however only around one third state they have access to this type of training currently. Qualitative comments throughout the survey made reference to limited grant opportunities for ECRs, suggesting that some who perceive a low availability of training (and high importance) are thinking in terms of grant opportunities rather than specific training. Other support / training opportunities highlighted as important to ECRs included research management, publishing and career development.

ECR employers / managers consider publishing and research management the most valuable non-technical skills for ECRs to possess; these skills are ranked 4th and 3rd respectively in terms of importance of providing support / training by ECRs themselves, and are skills occasionally felt to be lacking in some ECRs by a number of ECR employers / managers.

Support and training opportunities considered most important for the majority of ECRs often relate to careers inside of academia; only one quarter of ECRs ranked support in careers outside of academia as being important to provide (even though it is it highly recognised that the majority of ECRs will not remain in academia long-term).

Analysis of the importance of all 24 types of training / support, compared with the perceived quality of each, helps to identify 4 key areas for improvement: Research management, careers outside of academia, coping with stress and time management are all ranked relatively highly in terms of importance yet only a minority of those who have access to this type of training currently rate the quality as good.

For all 4 priority areas identified, the majority of ECRs feel their employer is best placed to provide this type of training or support, however ECRs would like to see an increased involvement from NERC, particularly in regards to research management and careers outside of academia. Some also believe learned societies and professional bodies have a role to play in regards to careers outside of academia.

**Gaps in support / training**

All ECRs completing the online survey were asked to identify the biggest gaps in support using a free-text box (where they could type in comments). Funding in terms of actual monetary support as well as advice on how to secure funds is felt to be lacking.

Over half of ECRs believe there are institutional barriers to applying for funding. The most frequently discussed barrier was the inability to act as PI on grants;
those applying for grants must be permanent members of staff, or can’t act as PIs on grants that would extend beyond their current length of employment. As a consequence, ECRs often co-write grants, but are not credited for their involvement. In order to progress, a good track record in grant writing / winning is required, however it is difficult to build a good track record when involvement is not acknowledged. Other barriers include: a limit on the number of applications allowed per institution, demand management, limited support or encouragement to apply for funding and a lack of time due to a heavy workload.

ECRs are hoping for more opportunities with small grants that can be used for short-term / small scale projects (where the ECR can act as a PI), as well as advice on how to write winning funding proposals / grant applications

Career guidance is also felt to be lacking, both in regards to advice on transitioning into a permanent or more senior role, but also in terms of actual career options inside and outside of academia. Although there is a high recognition that the majority of ECRs will not remain in academia, there is a very low awareness of career options outside of academia, and only a small proportion of ECRs state they currently have access to this type of training (and only a small proportion of those with access state the quality of support is good).

Conclusions and recommendations

Career instability and short-term contracts are a key challenge for ECRs; the current nature of ECR employment impacts on personal lives and can mean scientific work has to be abandoned.

1. If possible, more long-term funding should be made available (e.g. more NERC research fellowships) in order to tackle career instability and improve the wellbeing of ECRs.

The expectation to move institutions for each new contract is also considered a key challenge; many feel they are expected to make sacrifices in their personal lives in order to progress their career (and would be at a disadvantage if they did not frequently move around).

2. Although many recognise that mobility is important in order to develop research careers, extra consideration into the benefits of doing so could be applied on a case by case basis when reviewing applications.

The inability for ECRs to act as PIs on grants currently is often discussed as an institutional barrier to applying for funding. Due to this, ECRs often assist more senior researchers in grant writing, but are then not acknowledged for the input
(making it very difficult for ECRs to build a good track record and progress their career).

3. **NERC should consider developing mechanisms to allow ECRs to co-author / co-PI on large-scale grants and ensure input is acknowledged.**

Similarly, **limited availability of funding** is often discussed as a key gap in support.

4. **More small, short-term grants that are targeted at ECRs (where they can act as PI) would be beneficial, so that ECRs are not competing directly with more senior researchers and are then able to build a good track record of grant application writing.**

Only 20% of ECRs rate the overall support available to them as good; many reference a lack of training targeted at ECRs as a key gap, and there is limited awareness of support / training available currently (qualitative feedback suggests that a perceived lack of availability of support / training is partly due to a lack of awareness).

5. **NERC should consider how it can work in partnership with ECR employers to improve availability and awareness of training and support opportunities. Considerations could include development of a code of practice for more structured ECR support, and working together to improve availability and signposting to information (online and offline) on professional development and careers advice for ECRs.**

In some cases, ECRs feel they are unable to attend available training opportunities due to a high workload and unsupportive supervisors / PIs.

6. **NERC should encourage supervisors / PIs to allow a set amount of time outside of research to be put aside for ECRs to attend relevant training.**

The majority of ECRs consider grant writing skills to be the most important training to be provided, and of those who state they currently have this type of training available, the majority rate the quality as good. However; research management, careers outside of academia, coping with stress and time management are areas ECRs feel are important to provide training and support on, but current quality (and sometimes access) is rated as relatively poor. The majority believe these types of training should be provided predominantly by employers, though many are looking for additional support from NERC (particularly in regards to research management and careers outside academia), and learned societies / professional
bodies. Similarly, publishing and research management are considered the most valuable skills for an ECR to possess by the majority of ECR employers / managers (and are considered important support / training opportunities to provide by ECRs themselves).

7. NERC should look to:  

a. Provide additional support, particularly in research management and careers outside of academia  
b. Encourage institutions to provide and promote training in all key areas mentioned  
c. Encourage professional bodies/learned societies to get involved with advice on careers outside of academia.

There is a high recognition that the majority of ECRs will not secure a long-term post in academia, though many are unaware of how to achieve a career outside of academia, what their career options are, and where to find them. Support in careers outside of academia is ranked as the 7th most important support / training opportunities to provide overall.

8. There is a need to improve support and training in careers outside of academia, from NERC, institutions and professional bodies / learned societies. This could include guidance highlighting the many transferable skills that ECRs possess, and promotion of non-academic careers as a viable and rewarding alternative to the academic route. ECRs in academia appear to some extent blinkered towards the academic career route suggesting a need for more upfront and frank discussions by NERC and ECR employers from PhD level.

Although the gender ratio for ECRs completing this survey is almost equal, there is a rather large drop off of female NERC Research Fellows and NERC Research Grant PIs; equality and status of women in research has been recognised as a key issue for the global research community (for example it was a key discussion topic at the Global Research Council 2016 Annual Meeting). Similarly, the vast majority of NERC researchers from student to Research Grant PI are white; only a very small proportion identify as any other ethnicity.

9. NERC should continue to give consideration to measures to encourage and support women in applying for funding, and consider funding strategies and policies specifically designed to influence gender and ethnic diversity.
Objectives & Methodology
Objectives & Methodology

Research objectives

The Natural Environment Research Council (NERC) is the largest funder of environmental science in the UK, and invests £300 million each year in research, training and innovation through UK universities and research centres.

NERC has a responsibility under its Royal Charter to promote and support research across the range of disciplines within its remit and to provide the trained scientists to do so.

As a result of this, NERC commissioned this research with the following core aims:

- Determine whether current strategy and activities are effective for maintaining a healthy research base for the environmental sciences
- Ensure that the training and opportunities available for NERC Early Career Researchers (ECRs) are appropriate for facilitating success in the broad range of careers they enter.

In order to address the overarching objectives, the following information was collected:

- Demographic information concerning the UK ECR population relevant to NERC’s remit, such as age, gender, ethnicity, discipline etc;
  *This information was gathered to provide context, enable analysis of different segments (e.g. male versus female ECRs), and provide an indication of whether the sample is inclusive and not skewed towards certain demographic groups or geographic locations.*
- ECR working history and career aspirations (from PhD to now).
  *Again, this provides useful context for what support ECRs may require to achieve their ambitions.*
- Feedback on training and support opportunities currently available for ECRs and identification of any gaps
- Key challenges faced by ECRs and any gaps in support to address these challenges
- Available funding opportunities and any institutional barriers to applying for funding
  *These areas are key to determining whether current strategy and activities are effective for maintaining a healthy research base for the environmental sciences, and ensuring that the training and opportunities available for ECRs are appropriate for facilitating success.*
Feedback from individuals managing and/or employing ECRs in regards to their needs and demands relevant to ECRs. Here the intention was to provide an understanding of what support and training gaps exist from an employer perspective.

For the purpose of this research, an ECR was defined as: An individual employed in a non-permanent position within a postdoctoral research capacity with fewer than 8 years full time postdoctoral experience.

This definition was chosen as it aligned with the current NERC eligibility criteria for its fellowships schemes allowing applicant information from these competitions to be easily integrated into the analysis of results.

**DJS Research**

DJS Research Ltd is an independent market research agency with extensive experience of working with Research Councils and engaging the research community.

The ECR evaluation was intended to inform a broad range of information concerning the ECR community relevant to NERC’s remit, which consists of a large number of individuals diffused across a broad range of UK Research Organisations. It is beyond the capacity of NERC to collect these data; therefore, an independent organisation was required to source these detailed data on NERC’s ECR community and undertake an independent analysis of these data to identify the key features of the ECR population as well as the challenges and opportunities these researchers face.

**Methodology & sample**

In collaboration with NERC, DJS Research designed a set of questions intended to cover the objectives detailed in the research objectives section on the previous page. A final set of questions, including a mixture of single choice, multiple choice and open text questions, were agreed and then programmed into an online survey format. The average length was 20 minutes for an ECR and 10 minutes for an ECR employer. The online survey was open from 1st August – 6th October 2017.

A total of 329 ECRs and 69 ECR employers / managers completed the online survey between 1st August – 6th October; figure 1 (overleaf) shows the full sample breakdown:
The second phase of the research consisted of **10x 30-45-minute telephone interviews** with survey respondents.

All individuals who took part had completed the online survey and indicated that they were willing to be re-contacted for a follow-up interview. The responses of these individuals informed the decision to invite them as case studies to provide more nuance to issues raised in the survey. There are 5 case studies included within the main body of this report; we aimed to include a mix of genders, institutions, nationalities, topics, perceptions of available support etc.

**Data collection and Survey promotion**

NERC does not have a contact list for ECRs aligned with its science remit, and therefore survey promotion relied on members of the environmental science community. NERC provided relevant contact details for persons within UK universities, NERC Research Centres and NERC DTPs / CDTs. With NERC’s input, DJS Research sourced a list of relevant professional bodies and learned societies to contact.

All individuals / institutions were contacted first by email / telephone detailing the reason & method of the research and asking for their assistance with promoting the survey to any ECRs they or their institution had contact with. NERC also self-promoted the online survey link via multiple channels including the website, Twitter and LinkedIn.
The ECR sample in this survey is 329, and the ECR population relevant to NERC remit is believed to be ~3500 (source: HESA data), so it is estimated that the overall ECR data is accurate to +/- 3% to 5%.

NERC and DJS worked together to ensure that the survey was distributed widely, therefore the collected should be a good reflection of the ECR population. Anecdotal evidence from members of the community suggests that awareness of the survey was very high across UK research organisations.

Please note that some segment base sizes (notably for NERC Fellows and employers/managers) are relatively small and should be treated as indicative rather than statistically robust.

Any statistically significant differences have been discussed throughout the report.

Principal Investigator demographic and grant allocation data were provided by NERC for its research grant and fellowships schemes of relevance to ECRs, and were analysed alongside data / feedback from the online survey and telephone interviews.
Setting the Scene

This section provides a brief overview of some contextual information regarding the demographic profile and career aspirations of ECRs.

**Demographic Profile of ECRs**

In the online survey we captured demographic profiling information for ECRs such as age, gender, family status, ethnicity and location. This information was collected so that any differences in opinion between demographic groups could be determined (e.g. do males face different challenges from females?) in our analysis. These datasets did not exist at the time this research was commissioned so it was necessary to include them within the evaluation.

In addition, the profiling information was intended to provide reassurance that the ECR sample provides a good representation of the ECR community, and is not skewed towards certain locations or demographic groups.

Key demographic data is summarised in fig. 2 below:

**Figure 2. ECR Demographics (base: all ECRs, n=329)**

<table>
<thead>
<tr>
<th>Gender</th>
<th>Age</th>
<th>National identity</th>
<th>Marital status</th>
<th>Disability</th>
<th>Dependent children</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>25-30</td>
<td>32%</td>
<td>Married/living with partner</td>
<td>95%</td>
<td>Yes</td>
</tr>
<tr>
<td>Male</td>
<td>31-35</td>
<td>49%</td>
<td>Single</td>
<td>25%</td>
<td>Yes</td>
</tr>
<tr>
<td>Prefer not to say</td>
<td>36-40</td>
<td>19%</td>
<td>Civil partnership</td>
<td>1%</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>41-45</td>
<td>3%</td>
<td>Separated / divorced</td>
<td>1%</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>46-50</td>
<td>1%</td>
<td>Prefer not to say</td>
<td>3%</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>51 or older</td>
<td>0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Prefer not to say</td>
<td>2%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: The percentages for each category (gender, age, national identity, marital status, disability, dependent children) are represented visually in the figure. The figure includes a pie chart for disability and a bar chart for national identity, marital status, and dependent children. The gender distribution shows 53% female and 45% male, with 2% preferring not to say. The age distribution ranges from 25-30 (26%) to 51 or older (0%), with 2% preferring not to say. The national identity categories include British (32%), English (25%), Scottish (7%), Welsh (1%), Northern Irish (1%), and Other (28%), with 6% preferring not to say. The marital status categories include married/living with partner (68%), single (27%), civil partnership (1%), separated / divorced (1%), and prefer not to say (3%). The disability category shows 95% yes, 5% no, and 0% prefer not to say. The dependent children category shows 25% yes, 72% no, and 0% prefer not to say.
It is notable that nearly half (49%) of the ECRs surveyed fall into the 31-35 age category and a quarter have dependent children; we will see later that combining a career as an ECR with family life can bring its own challenges.

Overall, the survey sample is slightly weighed towards female ECRs (53%). Further demographic data for NERC students, NERC Research Fellows and NERC Research Grant were provided by NERC* and analysed alongside the data collected in the survey. The data provided shows that the gender ratio amongst ECRs and NERC students is relatively equal, but much less so for NERC fellows & Research Grant PIs (fig. 3 below):

*demographic data pulled from NERC grant management systems on 07/11/2017 - these data concern all active studentships, research grants, and research fellowships available to NERC on the date given.

In the overall ECR sample, 45% are male; however, this rises to 50% amongst NERC students, 59% amongst NERC Fellows and 77% amongst NERC Research Grant PIs.

In assessing the challenges ECRs face later in this report, we will examine whether there are gender specific factors that contribute to the drop in the number of female researchers from student to PI level.
Ethnicity data collected in the survey along with data provided by NERC shows that the vast majority of researchers are either White British, or any other White background (figure 4). Only a very small proportion identify as any other ethnicity, highlighting the need for a greater level of diversity.

**Figure 4. Ethnicity (base: All ECRs (329), NERC students (1612), NERC Research Fellows (86), NERC Research Grants PIs (1513))**

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Survey ECRs</th>
<th>NERC students</th>
<th>NERC Fellows (Research)</th>
<th>NERC Research Grant PIs</th>
</tr>
</thead>
<tbody>
<tr>
<td>White British</td>
<td>60%</td>
<td>59%</td>
<td>52%</td>
<td>65%</td>
</tr>
<tr>
<td>Any other White background</td>
<td>23%</td>
<td>12%</td>
<td>30%</td>
<td>19%</td>
</tr>
<tr>
<td>Irish</td>
<td>2%</td>
<td>1%</td>
<td>2%</td>
<td>1%</td>
</tr>
<tr>
<td>Any other mixed/multiple ethnic background</td>
<td>2%</td>
<td>1%</td>
<td>2%</td>
<td>1%</td>
</tr>
<tr>
<td>Any other Asian background</td>
<td>1%</td>
<td>1%</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>Arab</td>
<td>1%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Chinese</td>
<td>1%</td>
<td>0%</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>White and Asian</td>
<td>1%</td>
<td>1%</td>
<td>3%</td>
<td>0%</td>
</tr>
<tr>
<td>White and Black African</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>White and Black Caribbean</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Black and Black British</td>
<td>0%</td>
<td>1%</td>
<td>0%</td>
<td>1%</td>
</tr>
<tr>
<td>Prefer not to say</td>
<td>5%</td>
<td>24%</td>
<td>5%</td>
<td>10%</td>
</tr>
</tbody>
</table>

**Discipline spread & grant allocations**

In the online survey, ECRs were asked to select from a pre-populated list which topic(s) best describes their current area of research (they were allowed to select up to 2 topics). These research topic classifications align with ongoing topics of strategic importance to NERC. The results were compared with NERC’s total grant allocations for discovery and strategic science for the academic years 2013-14 to 2015/16 inclusive per topic area in order to determine whether current grant allocations align with the current ECR topic spread. Figure 5 overleaf shows the percentage of ECRs selecting each discipline and grant allocations per discipline in £millions.
When analysing broad topic groups, grant allocations are in line with the number of ECRs falling into each category. However, grant allocations within the broad discipline groups could be reviewed. For example, 19% of ECRs are currently working within biogeochemical cycles, with a total grant allocation of £28m; whereas 16% of ECRs are working within climate understanding and prediction, with a total grant allocation of £43m. Similarly, within resilience to environmental hazards disciplines, geohazards is most popular (9%), though pollution receives the largest sum of grant money (£22.5m, compared to £11.9m for geohazard). Within the crosscutting discipline group (data science, technology development, survey/monitoring), grant allocations appear to be reversed; the most popular is data science (9%) which received £2.8m, whereas the least popular is survey/monitoring (4%) but receives £7.9m. These data open up the question as to why large populations are not translating into, particularly, discovery science awards, e.g. are there too many people in topics that are lower priority for funders? NERC should investigate further into this reasoning behind the slight disconnect.

### Career History

In the online survey we captured some information about the past and current careers of ECRs and their career aspirations. This was partly to provide context for the main findings about support needs and perceptions; understanding careers...
aspirations also provides some clues as to the type of support ECRs might require to achieve their ambitions.

Figure 6 shows what sectors the ECRs surveyed have worked in and work in currently.

<table>
<thead>
<tr>
<th>Which of the following sectors have you worked in since completing your doctorate?</th>
<th>How would you describe what you are primarily doing now?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher education in the UK - mainly research</td>
<td>72%</td>
</tr>
<tr>
<td>Higher education in the UK - academic</td>
<td>30%</td>
</tr>
<tr>
<td>Higher education outside the UK - mainly research</td>
<td>19%</td>
</tr>
<tr>
<td>Higher education outside the UK - academic</td>
<td>7%</td>
</tr>
<tr>
<td>Higher education - other*</td>
<td>3%</td>
</tr>
<tr>
<td>Government &amp; public sector - research related</td>
<td>18%</td>
</tr>
<tr>
<td>Government &amp; public sector - not research related</td>
<td>2%</td>
</tr>
<tr>
<td>Self Employed Voluntary and Unpaid work</td>
<td>10%</td>
</tr>
<tr>
<td>School Teaching or Teacher Training</td>
<td>2%</td>
</tr>
<tr>
<td>Further study</td>
<td>1%</td>
</tr>
<tr>
<td>Industry &amp; commerce - research related</td>
<td>4%</td>
</tr>
<tr>
<td>Industry &amp; commerce - not research related</td>
<td>4%</td>
</tr>
<tr>
<td>Other</td>
<td>3%</td>
</tr>
</tbody>
</table>

In interpreting the results, it is important to remember that the survey was mainly distributed via academic channels – we did not target, for example, organisations in the private and third sectors who might employ ECRs. The reason for this is twofold: 1. ECRs who have left research are outside of NERC’s immediate influence with regards to policy / changes in support, and 2. As destination data are not available, it is difficult to know where these ECRs are in order to target them.

Our sample of ECRs has a clear higher education focus – for example 72% have worked in academic research since completing their doctorate, and nearly two thirds (62%) stated that their current role is in UK academic research.

There is a significant minority that have worked (18%) and/or currently work (13%) in Government/public sector related research roles.

**Career Aspirations**

In the online survey, ECRs were asked a series of questions to ascertain how their career aspirations have changed over time: ‘What were your career aspirations for when you had completed your doctorate; before study, during study, after study and now?’
Their responses are summarised in fig. 7 (below):

**Figure 7. Career aspirations over time (base: all ECRs, n=329)**

<table>
<thead>
<tr>
<th>Career aspirations before study, during study, after study, and now</th>
<th>Before study</th>
<th>During study</th>
<th>After study</th>
<th>Now</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher education in the UK: academic</td>
<td>24%</td>
<td>25%</td>
<td>28%</td>
<td>29%</td>
</tr>
<tr>
<td>Higher education in the UK: mainly research</td>
<td>10%</td>
<td>11%</td>
<td>9%</td>
<td>7%</td>
</tr>
<tr>
<td>Higher education outside the UK: academic</td>
<td>9%</td>
<td>15%</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>Higher education outside the UK: mainly research</td>
<td>1%</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>Higher education: other*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industry &amp; commerce: research related</td>
<td>5%</td>
<td>5%</td>
<td>2%</td>
<td>3%</td>
</tr>
<tr>
<td>Industry &amp; commerce: not research related</td>
<td>3%</td>
<td>1%</td>
<td>0%</td>
<td>1%</td>
</tr>
<tr>
<td>Government &amp; public sector: research related</td>
<td>5%</td>
<td>5%</td>
<td>7%</td>
<td>8%</td>
</tr>
<tr>
<td>Government &amp; public sector: not research related</td>
<td>2%</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Further study</td>
<td>3%</td>
<td>1%</td>
<td>1%</td>
<td>0%</td>
</tr>
<tr>
<td>School Teaching or Teacher Training</td>
<td>1%</td>
<td>0%</td>
<td>1%</td>
<td>0%</td>
</tr>
<tr>
<td>Other</td>
<td>2%</td>
<td>2%</td>
<td>3%</td>
<td>4%</td>
</tr>
<tr>
<td>Don’t know</td>
<td>15%</td>
<td>3%</td>
<td>3%</td>
<td>11%</td>
</tr>
</tbody>
</table>

There is a stark focus on academia running from before study right through to now. Taking the aspiration of a UK academic role as an example, this was the aspiration for **24%** of ECRs before study; **25%** during study; **28%** after study and **29%** now.

The top five aspirations from before study to now all relate to academia, and there are very few of these ECRs with aspirations to work in, for example, industrial/commercial research (**3%** hold this aspiration now).

As we will see later, this strong academic focus may have important implications for the support needs of ECRs; clearly there is strong competition for academic roles and, put simply, not enough academic positions for all those who aspire to hold one. Our data suggests that most ECRs retain the belief that they will be one of the ~15% that make it in academia, and the statistical likelihood that they may not is not reflected in their personal development, NERC policy or institutional policy within their employer.

**Employment/Contract Status**

In the online survey, ECRs were asked a series of questions about their current main employment status (fig 8 overleaf).
Whilst the majority (88%) are employed full time, fixed term contracts are prevalent and (as we will see later) this may pose challenges to ECRs. In particular around a third of ECRs are employed in short term contracts of 12 to 24 months (30%), or contracts lasting less than 12 months (4%). The short-term nature of ECR roles is also reflected in the fact that only 12% of the ECRs surveyed had been in their current role for four years or more.

"The nature of short term contracts (even up to 3 years) feels unstable and can be a source of anxiety, especially as you get older and have increased responsibilities."

Non-independent researcher

"Uncertainty related to job insecurity permeates every aspect of your life. It’s really hard to build a life if you only know you have a job for 11 months. Should you take a risk and buy a house? How can you even decide whether to start a family if your contract is a comparable length to a pregnancy, never mind a pregnancy plus some maternity leave?"

Non-independent researcher
Evaluation of ECR Support
Evaluation of ECR Support

A key objective of this research for NERC was to understand if training and support opportunities available for ECRs are appropriate for facilitating success in the broad range of careers they enter; hence, the main body of the online survey focussed on training and support available to ECRs.

In both the online survey and follow-up telephone interviews, ECRs were asked a number of questions relating to the types of training and support currently available, their perceived level of quality and any gaps.

Overall quality of support

ECRs were asked to rate the quality of support available for ECRs on a scale of 1 to 5, where 1 was ‘very poor’ and 5 was ‘excellent’. Figure 9 shows the response overall (all ECRs) and broken down by the type of ECR:

<table>
<thead>
<tr>
<th>Overall, how would you rate the quality of support available for ECRs?</th>
<th>% of respondents</th>
<th>NET good</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total (n=329)</td>
<td>11%</td>
<td>32%</td>
</tr>
<tr>
<td>NERC Independent Research Fellow (n=18)</td>
<td>28%</td>
<td>28%</td>
</tr>
<tr>
<td>Independent Postdoctoral Researcher (n=105)</td>
<td>12%</td>
<td>23%</td>
</tr>
<tr>
<td>Non-independent Postdoctoral Researcher (n=206)</td>
<td>12%</td>
<td>37%</td>
</tr>
</tbody>
</table>

Overall, only 20% of ECRs rated support as good (18% ‘quite good’ and 2% ‘excellent’), and 43% perceive it to be poor (11% ‘very poor’ and 32% ‘quite poor’).

Non-independent ECRs were least positive with nearly half (49%) rating the quality of support as very or quite poor. NERC Independent research fellows appear more positive with 44% giving a positive rating. This figure cannot be
classed as significantly different (statistically) due to a low base size for NERC research fellows (n=18), though it is clear that those who responded to the online survey perceived there to be a greater availability of support / training opportunities compared to other postdoctoral researchers.

Areas where support is lacking

All ECRs rating current support as ‘quite poor’ or ‘very poor’ (n=143 / 43% in total) were asked ‘Why do you rate the quality of ECR support as quite poor / very poor?’. This was an open ended ‘free-text’ question where ECRs could type in their comments. Key themes included the following:

1. A lack of support or training targeted specifically at ECRs: it is felt that in many institutions there are training opportunities available however there are limited opportunities targeted solely at ECRs; most training / support is targeted at PhD students or a wider audience. A smaller number stated that training and support at their institution was non-existent.

   "Most support is directed to PhD students. There is a cliff edge in terms of support for up and coming researchers because there are no resources provided for it.”

   Independent postdoctoral researcher

However, it is possible that a perceived lack of support is partly due to a lack of awareness. During the follow-up qualitative interviews, ECRs were asked how support and training opportunities were communicated in their institution; those who rated overall support as good often discussed frequent communication of available support / training via multiple channels, such as career centres and their email lists, department-wide emails, ECR forums or via supportive PIs and supervisors. There is therefore an opportunity for institutions to raise awareness of available support and training opportunities, particularly of those targeted specifically at ECRs.

   "I think they offer a lot of training... I'm on email lists for the Careers Centre and for postdocs. Then, also, some of the trainings get advertised through the department as well, through the whole department-wide email list.”

   Independent postdoctoral researcher
Job title: Research Coordinator

Institution: UK university

Responsibilities:
“To create a hub for ECRs”:
• Supplying information about available grants
• Communicating successes
• Identifying gaps around discipline-specific training

Relationship with ECRs
Part of her role is to improve relationships and improve ECR support: the Centre recognised that ECRs are often “left high and dry”.

Feedback on available support

Overall:
• Training provided by institution is fairly generic, and often very variable.
  “Training [for ECRs] is limited currently, but we know we have to do better.”
• Opportunities to learn are not always extended to ECRs
  “One of the things with ECRs is that because they are here for 3 years, [the attitude is that] we need to invest in the people that are here for twenty, and it seems a shame that training isn’t offered as in a more early development way to the ECRs.”

Specific areas where training is lacking:
• Careers outside of academia – focus is on the academic track. Difficult to provide this training.
• Research management training
  “This is definitely an area where our ECRs feel they are thrown in at the deep end...Flying by the seat of your pants doesn’t seem the best way to do things.”
• Publishing – provided within institution but not extended to ECRs
• Writing job applications/CVs: training not offered past PhD level
• Support on gaining permanent research position: current guidance is only from individual academics

Changing culture but not there yet...
“Used to be that people were supposed to wash their hands of you slightly.”
“I would say it’s a growing number of those looking for careers outside of academia, but I couldn’t give you a figure.”

Current non-academic avenues:
NGOs (e.g. Local Rivers Trust), Consultancy roles

“They feel a bit invisible. They’re the forgotten workforce.”
2. **A lack of support for career progression / securing a permanent post:**
   many who perceive overall support as poor are unclear on how to progress from an ECR to an established researcher. The vast majority of ECRs aspire to gain a permanent post in academia, however many state that there is very little guidance on how to achieve this. However, it is widely recognised that only a small proportion of ECRs will gain a permanent academic post therefore more guidance in terms of career progression in general, i.e. outside of academia, is required.

   "Little is done to address the strong drop off rate from PDRA to permanent University posts (either academic or within NERC centres e.g. NCAS). I was one of the lucky ones who got an academic post relatively quickly, but there are many who do not and get stuck on the hamster wheel of short-term PDRA posts which is hard to break out of once you’ve been doing that for several years.”
   **NERC fellow**

   "The main issue is that there is not a long-term plan of retention or progression of early career scientists. Paths to advance our career are not clear."
   **Non-independent postdoctoral researcher**

3. **Supply exceeds demand / ECR exploitation:**
   some perceiving overall support as poor believe they are not viewed as valuable commodities, and are easily replaceable; supply of ECRs exceeds demand and hence 'there will always be more PhD graduates ready to step in'. Often these ECRs can feel exploited by their employer and feel as though there is little enthusiasm for developing independent academics and researchers. In both the online survey and the follow-up telephone interviews it was made clear that the willingness of PIs / supervisors to allow ECRs to seek out and attend training can vary across institutions (often PIs / supervisors are unwilling to allow their ECRs to take time out to attend training when they could be completing work instead). An improvement of line management skills and an increase in support from PIs and supervisors would be beneficial.

   “There is little emphasis from employers or research councils on developing and retaining ECRs within research. This is allowed to continue (I think) because we aren’t considered valuable commodities- there will always be more PhD graduates ready to step in, as supply exceeds demand.”
   **Non-independent postdoctoral researcher**

It was apparent during the follow up telephone interviews that the level and quality of support / training opportunities available varies across institutions. Due to the
short-term nature of ECR contracts, all who were spoken to had experience across multiple institutions, and many had differing opinions in regards to the level of support they received depending on whether they were discussing their current or previous employment. Level and quality of support in this case refers to perceived actual opportunities available, as well as supportiveness of PIs / supervisors at that institution.

"You’re somewhat beholden to whoever’s in charge of you who often see it as a couple days out of their schedule, you could be doing work instead...It really depends on your supervisor/PIs to whether you can actually attend these trainings."

*Non-independent postdoctoral researcher*
Job title: Research Associate/Hydrological Modeller
Department: Hydrology
Topic: Water Resources

Career aspirations:
• Research focus either within industry or academia

Working history:
• Postdoctoral researcher for 3 years

Feedback on training & support
Overall:
• ‘Research Associate Programme’ is very good (training budget and set amount of training time over 3 year period)
• Valuable training provided = involving direct interaction with people who know the system and can give practical advice

Gaps?:
• Training can be very variable in quality
• Opportunities can depend on how willing your supervisor is to let you take time out for training

Key Challenges
• Having to move institutions: “If you’ve got a 12 month contract, the last few months of that you’re going to be doing nothing but looking for funding.”
• Having to figure it all out for yourself: “Adapting to a research landscape where there’s not really a given set of rules.”
• Lack of low value awards: “There’s a lot of very high value, very low probability of success, & not enough in terms of high probability of success, perhaps lower value awards.”

Careers outside academia?
• Good opportunities for a career in hydrology (but not in some disciplines)
• Looking into research consulting opportunities, (but no discussion around this at the institution)

“Opportunities to talk about industry have been very, very rare... which is a great shame”

Suggestions for NERC
• Workshops for careers outside of academia

“I think absolutely it would be NERC [who are best placed to set up careers outside academia training]]!... They are very well connected”
• Provide smaller grants so not competing against top level academics (e.g. environmental infrastructure innovation programme)

“I studied for a PhD because] There were a few guys that I worked for who had PhDs who could do a broad range of things. So I was quite impressed by this. And I guess I also quite enjoyed research as well”

Respondent details have been anonymised.
Availability of support / training opportunities

It was important for NERC to understand which types of support / training opportunities were currently on offer to ECRs, in order to easily identify any gaps / areas for improvement. In the online survey, ECRs were presented with a list of potential support and training opportunities that an institution might offer to ECRs, and were asked to select all those that they believe are available to them. Figure 10 shows the percentage of times that each support / training was selected overall (all ECRs) and broken down by the type of ECR:

<table>
<thead>
<tr>
<th>Support / training</th>
<th>Total</th>
<th>Non-independent researchers</th>
<th>Independent researchers</th>
<th>NERC fellows</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equality and diversity</td>
<td>55%</td>
<td>55%</td>
<td>52%</td>
<td>67%</td>
</tr>
<tr>
<td>Public engagement / outreach</td>
<td>51%</td>
<td>50%</td>
<td>50%</td>
<td>67%</td>
</tr>
<tr>
<td>Career development</td>
<td>46%</td>
<td>47%</td>
<td>44%</td>
<td>50%</td>
</tr>
<tr>
<td>Mentoring</td>
<td>44%</td>
<td>41%</td>
<td>48%</td>
<td>61%</td>
</tr>
<tr>
<td>Presentation skills</td>
<td>43%</td>
<td>42%</td>
<td>42%</td>
<td>50%</td>
</tr>
<tr>
<td>Time management</td>
<td>40%</td>
<td>39%</td>
<td>41%</td>
<td>39%</td>
</tr>
<tr>
<td>Research management</td>
<td>39%</td>
<td>35%</td>
<td>41%</td>
<td>67%</td>
</tr>
<tr>
<td>Publishing</td>
<td>38%</td>
<td>39%</td>
<td>31%</td>
<td>61%</td>
</tr>
<tr>
<td>Writing job applications / CVs</td>
<td>38%</td>
<td>34%</td>
<td>47%</td>
<td>28%</td>
</tr>
<tr>
<td>Leadership</td>
<td>35%</td>
<td>26%</td>
<td>47%</td>
<td>61%</td>
</tr>
<tr>
<td>Career within academia</td>
<td>33%</td>
<td>34%</td>
<td>32%</td>
<td>33%</td>
</tr>
<tr>
<td>Networking</td>
<td>32%</td>
<td>30%</td>
<td>33%</td>
<td>44%</td>
</tr>
<tr>
<td>Coping with stress</td>
<td>31%</td>
<td>32%</td>
<td>29%</td>
<td>39%</td>
</tr>
<tr>
<td>Grant writing skills</td>
<td>31%</td>
<td>31%</td>
<td>30%</td>
<td>50%</td>
</tr>
<tr>
<td>Teaching (training)</td>
<td>29%</td>
<td>26%</td>
<td>32%</td>
<td>44%</td>
</tr>
<tr>
<td>Careers outside of academia</td>
<td>26%</td>
<td>26%</td>
<td>25%</td>
<td>39%</td>
</tr>
<tr>
<td>Teaching (qualification)</td>
<td>25%</td>
<td>19%</td>
<td>33%</td>
<td>50%</td>
</tr>
<tr>
<td>Introduction to management</td>
<td>24%</td>
<td>24%</td>
<td>20%</td>
<td>44%</td>
</tr>
<tr>
<td>Interpersonal skills</td>
<td>18%</td>
<td>18%</td>
<td>15%</td>
<td>33%</td>
</tr>
<tr>
<td>Plain English writing</td>
<td>13%</td>
<td>14%</td>
<td>11%</td>
<td>22%</td>
</tr>
<tr>
<td>Innovation skills</td>
<td>12%</td>
<td>11%</td>
<td>11%</td>
<td>28%</td>
</tr>
<tr>
<td>Business skills</td>
<td>8%</td>
<td>6%</td>
<td>10%</td>
<td>22%</td>
</tr>
<tr>
<td>No support available</td>
<td>6%</td>
<td>5%</td>
<td>9%</td>
<td>0%</td>
</tr>
<tr>
<td>Other</td>
<td>4%</td>
<td>5%</td>
<td>3%</td>
<td>11%</td>
</tr>
</tbody>
</table>
Equality and diversity and public engagement / outreach are considered the most readily available support or training opportunities, and were selected as being available by just over half of all ECRs (55% and 51% respectively). Career development came out as the third most available training (46%) followed by mentoring (44%). Plain English writing, innovation skills and business skills are perceived to be the least readily available support / training (13%, 12% and 8% respectively).

It is important to note that the percentages in figure 10 reflect a ECR’s perceived availability and are not necessarily reflective of support / training opportunities actually available; follow-up telephone interviews with ECR employers suggested that a perceived lack of support or training could partly be due to a lack of awareness. A number of ECRs also discussed a lack of support from supervisors to take time off to attend training, or a lack of funding to attend, and hence could have influenced responses in terms of availability of training / support.

**Priority areas for support**

In order to understand whether current availability of support and training opportunities were in line with those that are considered most valuable, all ECRs were then asked to select 5 support / training opportunities from the same list that they consider to be the most important, and rank those 5 in order, where 1 is the most important (fig. 11 below):

### Figure 11. Most important support / training opportunities ranked
(base: all ECRs ranking each support / training in the top 5 most important)

<table>
<thead>
<tr>
<th>Support / training opportunities considered most important</th>
<th>% of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grant writing skills</td>
<td>60%</td>
</tr>
<tr>
<td>Career development</td>
<td>41%</td>
</tr>
<tr>
<td>Research management</td>
<td>39%</td>
</tr>
<tr>
<td>Publishing</td>
<td>32%</td>
</tr>
<tr>
<td>Career within academia</td>
<td>27%</td>
</tr>
<tr>
<td>Leadership</td>
<td>25%</td>
</tr>
<tr>
<td>Careers outside academia</td>
<td>23%</td>
</tr>
<tr>
<td>Teaching (training)</td>
<td>25%</td>
</tr>
</tbody>
</table>

N.B. all other support / training were ranked in top 5 by <25% of ECRs
Figure 11 shows that **grant writing skills** was most frequently ranked in the top 5 most important support / training opportunities (**60%**), and was also ranked first most frequently overall (**39%**). As the vast majority of ECRs would like to remain in academia, grant writing skills is considered most important; securing grants is considered key for career progression and appealing to employers. However, some feel there is not enough support in terms of grant writing skills currently (only **31%** of ECRs stated that this type of training is currently available at their institution, though **51%** of those with access rate the quality of training as ‘quite good’ or ‘excellent’ – see figure 12 overleaf). However, it is important to note that a number of ECRs commented at different stages in the survey on a lack of grants targeted at ECRs, and hence a high level of competition with established PIs; there is therefore the potential that those perceiving there to be a lack of grant writing skills training, and grant writing skills being the most important, are thinking in terms of grant opportunities rather than actual training.

**Career development** is considered the second most important support / training; ranked in the top 5 by **51%** and ranked first by **30%** (career development was ranked in the top 5 significantly more frequently by non-independent researchers than independent – see figure 11). ECRs are looking for guidance in terms of progressing to an independent, permanent position in academia. **46%** state that their institution currently provides training on career development, and **44%** of those with access rate the quality of support as ‘quite good’ or ‘excellent’ (figure 12)

**Research management** was ranked in the top 5 by **44%**, and significantly more often by independent researchers than non-independent (figure 11). This is considered an important skill, particularly when independently managing projects, and is sometimes felt like a skill that is taken for granted; good research management is necessary in order to successfully run / complete a project but actual training can be perceived to be lacking (**39%** stated that research management training is currently available to them, and only **35%** of ECRs with access rate the quality of support received as ‘quite good’ or ‘excellent’ - see figure 12)

**Publishing** was selected in the top 5 by **42%** and considered the most important overall by **27%** (figure 11). The vast majority of ECRs state that you need an excellent publishing record to be competitive in science and is considered a key assessment of candidates for academic jobs. Publishing is considered important but often neglected in terms of training (only **38%** state that they currently have access to publishing training, of which **46%** rate the quality of training received as ‘quite good’ or ‘excellent’ – figure 12)
Support and training opportunities considered most important for the majority of ECRs often relate to careers inside of academia, however is it highly recognised that the majority of ECRs will not remain in academia long-term. Support and training on careers outside of academia is ranked in the top 5 most important by 25%, of which 27% selected it as the most important (figure 11).

Feedback from the follow-up telephone interviews suggested that ECRs are open to a job outside of academia and are keen to understand what their options are; however, most are unaware of how to achieve this, where to look and which jobs are appropriate for them. Only 26% of ECRs state they currently have access to support / training in careers outside of academia, of which only 28% rate the quality of support as ‘quite good’ or ‘excellent’ (figure 12). There is therefore a clear need to improve support in this area, and considering there is a high recognition that the success rate of remaining in academia long-term is poor, but only one quarter of ECRs consider support in careers outside of academia as important, highlights a need for more upfront and frank discussions with ECRs from PhD stage.
Academia is a really weird place, and I don’t think it’s a very healthy place. I’m one of the leads on a campaign called ‘Bullied into Bad Science’.

Case Study 3: 'Lucy' (ECR)

Job title: Independent postdoctoral researcher

Career history/aspirations

Career aspirations: • Research, research, research."

Feedback on training & support

Overall: Uni has a Career Centre: help with CV writing, help on getting first fellowship, interview practice, one on one tailored training (very useful)

Gaps?: • How academia is changing • How to stay a critical thinker • Where to publish • Grant writing workshops are too generic – need advice on particular grant proposals for particular fellowships or grants

Working history:
• Came into academia fairly late, so had a career outside academia • Two three-year fellowships, and next position as a senior researcher already confirmed

Key Challenges
• Senior researchers not up-to-date on new developments (don’t allow ECRs to implement the things they learn) • Pressure to publish in particular journals in order to be considered for a position, even if it means bad science • Gender equality issues... "We have 25 permanent faculty members, and only one of them is a woman... When I apply for grants, I know that in terms of statistics, I have half the chance a man does, simply because I’m a woman”

Careers outside academia?

"Most ECRs won’t stay in academia because there aren’t enough jobs, training on transferable skills [would be valuable]. And what are other career options."

Could seek out advice from the Career Centre at Cambridge but not from people within the department: “They don’t have experiences outside of academia.”

Suggestions for NERC

Encourage open-access publishing/publishing outside of the usual publications

"Wellcome Trust and American – if you have money from these organisations, you have to make your publications open access...It would be amazing for NERC to say 'if you take out money, you have to publish in these’. Which means you can’t publish in Elsevier etc. who have universities under this huge lock and key”

"Academia is a really weird place, and I don’t think it’s a very healthy place. I’m one of the leads on a campaign called ‘Bullied into Bad Science’.”

Respondent details have been anonymised.
**Figure 12.** Perceived availability and quality of support / training opportunities, ranked in order of perceived importance (base: all ECRs, n=329)

<table>
<thead>
<tr>
<th>Training Opportunity</th>
<th>% with access to support</th>
<th>Rating of quality of support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grant writing skills</td>
<td>31%</td>
<td>61%</td>
</tr>
<tr>
<td>Career development</td>
<td>46%</td>
<td>51%</td>
</tr>
<tr>
<td>Research management</td>
<td>39%</td>
<td>44%</td>
</tr>
<tr>
<td>Publishing</td>
<td>38%</td>
<td>43%</td>
</tr>
<tr>
<td>Career within academia</td>
<td>33%</td>
<td>46%</td>
</tr>
<tr>
<td>Leadership</td>
<td>35%</td>
<td>46%</td>
</tr>
<tr>
<td>Careers outside academia</td>
<td>26%</td>
<td>43%</td>
</tr>
<tr>
<td>Teaching (training)</td>
<td>29%</td>
<td>42%</td>
</tr>
<tr>
<td>Mentoring</td>
<td>44%</td>
<td>42%</td>
</tr>
<tr>
<td>Networking</td>
<td>32%</td>
<td>41%</td>
</tr>
<tr>
<td>Teaching (qualification)</td>
<td>25%</td>
<td>41%</td>
</tr>
<tr>
<td>Public engagement / outreach</td>
<td>51%</td>
<td>39%</td>
</tr>
<tr>
<td>Coping with stress (or equivalent)</td>
<td>31%</td>
<td>35%</td>
</tr>
<tr>
<td>Time management</td>
<td>40%</td>
<td>35%</td>
</tr>
<tr>
<td>Introduction to management</td>
<td>24%</td>
<td>31%</td>
</tr>
<tr>
<td>Writing job applications etc.</td>
<td>38%</td>
<td>37%</td>
</tr>
<tr>
<td>Presentation skills</td>
<td>43%</td>
<td>44%</td>
</tr>
<tr>
<td>Innovation skills</td>
<td>12%</td>
<td>46%</td>
</tr>
<tr>
<td>Business skills</td>
<td>8%</td>
<td>46%</td>
</tr>
<tr>
<td>Interpersonal skills</td>
<td>18%</td>
<td>43%</td>
</tr>
<tr>
<td>Plain English writing</td>
<td>13%</td>
<td>41%</td>
</tr>
<tr>
<td>Equality and diversity</td>
<td>55%</td>
<td>38%</td>
</tr>
</tbody>
</table>

N.B. only those who stated they have access to each training / support rated its quality
Priority improvements of support

Information gathered on the importance of each type of support along with the perceived quality of each support, helped to identify clear areas for improvement.

Figure 13 (page 36) places all support / training opportunities onto a priority matrix; the position of each type of support is determined by its perceived level of importance and current quality. The x axis looks at the importance of each type of support; support or training opportunities ranked between 1st and 8th place were placed in the right column, those between 9th and 16th place in the middle column, and 17th to 24th place went in the left column. The y axis looks at the perceived quality of support received; a rating of 35% or less was placed in the bottom row, 36-50% in the middle row, and 51%+ in the top row.

Grant writing skills is considered the most important type of support by the vast majority, and just over half of those who have access to grant writing skills support rate the overall quality they receive as ‘quite good’ or ‘excellent’ (51%). It is therefore important that training in grant writing skills is considered a key deliverable for institutions, and that a high quality is maintained. Awareness of grant writing skills training is low (31% - figures 11/12), therefore institutions should look to increase promotion of this type of training when possible.

The priority matrix (figure 13) identifies 4 key areas for improvement:

- **Research management**: ranked 3rd overall for importance and only 35% of ECRs who have access to this type of training rate it as ‘quite good’ or ‘excellent’. Both ECRs and ECR employers consider research management to be a useful skill, and necessary in order to effectively manage a project from start to finish; however, many feel as though they are ‘thrown in at the deep end’. Good quality training on research management is felt to be lacking currently.

- **Careers outside of academia**: ranked 7th overall for importance and only 28% of ECRs who have access to this type of training rate it as ‘quite good’ or ‘excellent’. Most ECRs consider it important for support in careers outside of academia to be provided, particularly because most are very much aware that careers inside of academia are highly competitive. When support is provided, the quality is considered adequate or poor by the majority; there is a need to improve support in this area.
• **Coping with stress:** ranked 13th overall for importance and only 35% of those with access to this type of training rate it as ‘quite good’ or ‘excellent’. A combination of short-term contracts, heavy workload, mobility and limited funding opportunities has the potential to cause stress and impact on the wellbeing of ECRs, and many discuss this as a key challenge in both the online survey and the follow up telephone interviews. However, it is felt that the quality of support received in terms of coping with stress is only adequate or poor for the majority.

• **Time management:** ranked 14th overall for importance and only 35% of those with access to this type of training rate it as ‘quite good’ or ‘excellent’. Both ECRs and ECR employers consider time management to be an important and necessary skill in order to effectively manage work load, however good quality training is felt to be lacking.
<table>
<thead>
<tr>
<th>Quality of support</th>
<th>Importance to ECRs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MAINTAIN</strong></td>
<td></td>
</tr>
<tr>
<td>Innovation skills</td>
<td></td>
</tr>
<tr>
<td>(importance ranking 18th, 56% rate quality as good)</td>
<td></td>
</tr>
<tr>
<td>Public engagement / outreach</td>
<td></td>
</tr>
<tr>
<td>(importance ranking 12th, 55% rate quality as good)</td>
<td></td>
</tr>
<tr>
<td><strong>KEY STRENGTHS</strong></td>
<td></td>
</tr>
<tr>
<td>Grant writing skills</td>
<td></td>
</tr>
<tr>
<td>(importance ranking 1st, 51% rate quality as good)</td>
<td></td>
</tr>
<tr>
<td><strong>Presentation skills</strong></td>
<td></td>
</tr>
<tr>
<td>(importance ranking 17th, 46% rate quality as good)</td>
<td></td>
</tr>
<tr>
<td>Interpersonal skills</td>
<td></td>
</tr>
<tr>
<td>(importance ranking 20th, 37% rate quality as good)</td>
<td></td>
</tr>
<tr>
<td>Plain English writing</td>
<td></td>
</tr>
<tr>
<td>(importance ranking 21st, 41% rate quality as good)</td>
<td></td>
</tr>
<tr>
<td>Equality and diversity</td>
<td></td>
</tr>
<tr>
<td>(importance ranking 22nd, 48% rate quality as good)</td>
<td></td>
</tr>
<tr>
<td>Networking</td>
<td></td>
</tr>
<tr>
<td>(importance ranking 10th, 48% rate quality as good)</td>
<td></td>
</tr>
<tr>
<td>Writing job applications/CVs</td>
<td></td>
</tr>
<tr>
<td>(importance ranking 16th, 44% rate quality as good)</td>
<td></td>
</tr>
<tr>
<td>Introduction to management</td>
<td></td>
</tr>
<tr>
<td>(importance ranking 15th, 37% rate quality as good)</td>
<td></td>
</tr>
<tr>
<td>Mentoring</td>
<td></td>
</tr>
<tr>
<td>(importance ranking 9th, 44% rate quality as good)</td>
<td></td>
</tr>
<tr>
<td>Teaching (qualification)</td>
<td></td>
</tr>
<tr>
<td>(importance ranking 11th, 45% rate quality as good)</td>
<td></td>
</tr>
<tr>
<td>Career development</td>
<td></td>
</tr>
<tr>
<td>(importance ranking 2nd, 44% rate quality as good)</td>
<td></td>
</tr>
<tr>
<td>Career within academia</td>
<td></td>
</tr>
<tr>
<td>(importance ranking 5th, 46% rate quality as good)</td>
<td></td>
</tr>
<tr>
<td>Leadership</td>
<td></td>
</tr>
<tr>
<td>(importance ranking 6th, 48% rate quality as good)</td>
<td></td>
</tr>
<tr>
<td>Teaching (training)</td>
<td></td>
</tr>
<tr>
<td>(importance ranking 8th, 45% rate quality as good)</td>
<td></td>
</tr>
<tr>
<td>Publishing</td>
<td></td>
</tr>
<tr>
<td>(importance ranking 4th, 46% rate quality as good)</td>
<td></td>
</tr>
<tr>
<td>Business skills</td>
<td></td>
</tr>
<tr>
<td>(importance ranking 19th, 35% rate quality as good)</td>
<td></td>
</tr>
<tr>
<td>Coping with stress</td>
<td></td>
</tr>
<tr>
<td>(importance ranking 13th, 35% rate quality as good)</td>
<td></td>
</tr>
<tr>
<td>Time management</td>
<td></td>
</tr>
<tr>
<td>(importance ranking 14th, 35% rate quality as good)</td>
<td></td>
</tr>
<tr>
<td>Research management</td>
<td></td>
</tr>
<tr>
<td>(importance ranking 3rd, 35% rate quality as good)</td>
<td></td>
</tr>
<tr>
<td>Careers outside academia</td>
<td></td>
</tr>
<tr>
<td>(importance ranking 7th, 28% rate quality as good)</td>
<td></td>
</tr>
</tbody>
</table>

**Figure 13.** Priority matrix: perceived quality of support vs importance (base: all ECRs n=329)
Who should provide support in priority areas?

When determining priority areas for improvement, it was important for NERC to understand who the ECR community feel are best placed to provide each type of support. When ECRs were asked to select which types of support / training opportunities are available to them currently, for each they perceived to be available, they were asked who currently provides this type of support. Then, when ECRs were asked to select their top 5 most important support / training opportunities, for each of the 5 they selected, they were asked who they think should provide each type. Figure 14 shows the percentage of ECRs stating who they currently receive support from, and who they think should provide support, for each of the 4 priority improvements.

For all four priority improvement areas, the majority of ECRs feel that their employer is best placed to provide such training / support; however, ECRs would like to see an increase of support / training provided by NERC (particularly in research management and careers outside academia). A majority (85%) of ECRs stating they currently have access to research management training receive training from their employer, and only 2% from NERC; though 36% of ECRs rating research management in their top 5 most important believe NERC should provide such training.
Similarly, only **2%** of ECRs who state they currently have access to training on careers outside of academia receive such training from NERC, though **23%** of those who rate careers outside of academia in their top 5 most important believe this type of training should be provided by NERC.

ECRs also believe learned societies and professional bodies have a role to play in regards to careers outside of academia; **22%** of those who include this type of support in their top 5 most important believe they should provide such training. The majority of those who have access to support in coping with stress and time management are currently receiving these types of support from their employer, and this is reasonably in line with expectations; though a small percentage would like to see support from NERC (**5%** and **11%** respectively)

**Gaps in support / training for ECRs**

Following review of potential support and training opportunities in terms of access, quality, importance and provision, all ECRs were asked what they believed to be the biggest gaps in support / training for ECRs. This was an open ended ‘free-text’ question where ECRs could type in their comments.

One of the biggest gaps discussed was a lack of support or advice on career progression; particularly in regards to transitioning into a permanent or more senior role, but also in terms of actual career options in and outside of academia.

“There needs to be far more support for postdocs/fellows in either getting permanent academic positions, or exploring options outside academia.”

**NERC fellow**

Feedback from both the online survey and the follow-up telephone interviews suggests that there is a relatively low awareness of relevant career options outside of academia, and in some instances, a career outside of academia could be considered a failure or less desirable. There is therefore a clear need to improve support in this area, and for more upfront and frank discussions with ECRs from PhD stage.

“Beyond the usual refrain of ‘publish a lot’, most ECRs have a narrow perception of how to progress their careers. We’re faced with competing for a very small number of fellowships or lectureships and other options are either treated as failures or less desirable.”

**Independent postdoctoral researcher**
"I think opportunities to talk about industry have been very, very rare...which is a great shame... It’s something like 90 percent of postdocs who will end up actually getting a job in the industry one way or another. So, I think [support / training in careers outside academia] will be very good to see."

Non-independent postdoctoral researcher

Funding is also felt to be lacking; both in terms of actual monetary support, and also advice on securing funds. ECRs would particularly like to see more support in regards to:

- **Monetary support:** many ECRs would like more opportunities with small grants that can be used for short term / small scale projects on which ECRs can act as PI. A smaller number suggested providing small grants / financial support for travel, attending conferences etc.

- **Help with securing funds:** advice on how to write winning funding proposals / grant applications would be beneficial; though many discuss institutional barriers to applying for funding in the first place (discussed in more detail in the available funding opportunities section). ECRs struggle to be recognised as quality researchers without having a successful track record of grants, and hence would like the opportunity to apply for (small) grants as a PI or even co-I. In terms of awarding funding, ECRs would like to see more trust, i.e. not only funding those who have already been funded

"Support in getting funding to become an independent researcher [would be good to provide] ... You need to have a permanent position to be able to apply for funding but you need funding to obtain a permanent position: catch 22."

Non-independent postdoctoral researcher

Many other gaps in support were mentioned albeit less frequently; these included but were not limited to: research management training, support with publishing, time management training, mentoring, ECR-specific training, stress management, training on supervising PhD / MSc students, teaching training and support for women in science.
Challenges facing ECRs

In order to better support for ECRs, it is important for NERC to understand what are the key challenges that ECRs face due to the nature of their employment. Information regarding this was collected via a series of questions in the online survey; both quantitative and qualitative, and also discussed during the follow-up telephone interviews. The overall objective was to understand what are the most frequently cited challenges in order to determine support needs and potential solutions.

All ECRs were presented with a list of potential challenges, and were asked to select all those that they personally face / have personally faced during their time as an ECR (figure 15). The vast majority of ECRs selected 'career feels unstable' (92%) and 'difficulty securing a long-term post in academia' (90%). Over four fifths selected 'limited to short term contracts' (87%) and 'limited funding available' (84%).

Females were significantly more likely to select 'discrimination', 'lack of adequate mentoring', 'lack of adequate support' and 'difficulty exerting or growing independence', compared to males. Those mainly funded by NERC were less likely to select 'limited funding' or 'career feels unstable', compared to those mainly funded by other means.

To follow up on the quantitative question (figure 15), all ECRs were asked to describe the biggest challenges they face as an ECR via an open-ended 'free-text' question.
Career insecurity is universally recognised as a key challenge for ECRs; the short-term nature of employment means ECRs are continuously looking for ‘the next thing’, ultimately impacting on their work (many feel they have to abandon their current research early in order to look for and apply for other jobs) and personal life (many cite difficulties in having a stable home, starting a family, keeping long-term relationships etc.).

“The lack of job security, which prevents any serious life planning (especially with a partner not in academia), because of short term contracts and the associated lack of full-time posts.”

NERC research fellow

The expectation to frequently move institutions in order to be considered for new funding was also spontaneously cited on many occasions. ECRs feel they would be at a disadvantage if they did not move institutions for each new contract, and therefore feel they are having to making sacrifices in their personal life in order to develop their career. A lack of job security combined with a frequent need to move around affects ECRs ability to plan for the future, both financially and in terms of starting / maintaining a family, and hence has the potential to cause stress and impact on wellbeing.

“It is expected of ECRs that we will move around and not a lot of allowance is made for family commitments and being in a dual career relationship.”

Non-independent Postdoctoral researcher

The vast majority of ECRs aspire to remain in academia; however, many state a lack of permanent positions, and limited support in regards to gaining a permanent post, as a big challenge.

Challenges in regards to career instability, short-term contracts and mobility are likely to contribute to the large drop off of female researchers between ECR to PI level. E.g. during the telephone interviews, a greater difficulty for females to start / maintain a family vs male ECRs was discussed in the qualitative interviews (particularly with regards to taking maternity leave and re-joining research after time off). Feedback from the telephone interviews reinforced some of these points; some female ECRs discussed the fact that they had often observed gender inequality in their institutions and presumed that they were less likely to win grants solely due to their gender.

Another key challenge for ECRs is the long-hours culture (often alongside low pay); many state that a heavy workload causes significant stress and can mean they have limited time to attend training that would be beneficial to them.
**Case Study 4: 'James' (ECR)**

**Job title:**  
NERC independent Research Fellow

**Department:**  
Zoology

**Topic:**  
Evolution/Behaviour/Genetics

---

### Career Aspirations

- Didn’t have any long-term objectives when first taking on a PhD
- Aspirations now: to establish a research group (working towards this now) to ultimately gain a permanent position once the fellowship ends
- Long-term goal = to keep doing science!

---

### Career Instability

"There just aren’t enough opportunities for the amount of people who want to stay in research."

### Careers Outside Academia

"...if you don’t want to stay in academia, then working out what your other options are."

### Expectation to Move Around

"I think [the expectation to move around] is a big problem... in a lot of applications you see for fellowships, or for permanent positions, it seems to be frowned upon if you stay in one place for too long."

---

### Feedback on Training & Support

**Overall:**  
- Fellowship is a very good scheme, and wider support from NERC for fellows is good
- University also has a lot of training schemes which fill in any gaps not addressed by NERC

**Gaps?:**  
- Feels reasonably well supported by NERC and university

---

### Suggestions for NERC

- Think about support for ECRs, especially after Brexit (invest in more fellowships vs standard research grants)
- Better support for careers outside academia e.g. encourage placement in industry during PhD

"The BBSRC has a requirement for their DTP that their graduate students have to do a year in industry... I think that would be helpful"

---

### Key Challenges

"The position I have now, it’s to establish a research group, so that’s what I’ve been trying to do... the idea is that, at the end of this fellowship, I should be a fairly established head of the lab, and then I can use what I’ve done to get a permanent position."

---

**Careers Outside Academia?**

Have always considered this/ have applied for a number of positions.

"I’ve never not considered doing other things. The main problem is not knowing what those other things might be, and whether or not you would enjoy them any more than what you’re doing now."

---

Respondent details have been anonymised.
The **process of applying for and gaining funding / grants** is also often cited as a key challenge. Firstly, a perceived lack of funding overall means high competition with limited chance of success (particularly when combined with demand management). Secondly, a heavy workload can leave ECRs with very limited time to apply for grants in the first place; this can be especially difficult if an ECRs line manager / PI is unsupportive and would prefer their time to be spent completing research. Thirdly, when ECRs are involved in grant applications on many occasions there is no acknowledgement of their involvement, causing ECRs to feel undervalued and demotivated (as discussed in the following section).
Available funding opportunities

In the online survey, all ECRs were asked whether they believed there are any institutional barriers to postdoctoral researchers applying for funding (figure 16); **56%** believe there are. Slightly more independent researchers believe there are barriers (**63%**) compared to NERC research fellows (**56%**) and non-independent researchers (**52%**)

<table>
<thead>
<tr>
<th>Figure 16.</th>
<th>Key challenges faced by ECRs (base: all ECRs, n=329)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Are there any institutional barriers to postdoctoral researchers applying for funding?</strong></td>
<td></td>
</tr>
<tr>
<td>% of respondents</td>
<td>NERC fellow</td>
</tr>
<tr>
<td>Yes</td>
<td>56%</td>
</tr>
<tr>
<td>No</td>
<td>28%</td>
</tr>
<tr>
<td>Don’t know</td>
<td>17%</td>
</tr>
</tbody>
</table>

All ECRs who believe there are institutional barriers (**56%**) were then asked to specify all barriers via an open ‘free-text’ question. The most frequently cited barrier was the **inability to act as PIs on grants**; those applying as PIs need to be a permanent member of staff and/or can’t act as PIs on grants that would extend beyond current length of employment.

Consequently, many ECRs assist with grants but are not acknowledged or credited for co-writing (often due to ECRs being seen as too junior or not experienced enough, and therefore there is a perceived risk that the grant would be unsuccessful if they were to be credited). Many ECRs therefore feel they are in a ‘catch 22’ situation; a proven track record of successful funding is required in order to be successful, however it is very difficult to build a proven track record when there is no acknowledgement of input with grants. A lack of acknowledgement is considered a hinderance on career progression; lots of work and time for minimal output.
Other institutional barriers included a **limit on the number of applications allowed per institute** (ECRs are less likely to be given approval when competing against more senior members), **demand management** (making it even more difficult to apply / causes a slump in applications), **no support for encouragement to apply for funding** (several ECRs feel they are not encouraged to get involved; their PIs / supervisors would rather they focus on research), and a **lack of time / heavy workload** (ECR time is already tight supporting research activities).
Improving ECR support

All ECRs were asked what they believe NERC most urgently need to do in order to better their support of ECRs; 3 key areas were highlighted:

- **Change funding / grant structure:** ECRs would like to see more opportunities to apply for funding i.e. smaller grants that are targeted at ECRs specifically and the ability to act as PI on grants (or at least be acknowledged for input). Most would like the grant and funding application process to be more transparent.

- **Improve working conditions:** i.e. provide long-term contracts and more permanent positions. Put more pressure on universities to support ECR training and networking. Increase salaries and improve respect and recognition of ECRs.

- **Create a networking / support system:** some ECRs suggested setting up networking opportunities with other ECRs and collaboration between working groups. Others suggested providing a NERC induction during first year, or personal mentoring programmes. Overall, ECRs desire clear guidance in regards to career paths (including alternative pathways), and an increased awareness of types of support currently available.

There is recognition that the desired improvements discussed are beyond the scope of NERC alone; involvement from the science community as a whole and the UK government would be required.

"I think the improvements are beyond the scope of NERC individually, and need to be tackled by the UK research community, UK government and international science community as a whole." – NERC fellow
The Employer Perspective

In addition to the ECR perspective, another objective of the evaluation was to canvas feedback from a broad range of employers and stakeholders in NERC research regarding their needs and demands relevant to ECRs.

In promoting the online survey, we were in contact with a range of organisations who employ ECRs, and therefore used the opportunity to ask them for their views via the online survey; a slightly different questionnaire was developed for employers focusing on skills needs relevant to postdoctoral candidates with an environmental science background.

In total 69 employers completed the survey; mostly working in UK universities

Most valuable skills

In the online survey, ECR employers were supplied with a list of non-technical skills and asked to select all that are valuable for an ECR to possess. From the same list, they were also asked to select one non-technical skill they consider most valuable. Figure 17 (overleaf) shows the percentage of ECR employers selecting each non-technical skill as valuable (left), and the percentage selecting each skill as most valuable (right).

About half (52%) of ECR employers consider publishing to be the most valuable skill to possess; the ability to conduct high-quality work and convert this into publications is considered important. A researcher’s publishing record is what they are assessed on, and is important for their own career progression.

"The ability to write clear papers and publish is vital to develop a publication record necessary to secure a permanent position."

ECR manager
A fifth (20%) of ECR employers consider research management the most valuable non-technical skill to have; it is a skill necessary in order to effectively manage projects from start to finish.

Management of the research and being able to prioritise and problem solve so that the studies are concluded on time and in budget are vital skills.”

ECR employer

**Lacking skills**

ECR managers were asked in the online survey if there are any technical or non-technical skills or qualities that ECRs recruited by their department / section lack. Two thirds (67%) answered yes (25% answered ‘yes, often’ and 42% answered ‘yes, occasionally’). Those who answered yes were asked to specify lacking skills; figure 18 (overleaf) shows skills most frequently mentioned, which include technical skills such as programming and statistical analysis, but also non-technical skills such as research management, time management, publishing, grant writing, good writing skills and self-confidence. It is important to note however, that these skills most often mentioned are not reflective of all ECRs and merely depict skills which can be lacking in certain individuals / situations.
Lacking skills: priority areas

In order to determine which skills are most important to prioritise in regards to support / training, we considered skills considered valuable for ECRs to possess, skills most frequently cited by ECR employers as skills ECRs lack, as well as support / training opportunities ECRs consider to be most important for an institution to provide.

Research management and Publishing are considered the most valuable skills for ECRs to possess by the majority (52% and 20% respectively – figure 17), and for those who state there are often or occasionally skills that ECRs lack (n=46, 67%), both research management and publishing are discussed. Both of these skills are also ranked in the top 5 most important support / training opportunities by ECRs (44% and 42% respectively – figure 19 overleaf).

ECR employers who believe there are often or occasionally skills that ECRs lack often discuss grant writing as a lacking skill; and is also considered the most important support / training opportunity by the majority of ECRs (39% ranking first, 60% ranking in top 5 – figure 19 overleaf).
Desired support

All ECR employers were asked what kind of support they would like to see /receive from NERC in regards to ECR training / support, via an open ‘free-text’ question in the online survey. Feedback can be summaries into 4 key themes:

- **Centrally provided and funded skills training on specific skills** required of ECRs, e.g. statistics / modelling, computer programming, writing and publishing papers, presenting at conferences and public engagement (considered skills that are lacking for some)

  "Bespoke process-based modelling courses, including uncertainty/sensitivity analysis, large data management, python coding etc."

- **Funding for fellowships and research** (particularly early career fellowships); employers mirror ECRs concerns in regards to short-term contracts and would like to see more long-term grants in order to help develop good research (ECRs often state that due to the short-term nature of their employment, much of their time is spent searching for ‘the next thing’ which can impact their work)
"Grants need to be longer in duration so that ECRs have stability and can build off their momentum. Typically, a postdoc position is 2 years when in fact people are usually a postdoc for longer. The typical NERC grant is 3 years which doesn't provide much breathing room for ideas to develop."

- **Support / training on obtaining research grants**: considered the most important support / training for the majority of ECRs, and also often cited by employers who state ECRs often or occasionally lack required skills

  "Grant writing - how to write a successful grant application based on the grants that you offer."

- **Better articulation / support on different career paths**: it is universally recognised by employers and ECRs that the majority of ECRs will not end up with a permanent career in academia. It is therefore important that support and guidance is offered in terms of alternative pathways / careers outside of academia from PhD stage onwards.

  "A commitment to developing careers beyond ECR level. It is unfair to focus resources into developing ECRs in research, if we honesty identify there is no future for them beyond the ECR opportunity.

  We could end up training a generation of good scientists for whom there is no career-track. Worse, we could end up having to make mid-career researchers redundant, in order to fund new ECRs, for whom there will be no long-term future in research."
**Relationship with ECRs**

It is difficult for the University to support ECRs and show appreciation for their work as the University is not able to offer ECRs permanent jobs, or even bridge funding between contracts.

**Feedback on available support**

"I think you need to separate out training which is generic, and then training that is linked to their research objectives: the two are very different and expectations have to be different on those two things."

- Skills linked to research objectives often learnt on the job.
- Generic training: quality can vary depending on who provides it.

**Careers outside academia**

**Need a change in culture and a change in conversation:**

"The reason we get given money by the government isn’t to create more academics, it’s to create more well-trained people who go off and work for UK Plc...Leaving academia or PhD is seen as being somewhat of a failure rather than a success. I think there needs to be more upfront conversations with people."

PhD students and ECRs need clear view of career options available, inside and outside academia, and the difficulty is that neither the Research Councils nor the Universities care all that much about providing this.

ECRs need to recognise how useful the skills are that they are developing and how these can be applied to roles outside academia.

**Current non-academic avenues:**

Big data analytics: "Nearly everybody who’s finished with me has gone and done big data analytics in some form. The world is crying out for people who can do this kind of stuff."

"I think there’s probably an issue with people feeling that they’re not being supported by the university, but I think it’s very hard for people to tell us what that more is, and what that means."

Respondent details have been anonymised.