Pathways to Excellence in Public Engagement
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At the time of writing, the ‘impact agenda’ has been part of the UK’s research landscape for a little over eight years. For researchers applying to STFC for funding, however, the requirement to include planning for impact within grant applications was a more recent development: STFC staged the introduction of Pathways to Impact due to the range and complexity of the awards it offers. Public engagement is one of the most significant Pathways to Impact for many STFC-funded researchers; hence, it forms the focus of this report.

Whether you are an STFC-funded researcher or not, the requirements to plan for, assess, monitor and report impact are still relatively new aspects of what is in many other respects a well-established system for supporting research through public funds. This review, Pathways to Excellence in Public Engagement, provides a timely opportunity to explore the impact of this impact agenda.

Inevitably, the introduction of a new requirement within the publicly-funded research system has attracted the attention of academic researchers, policy makers and professionals. These actors have sought to understand the revised research system and implement changes to support researchers as they make sense of the new requirements.

For six of the years that impact has been in place, I have worked in an academic leadership role with researchers and professionals at the Open University, UK. Through culture change programmes and other forms of support, we have sought to develop and implement strategies and practices that improve how researchers plan for, derive and report evidence of the social and economic impacts of research. We have both explored the implementation of the impact agenda and attempted to shape it by combining evidence and analysis with action and reflection.1 Similar work has been undertaken by many other universities across the UK: Pathways to Excellence in Public Engagement contributes to this larger body of work.

It is important to highlight the context within which this review has been conducted. We have explored a ‘live’ system; researchers were applying for, assessing, managing and reporting the impacts of STFC research during the course of this review. “Never bite the hand that feeds you” is an idiom with more than a ring of truth if we consider it in the context of the UK’s extremely competitive landscape for public funding. It takes courage to speak out openly about challenges and imperfections. I am therefore extremely grateful to the STFC researchers and staff who have offered their invaluable insights.

1 For example, see: An Open Research University ([http://oro.open.ac.uk/44255](http://oro.open.ac.uk/44255)); and Engaging Opportunities ([http://oro.open.ac.uk/53026](http://oro.open.ac.uk/53026)).
This review was a team effort. The STFC public engagement team convened a working group to explore these issues and invited me to act as the Chair to work alongside Katherine Leech (University of York), Dr June McCombie (University of Nottingham), and Dr Neville Hollingworth (STFC). As a sub-group of the wider STFC Advisory Panel for Public Engagement, we were joined by Ian Fuller (STFC) and Dr Ruth Townsley (an independent consultant). Biographies of the members of the Working Group are provided at the end of this report.

Finally, I applaud the STFC public engagement team for commissioning the *Pathways to Excellence* review, and this report. Dr Derek Gillespie (STFC) and team demonstrated a willingness to highlight current strengths and weaknesses of Pathways to Impact and made a commitment to publish this work.

This report is another step along the pathway to delivering excellence in public engagement with STFC research. In the coming months and years, STFC (as part of UKRI) is likely to require the support of researchers and impact experts as they seek to implement change. If we continue to embrace the best principles of engagement, together we can deliver a publicly-funded system where excellence is at the heart of all aspects of research.

Professor Richard Holliman  
*The Open University*  
August 2018
Foreword from STFC

Since the publication of STFC’s 2016-2021 strategy for public engagement, the STFC engagement team has undertaken a series of reviews and collaborative projects to help us better understand and refine the systems that we use to create, support, and evaluate the very best public engagement in the STFC community. Our Attitudes, Culture and Ethos review uncovered the community’s perceptions of the challenges and opportunities they faced in the course of balancing engagement activities alongside their scientific and engineering careers. Our review of STFC’s engagement grant schemes created new mechanisms to deliver a range of funding for truly excellent engagement practitioners, projects, and networks. Our Evaluation Framework makes clear our approach to understanding and learning from public engagement.

Pathways to Excellence in Public Engagement continues this work by shining a light on an important aspect of STFC’s support for public engagement. We have always seen our ‘twin-track’ approach to engagement funding to be highly advantageous for the community – a researcher can support engagement activities from two sources: our dedicated engagement grants, and the Pathways to Impact system on STFC grants. However, we have long been aware of anecdotal comments from researchers and HEI staff that indicated difficulties encountered with Pathways to Impact.

In late 2017, we decided to investigate this issue in depth. Bearing in mind the maxim that the plural of anecdote is not data, we set out to systematically gather quantitative and qualitative evidence from the STFC research community and the outputs of their research programmes as reported to STFC. The report you are now reading is the result of an analysis of that material by a dedicated working group, each member of which I would like to thank wholeheartedly for their commitment to this work.

What Pathways to Excellence has shown us is that the system of Pathways to Impact Planning in its current form is struggling to consistently deliver rigorous, well-resourced programmes of impact-generating activity, including public engagement. The pressures on the research funding system, and insufficient available budgets to support all the excellent research proposals funders receive, means that impact-generating activities can all-too-easily be ‘crowded out’. This is not the first time that system-wide reviews have highlighted such a danger – we note a similar conclusion from the 2016 NCCPE report on the RCUK Catalysts for Engaging the Public with Research – but it is the first time that STFC has had such a detailed evidence base available.

And yet, ‘impact from research’ is a concept that remains prominent in the UK research landscape, and will not disappear any time soon: the prominence of impact in the 2021 Research Excellence Framework should ensure that HEIs view impact-generating activities as being of high value. Pathways to Excellence is our
starting point to make our system work well. The action plan that accompanies this review commits us to working towards a system in which the research community and funders work in open dialogue to build a peer review system that recognises and supports high-quality impact-generating activities that are led and delivered by teams of skilled practitioners. The advent of UKRI presents us with a perfect opportunity to develop and share the best ideas across the organisation, and to better align our research funding and research assessment systems.

This will be a steady and collaborative process rather than anything we will change in the short-term, but it is a challenge that we are committed to, and we trust that we will have the support of the STFC community to achieve the same goal.

Dr Derek Gillespie

STFC Head of Skills & Engagement

August 2018
Executive summary

The requirement to plan for, assess, monitor and report social and/or economic impacts derived from research was introduced by Research Councils over a number of years, starting in 2009. This report seeks to explore how the STFC community has responded to the introduction of impact as a core requirement for those seeking support for research through public funds. Public engagement is one of the most significant Pathways to Impact for many STFC-funded researchers; hence, it is the focus of this report.

The work detailed in this report contributes to a wider programme led by STFC’s public engagement team to better understand and refine the systems used to create, support and evaluate excellence in public engagement. It builds on issues highlighted by the RCUK Catalysts for Engaging the Public with Research, and the 2016 STFC Public Engagement: Attitudes, Culture and Ethos report. Together, these previous pieces of work indicated difficulties encountered with Pathways to Impact in relation to the peer review system, incorporating pre-award planning and assessment, and post-award monitoring and reporting.

The scope of this review was defined according to these stages of the peer review system – planning, assessment, monitoring, and reporting. We collected and analysed quantitative and qualitative evidence from the STFC community and the outputs of their research programmes as reported to STFC. In this report we draw on evidence from: a review of planning documents, alongside impact data submitted to Researchfish; and analysis of the views of the STFC community with respect to the planning, assessment, monitoring and reporting of Pathways to Impact Planning.

Key findings

We have found that the current system of Pathways to Impact Planning is struggling to consistently deliver rigorous, well-resourced programmes of impact-generating activity, including public engagement.

In relation to planning, we identified confusion within the STFC research community about: the distinction between academic and non-academic impact; how to deliver high-quality, upstream Pathways to Impact Planning; whether high-quality Pathways to Impact Planning is an essential requirement for funding; and from which schemes it is appropriate to seek funding. Further, we found that the tailoring and prioritisation of Pathways to Impact Planning is often linked with issues of under-resourcing. In effect, high-quality, upstream Pathways to Impact Planning is less likely to be prioritised when it is not valued in monetary terms.

In relation to the monitoring of Pathways to Impact Planning, we have identified that planning and assessment of Pathways to Impact is failing to routinely deliver excellence in the ways impact-generating activities are delivered and evidenced. Established ‘transmission’ practices are the norm for the vast majority of STFC researchers to the detriment of cooperative and collaborative forms of engagement. There is little evidence of active management of Pathways to Impact Planning in terms of progress or performance.

The measuring and reporting of Pathways to Impact outcomes is a work in progress. Whilst we found that greater numbers of activities are being recorded, there is still some way to go to ensure that the impact of these activities is rigorously measured and reported consistently.

A pathway to excellence in public engagement

The findings documented in this review show that, to some degree, all aspects of Pathways to Impact Planning...
– planning, assessment, monitoring and reporting – could be improved. Comprehensive, upstream, tailored planning should become an essential requirement for Pathways to Impact. Clear and consistent advice and guidance for researchers will be required to improve the planning phase. This needs to be matched by a rigorous, consistent and transparent process of assessment and feedback. Panels require routine access to relevant expertise to make high-quality assessments and offer constructive feedback.

Given the challenges identified in this report it is important to note that each of the issues can be resolved. To this end, nine recommendations have been identified for STFC to consider. Further, an initial action plan has been drafted, discussed and refined following deliberations with STFC grant managers and the Advisory Panel for Public Engagement.

If the planning and assessment phases of the peer review system can be improved, researchers will gain confidence that their Pathways to Impact Planning should be better than acceptable; rather that it should have a realistic prospect of generating high-quality evidence of social and economic impact.

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**A Note on Terminology**

The reader will be, or will become, aware that there are a variety of different documents for impact planning commonly required by Research Councils as part of grant applications. In this report, we have adopted the following terminology:

- **Pathways to Impact (PtoI) Planning**: this includes all aspects of the planning for impact within a grant application, i.e. the Impact Summary, the two-path Pathways to Impact Document, and other relevant aspects of the full application (e.g. the Justification of Resources, the work plan).

- **The Impact Summary**: A section of the Je-S form that provides up to 4,000 characters for applicants to address the following two questions: Who (outside the academic community e.g. public, schools, teachers and students, industry, government, etc.) will benefit from this research? How will those outside the academic community be changed, affected and/or benefit from this research? The Impact Summaries of successful applications are made available to the public online.

- **The Pathways to Impact (PtoI) document**: A document submitted alongside the Case for Support of a grant application, this document (which can be up to two pages in length) details an applicant’s views on the desired impacts of the research. The Pathways to Impact document provides the applicant with the opportunity to detail the steps they will take to increase the likelihood of those potential impacts occurring, and should therefore include details of planning, management, delivery and appropriate evaluation of those activities.

While this review focuses upon public engagement as one form of ‘impact generating’ activity, the Pathways to Impact document can discuss plans for other methods of collaboration, knowledge exchange, communication, or networking outside of the academic sphere.
Pathways to Impact: a brief history

In 2009, Research Councils UK (RCUK) implemented the mandatory inclusion of ‘Pathways to Impact’ (PtoI) Planning as a component part of grant applications. The aim of this was to ensure that considerations of ‘impact’ were treated as an essential component of a research proposal, and a meaningful consideration of impact would be a condition of funding. Pathways to Impact Planning was envisaged as an applicant’s opportunity to consider the various routes by which impact might arise from their proposed research, and to propose specific steps that the research team would undertake to increase the chance of those impacts becoming a reality.

Due to the complexity of its large-scale, long-term research programmes and grant review processes, STFC implemented PtoI Planning as a phased process between 2010 and 2013. Pathways to Impact Planning was reviewed internally by STFC staff, and comments and scores were provided to grant panels for inclusion in their assessment processes. In 2014, the RCUK Impact Group commissioned a review of PtoI Planning to establish how this requirement of the application process was embedded in the research process across all Research Councils and to establish how the process could be improved. The 2014 review sought to assess the extent to which PtoI Planning was aiding the Research Councils, and researchers: in “… actively demonstrating [that] the impact of research is essential to ensure continued investment in the research base.”

The review also offered a vision for Pathways to Impact Planning: “By working together with wider communities and other partners, RCUK want to ensure that activities are pursued during the research cycle that will increase the likelihood of the research having the intended societal and economic impact in order to add value in the UK and stimulate interest from wider stakeholders, including the general public.” The review resulted in a series of recommendations and an action plan. In 2015, STFC altered the assessment process to harmonise more fully with other Research Council assessment processes, such that PtoI Planning was assessed by grant panels alongside all other requirements of the application process.

Impact and the Research Excellence Framework

In 2014, the Research Excellence Framework (REF) included an assessment of impact for the first time.\(^2\) Given REF’s importance to UK higher education institutions in determining Quality Related (QR) funding decisions, the inclusion of impact as an assessment criterion was a clear indication of the importance assigned to impact by UK public funders of research. The weighting given to impact as a part of the overall assessment is expected to increase in REF 2021.

REF is referenced at several points throughout this report. Two key points may help the reader to provide context to these references:

i. **The definition of ‘impact’ used in the REF is subtly different from that used by the Research Councils within Pathways to Impact.** While the two definitions are clearly related to one another, the difference does cause confusion for some researchers and HEI staff. Research England, which manages REF, and the Research Councils have committed to work together to more closely align impact definitions.\(^3\)

ii. **REF impact case studies, by their nature, are retrospective:** they ask HEI staff to assess the impacts that have arisen from research that was initiated or completed during a specified period of time before the REF exercise in question. Pathways to Impact are prospective: they require applicants to identify and plan for potential impacts that may arise from a proposed research or training programme. Evidence indicates that the different foci of REF and Pathways to Impact appear to not always be clear in the minds of all HEI staff.

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2 For an overview of impact in REF 2014, see ‘The nature, scale and beneficiaries of research impact’, King’s College and Digital Science, HEFCE 2015. Online: [http://www.hefce.ac.uk/media/HEFCE2014/Content/Pubs/Independentresearch/2015/Analysis.of.REF.impact/Analysis_of_REF_impact.pdf](http://www.hefce.ac.uk/media/HEFCE2014/Content/Pubs/Independentresearch/2015/Analysis.of.REF.impact/Analysis_of_REF_impact.pdf)

Background and objectives

The STFC Research and Training Portfolio

Annually, STFC invests more than £100 million in frontier research in astronomy, particle and nuclear physics, supporting a community of more than 1000 academics in over 80 universities across the UK. This support also includes funding ongoing technology development necessary to support our experiments and facility upgrades as well as postgraduate training, including fellowships and PhD studentships. Researchfish data tell us that, every year, our community reaches around 600,000 members of the UK public via engagement activities attributed to STFC research and training grants.

Public engagement is commonly cited as an ‘impact-generating’ activity during discussions of PtoI Planning. STFC has been a major supporter of science, technology, engineering and mathematics (STEM) engagement for over a decade, with a dedicated programme of public engagement delivered by STFC staff, STFC-supported researchers, and wider partners in industry, charities, museums, science centres, and community groups across the UK. The 2016 STFC Public Engagement: Attitudes, Culture and Ethos report (PEACE) investigated the perspectives of the STFC research community towards planning, delivering, and evaluating public engagement.4

The PEACE report noted that the inclusion of public engagement within PtoI Planning was variable, and highlighted the perception that it isn’t always acknowledged or valued in the peer review process.

Many of the contributors to the PEACE report evidence base commented on the nature of peer review attitudes, and how this could be improved to better support public engagement. These findings chimed with equivalent work completed through the RCUK Public Engagement with Research (PER) Catalysts, which highlighted three issues:

- Lack of clarity about what can be funded through PtoI [Planning] – and how far public engagement can be resourced through this route;
- Concerns about inconsistency in the review process and lack of clear guidance;
- Once research projects are underway, concerns that not enough attention is paid to the PtoI Planning by researchers or funders, and that Researchfish is not best suited to the types of response people wanted to make.5

A detailed investigation of public engagement in PtoI Planning and STFC’s peer review processes was not within the scope of PEACE or the RCUK-funded PER Catalysts, but the finding of these related pieces of work indicated that such a review could have a range of benefits to STFC and the wider research community.

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5 Culture change – embedding a culture of public engagement: Learning from the Catalysts for Engaging the Public with Research. Online: https://www.publicengagement.ac.uk/sites/default/files/publication/nccpe_catalyst_report_may_2016.pdf
This work, since named *Pathways to Excellence in Public Engagement*, set out to gain a more detailed, evidence-based picture of how public engagement is supported across STFC’s research and innovation grant portfolios. The scope of the review was defined according to different stages of the peer review system – planning, assessment, monitoring, and reporting. The objectives of the *Pathways to Excellence review* relate to the different stages of the peer review system:

**Planning**
- To explore the STFC guidance that supports the preparation of PtoI Planning submitted as part of grant applications to STFC.
- To explore STFC researchers’ experiences of preparing PtoI Planning submitted as part of grant applications to STFC.

**Assessment**
- To explore how PtoI Planning is reviewed within STFC grant applications.
- To explore how PtoI Planning is assessed by grant panels within the context of completed applications.

**Monitoring**
- To explore grant holders’ experiences of implementing and monitoring the progress of PtoI Planning submitted as part of grant applications to STFC.
- To review the support and guidance available from STFC about the implementation and monitoring of PtoI Planning.

**Reporting**
- To investigate whether the original plans submitted by STFC researchers during the assessment phase for grant applications matched what was recorded by grant holders during and after the award of funding.
- To explore how successful applicants go about evidencing the reach and significance of their public engagement activities.
- To investigate the use and knowledge of Researchfish® as a means for reporting impact amongst the STFC community.

This review sought feedback from relevant stakeholders (STFC researchers, panel members and grant managers) regarding the current ‘state of play’ in the STFC peer review system, and provided an opportunity for participants to volunteer their perspectives on how the system could be improved for the better.

The *Pathways to Excellence in Public Engagement* review aims to inform how STFC can improve the rigour and transparency of the assessment of PtoI Planning within the STFC’s peer review processes. The review will help inform the STFC public engagement programme on more effective ways to work with STFC grant applicants and peer review panel members in order to identify and support good quality PtoI Planning.

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6 Following the award of STFC funding, grant holders are required to report on completed activities using the online data reporting tool, Researchfish: https://www.researchfish.net
Methodology

Pathways to Excellence in Public Engagement consisted of two linked pieces of research: a review of the two-page PtoI documents, alongside impact data submitted to Researchfish; and analysis of the views of the STFC community with respect to the planning, assessment, monitoring and reporting of PtoI Planning.

We selected a mix of methods to overlap and complement each other. Ultimately the aim of this methodological approach was to generate greater validity for the overall review, and a greater measure of reliability if the results using the different methods on the same sample produced similar results.7

The research was commissioned and monitored by the project working group and interviews and data collection were undertaken in tandem between late Autumn 2017 and Summer 2018.8 The Review Chair and STFC staff held regular meetings with the researchers throughout this period to monitor progress and, as required, update forward planning.

(a) Reviewing Applications and Researchfish Submissions

This aspect of the research sought to establish links between the PtoI documents submitted with grant applications, and the Researchfish submissions from across a range of research grants, fellowships, and innovation awards that were supported by STFC. We wanted to explore whether the original plans submitted by applicants corresponded to what was later recorded by grant holders during and after project completion.

With the exception of the dedicated public engagement grant schemes and various studentship awards, our investigation covered all the disciplines and/or award schemes that STFC supports.9 Awards were selected at random from a three-year window (2013-2016)10 for each of the disciplines and/or award areas. We analysed successful and unsuccessful applications. In total, 37 applications were analysed.

To explore whether the sample was representative, a more in-depth analysis was carried out. We explored every application to the Astronomy Consolidated Grants and Ernest Rutherford Fellowships submitted between 2013 and 2016 (a total of 126 applications, successful and unsuccessful). We found similar patterns of planning and reporting in this more in-depth sample. The results from this work suggest that the initial sample size (n=37) was sufficiently representative of PtoI Planning across each grant round.

Consistency in the inspection of PtoI documents submitted with grant applications was maintained by having a single, experienced reviewer carrying out this task across the whole STFC programme.

8 The key evidence presented in this report is informed by more detailed and comprehensive analysis. This was conducted by Dr. Ruth Townsley, an independent consultant. The Researchfish data were collected analysed by Ian Fuller (STFC). The assessment of previous PtoI Planning was conducted by Dr. Neville Hollingworth (STFC).
9 This includes: Astronomy; Nuclear physics; Particle physics (experiment); Particle physics (theory); Ernest Rutherford Fellowships; Projects Peer Review Panel (PPRP); Challenge Led Applied System Programme (CLASP); Industrial Partnership Scheme (IPS); mini IPS and Follow-on Fund.
10 Researchfish data capture continues for five years after the award has concluded. Where data fell within the sampling period, it was included in the analysis.
(b) Assessing the views of the STFC community

A qualitative study was undertaken to complement the review of the applications and Researchfish data. Through this aspect of the review, the project working group explored the attitudes and experiences of the STFC community with regards to the use of PtoI Planning to support public engagement as a pathway to generating research impact.

The qualitative research involved 24 telephone interviews and four focus groups with a total of 36 grant holders and grant panel members, and 12 STFC-employed grant managers and administrators. The details of the data collection are outlined in more detail below.

Telephone interviews
Telephone interviews were conducted with 13 grant holders (Principal Investigators [PIs] and Co-Investigators [Co-Is]) and 11 grant panel members, panel chairs or deputy chairs (many of whom were also PIs or Co-Is).

Participants were selected and contacted by the STFC public engagement team. Interviews by the independent researcher lasted from 20 to 50 minutes and were audio-recorded (with permission) and transcribed for recall and data analysis purposes. Participants were offered the chance to check and amend their transcripts and several people made amendments or asked for redactions.

Focus groups
Four focus groups were undertaken with a total of 24 individuals. The first, with 12 STFC grant managers, lasted around 30 minutes during a scheduled meeting at STFC’s offices. With permission, the discussion was audio-recorded and transcribed.

The other three focus groups were undertaken concurrently, with three groups of public engagement grant holders (12 participants overall). These focus groups lasted 60 minutes and were scheduled as part of an annual symposium run by STFC at Polaris House in Swindon.

The interviews and focus groups used a set of questions designed and reviewed by the project working group. They focused on gathering data relating to individuals’ experiences of preparing, monitoring, assessing and supporting PtoI Planning, with a specific emphasis on public engagement.

The topic areas addressed with the subjects were:

- Developing and drafting the documentation necessary to fulfil the requirements of PtoI Planning;
- Assessing and reviewing PtoI Planning as part of grant applications;
- Implementing and monitoring the PtoI document: the experience of grant holders;
- Evaluating and reporting the outputs and outcomes of public engagement derived from PtoI Planning;
- Suggestions from those interviewed for changes to the current process for reviewing, assessing, monitoring and evaluating public engagement within PtoI Planning.

Key themes relating to the main question areas were drawn out from the data by Dr Townsley in her full report, which is available on the STFC website.11

Sample information
Participants included 28 men and 20 women. 29 participants worked for universities; 7 were non-academic or private sector-based; and 12 worked for STFC. Research participants represented the core disciplines12 covered by STFC grants programmes, as grant holders and/or panel members.

12 STFC’s “core” disciplines: particle physics, astronomy, particle astrophysics, solar and planetary science, nuclear physics, accelerator science, and programmes that seek to transfer the skills, techniques and technologies developed within the core areas into other areas or research and innovation.
Understanding approaches to Pathways to Impact by the STFC community

In this section, we present the key findings from our combined analyses. In so doing, we draw on quantitative and qualitative evidence collected through the underpinning research described in the methodology section. Our findings and recommendations are listed under the four key areas of Planning, Assessment, Monitoring, and Reporting.

**(a) Producing high-quality Pathways to Impact Planning**

High-quality planning is clearly a key element of any successful venture. We sought STFC researchers’ (applicants and panel members) views on this planning phase with a view to understand how they prepared this aspect of their application. Further, we were keen to gain insights from researchers about the types of guidance and support that they found helpful in preparing PtoI Planning.

The interview data show that STFC grant applicants and panel members who used the guidance from the STFC grants user handbook considered it to be generally poor. For example, they argued that there was lack of clarity about what can and should count as the academic, societal or economic impact of STFC-supported research.

> Making it clear to proposers what impact is. The RCUK three headings [academic, social and economic impact] are helpful - they seem to be saying that PtoI can be any one of those three impact areas - but my understanding was that academic impact was not generally thought by STFC to be acceptable as impact on its own. So, it would be good to have some clarity about this.
> Panel Member

Notably, this interviewee conflates academic impact with social and economic forms of impact. PtoI Planning relates only to non-academic (social and economic) forms of impact.

> ‘Academic’ impact versus ‘Social and Economic’ impact
>
> Whether or not ‘academic’ impact is suitable for inclusion in PtoI Planning is a common source of confusion for applicants. The source of this confusion is understandable: the definition of impact used by the Research Councils includes ‘academic impact’ (scholarly communication and dissemination, training of researchers etc.) alongside ‘social and economic’ impact.13

What is less clear to applicants is that academic impact is considered to arise, be planned for, and is financially supported by, the ‘core’ costs of a research grant. Pathways to Impact Planning, and the resources that should be associated with it, is intended to cover ‘social and economic’ impact. This is similar to the REF, where academic impacts are outside of the scope of impact case studies.

For the avoidance of any doubt: academic impact should not be considered within the Research Councils’ Pathways to Impact process.

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In addition, a small number of respondents highlighted what they perceived to be the inherent difficulties of planning for unintended, or unforeseeable, impacts of scientific research, particularly in the fields covered by STFC grant funding. This evidence underlines the different challenges that researchers face when developing plans for impact that is derived from Mode 1 (‘blue skies’) as opposed to Mode 2 (‘socially relevant’) forms of knowledge production.14

I think the only thing I would really like to see is an honest assessment of what people can actually do in a circumstance. I think, depending on what kind of science you do, depending on what kind of university environment you have, there’s different things that are possible… I doubt very much that playing the role of some political science advisor or so is really possible outside of the Westminster bubble. So, I see that in different places you can do different things. Up here, for me, it’s very clear: if you’re in a place like [this institution], you should go to the villages, and try to do something at a local level...I think it would be good to have an honest assessment, in this Pathway to Impact, of what is possible.

Panel Member/Principal Investigator

To address this issue, STFC could usefully provide specific guidance about how social and economic impacts could be derived from different types of research, e.g. Mode 1 (‘blue skies’) versus Mode 2 (‘socially relevant’).15

Comparing Mode 1 and Mode 2 Forms of Knowledge Production16

Scholars have long-discussed the ways that knowledge is produced and, crucially, whether and how the ways new knowledge is generated is changing. The distinction between Mode 1 and Mode 2 forms of knowledge production could offer a useful categorisation for applicants, reviewers and panels about the possibilities of PtoI Planning. The implication is that PtoI Planning has greater potential to be embedded within Mode 2 forms of knowledge production, though the authors of this report highlight that there are different forms of public engagement activities applicable to both modes.

<table>
<thead>
<tr>
<th>Mode 1 Knowledge Production</th>
<th>Mode 2 Knowledge Production</th>
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<tbody>
<tr>
<td>Discipline-based</td>
<td>Trans-Disciplinary</td>
</tr>
<tr>
<td>University-based Expertise</td>
<td>Expertise within and beyond universities</td>
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<tr>
<td>Curiosity-driven</td>
<td>Directed, Responsive, Accountable</td>
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<tr>
<td>‘Objective’</td>
<td>‘Reflexive’</td>
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<tr>
<td>Public Good</td>
<td>Intellectual Property, Social Innovation</td>
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<tr>
<td>Publicly funded</td>
<td>Diversification of Income Streams</td>
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<tr>
<td>Scholarly publication</td>
<td>Varied forms of Representation &amp; Sharing</td>
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Given the perceptions about a lack of clarity in the guidance, allied with the complexity of generating impact from different types of underpinning research (e.g. either Mode 1 or Mode 2), it is unsurprising that STFC researchers are also confused about how ‘quality’ in PtoI Planning is defined and understood.


15 This raises obvious questions about the assessment of PtoI Planning derived from Mode 1 (‘blue skies’) and Mode 2 (‘socially relevant’) forms of research; see the Assessment Section for further discussion.

The concerns raised by some of the interviewees about what can and should count as the academic, societal or economic impact of STFC-supported research, alongside questions of quality, need to be considered in the light of another related finding: online guidance from STFC/UKRI was seen as piecemeal and rarely recalled by respondents in any detail.

Drawing on relevant expertise in public engagement, knowledge exchange or impact is another important aspect of the planning process. We note, therefore, that these forms of expertise were not widely accessed when preparing plans, although the STFC community was aware that this was available to them.

In part, the fact that researchers rarely look for expert advice and STFC guidance may be partly down to perceptions about the required quality for PtoI Planning to be deemed ‘acceptable’.17 As the previous quote illustrated, for some researchers this is “…just about producing a plan that will ‘pass’.

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Work to coordinate and clarify the guidance for PtoI Planning should be undertaken with coordination from STFC. This work should involve the STFC community and relevant experts in the generation and evidencing of impact to encourage the development of solutions that are both workable, and promote best practice. To this end, interviewees suggested that current guidance on drafting and developing PtoI Planning documents could be improved by:

i. clearly defining what counts as impact;

ii. including more case studies of different types of societal and economic impact, including public engagement; and

iii. showcasing what quality in PtoI Planning and the component activities might look like.

To these initial suggestions, we add the need for any refreshed guidance to include the criteria under which PtoI Planning will be assessed (see the Assessment section for further discussion), alongside guidance for how PtoI Planning can be managed and monitored, and how impacts can be measured and reported.

17 RCUK conducted a review of PtoI Planning in 2014. Subsequently, the benchmark for PtoI Planning to be considered fundable was set as ‘acceptable’. The requirement for acceptability is outlined here: https://www.ukri.org/innovation/excellence-with-impact/pathways-to-impact
Several of the interviewees also noted that STFC offers public engagement funding through dedicated awards\(^\text{18}\). They argued that it wasn’t always clear about the distinction between PtoI planning within research grant applications and these other awards. As a result, STFC could usefully provide researchers with further guidance about the distinctions between these sources of funding.

Given the nature of these changes, any refined guidance, both for PtoI planning and for where to seek funding, needs to be communicated clearly and consistently to STFC researchers.

> [The] guidance could be better. I’ve got some sympathy about the need to be general, but it’s not at all specific to our community. [It] would be good to have suggestions about what they are asking for – examples or case-studies – to get a feel for the work they want to see undertaken.

*Panel Member/Principal Investigator*

In offering a perspective on the current guidance, the interviewees offered the following suggestions for what they felt makes a good quality PtoI plan (Table 1). These suggestions are helpful as a starting point for the development of a set of standardised criteria for assessing PtoI planning.

<table>
<thead>
<tr>
<th>Key criteria of a good quality PtoI document as suggested by members of the STFC research community</th>
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<tbody>
<tr>
<td>A range of PtoI work, which includes creative or innovative collaboration with partners that has benefits for both partners and researchers.</td>
</tr>
<tr>
<td>Clear objectives and methods for delivering specific, targeted PtoI activities.</td>
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<tr>
<td>Evidence of evaluation – quantifying the PtoI work and the difference it makes to participants.</td>
</tr>
<tr>
<td>Sets impact goals which are achievable and realistic.</td>
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<tr>
<td>Shows evidence of talking to impact specialists and/or showing how the HEI will support impact plans.</td>
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<tr>
<td>Relates to what you’ve done in the past.</td>
</tr>
<tr>
<td>Clearly states what PtoI work you have done in the past and what you plan to do in the future.</td>
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<tr>
<td>Demonstrates linkage between PtoI plans and REF criteria.</td>
</tr>
<tr>
<td>Is closely related to the research covered by the grant.</td>
</tr>
<tr>
<td>Involves depth of contact rather than lots of superficial engagement.</td>
</tr>
<tr>
<td>Contains evidence of leadership around Pathways to Impact.</td>
</tr>
<tr>
<td>Only includes non-academic impact i.e. not the education and training of PhD students.</td>
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</tbody>
</table>

Table 1: Respondents’ ideas about what makes a good quality PtoI document

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18 STFC Public Engagement Awards: [https://stfc.ukri.org/public-engagement/public-engagement-grants/pe-funding-opportunities](https://stfc.ukri.org/public-engagement/public-engagement-grants/pe-funding-opportunities)
Guidance in how to deliver high-quality PtoI Planning in the context of a range of potential funding opportunities is one element of a complex set of related processes, which includes: the identification of the types of impact that could be generated; which non-academic beneficiaries could/should be involved in PtoI Planning; when and how often during the research cycle impact activities could/should take place; which forms of engagement are appropriate and relevant; how these processes will be governed; what evidence of impact could be generated and when; how participants to these processes could be represented in any outputs, etc. Having identified these as challenges, our focus shifted to understanding previous planning practices.

Our analysis of PtoI documents offers insight into the types of activities that have been proposed by STFC researchers in the past. Analysis of these plans and subsequent Researchfish submissions from funded projects shows that public engagement, often referred to as ‘outreach’, was the most commonly cited route for potential impact (Figure 1; see also Table 2).

Further analysis of the PtoI documents shows that, in general, applicants describe their activities in brief. Some reference reach and significance; very few describe the anticipated outcomes, or a well-reasoned route from anticipated outcomes to wider potential impacts of these activities. Almost no plans refer back to any learning gained from the implementation of previous PtoI Planning (which is distinctly different from providing a track record), or to theoretical and conceptual underpinning from relevant published literature.

In general, the plans lack clear leadership roles; the opportunities that leading PtoI Planning could offer a PI or Co-I are often missed, therefore clear lines of responsibility for delivering the planning are also absent.

Data from the interview study reinforce these findings. Again, public engagement (or outreach) was the most commonly cited route for potential impact. Applicants described planned (or actual) activities that fell into four main categories (Table 2).

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19 The STFC Report, Public Engagement: Attitudes, Culture and Ethos, identified definitions as a key challenge where researchers use of language and practice are interlinked: https://stfc.ukri.org/files/corporate-publications/pe-attitudes-culture-ethos

20 Previously, it was not compulsory for STFC Ernest Rutherford Fellows to include PtoI Planning as a requirement for funding. PtoI Planning is also not required for innovation based awards. This is referenced as N/A in Figure 1.


Online: http://oro.open.ac.uk/44415
### Outreach
- Lectures, talks and demonstrations at science fairs, other public events and in schools.
- Press releases
- Contributions to TV and radio broadcasts
- Inclusion in popular publications

### Dialogues
- Social media, via a range of platforms.
- Cafés scientifique
- ‘Pub-science’

### Inquiry
- Bidding for/conducting research & activities with non-academic partners
- Supporting citizen science

### Creative
- Collaborations to produce creative artefacts, which included:
  - Musical/dance performances
  - Sculptures
  - Exhibitions
  - Films, web videos & documentaries
  - Children’s stories

#### Table 2: Forms of public engagement cited in respondents’ PtoI plans

<table>
<thead>
<tr>
<th>Outreach</th>
<th>Dialogues</th>
<th>Inquiry</th>
<th>Creative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lectures, talks and demonstrations at science fairs, other public events and in schools.</td>
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<td>Bidding for/conducting research &amp; activities with non-academic partners</td>
<td>Collaborations to produce creative artefacts, which included:</td>
</tr>
<tr>
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<td>Cafés scientifique</td>
<td>Supporting citizen science</td>
<td>• Musical/dance performances</td>
</tr>
<tr>
<td>Contributions to TV and radio broadcasts</td>
<td>‘Pub-science’</td>
<td></td>
<td>• Sculptures</td>
</tr>
<tr>
<td>Inclusion in popular publications</td>
<td>Workshops</td>
<td></td>
<td>• Exhibitions</td>
</tr>
</tbody>
</table>

These data highlight a significant challenge for the STFC community; engagement approaches beyond outreach require different skills, mind sets, planning, and time commitments. Previous research demonstrates that this requires more than a change in terminology; researchers need to consider: with whom they could (and should) engage; why; how; when (and how often); what measures could demonstrate that an activity has been successful; and how they could evidence different forms of impact.

We recognise that engagement activities supported by Pathways to Impact (which by their very nature are closely linked to proposed research programmes) may need to operate within more specific, project-specific, constraints than more general public engagement work. STFC researchers are often preparing and enacting PtoI Planning within the existing and sometimes well-established practices of complex research consortia. Further, these practices are often embedded within a disciplinary and institutional context, and an established calendar of events.

For our plans for public engagement impact, we have general annual events in the diary that we contribute to – festivals, teacher conferences, local society meetings, and so on. For our plans for KE and economic impact, we focussed on the links we had already with two companies. It would have been difficult to fit any new relationships in!

Panel Member/Principal Investigator

Given existing commitments and time/resource constraints, it is not that surprising that the default position is often to connect PtoI Planning with pre-existing commitments. This can lead to several related problems further downstream, however. For example, if PtoI Planning is determined by pre-existing departmental commitments, it is less likely to be tailored to the objectives of the proposed research and to the related needs of non-academic beneficiaries. As a result, when a plan comes to be operationalised the fundamental requirement to connect PtoI Planning with the proposed research, particular pathways and with ‘non-academic beneficiaries’ can be lost. In instances where impact (and public engagement work) is more generic, the advice from STFC should clearly state that it would be more appropriate for researchers to seek support for their public engagement from schemes other than Pathways to Impact.

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22 STFC’s PEACE Report includes the annex ‘Helping to define public engagement’. This annex (re-)introduces the ‘public engagement triangle’ model: transmit-receive-collaborate. Revised guidance for PtoI Planning could usefully highlight this model and the related need to go beyond transmission, encouraging greater dialogue and collaboration.


24 STFC offers funding for public engagement activities through a number of award schemes. Pre-existing public engagement programmes that can demonstrate sustained success are eligible to apply for funding through the Legacy Award Scheme: https://stfc.ukri.org/public-engagement/public-engagement-grants/pe-funding-opportunities.pe-legacy-awards
A lack of tailored planning was evident in the interview data. For example, there were very few examples of applicants working with external partners ‘upstream’ to co-develop PtoI Planning (experienced practitioners advocate that planning should take place ‘upstream’, and with a range of relevant stakeholders, to improve the potential that subsequent activities will generate meaningful engagement25). Rather, the development of PtoI Planning which featured public engagement as a form of impact was often the result of individual/personal interests and contacts, or the use of existing platforms and partnerships.

"We just did our Consolidated Grant. I wrote the PtoI section. I consulted no one, and I did it in about two hours and that included a coffee break. I think I pretty much wrote it off the top of my head. I referred to the last one, because internal consistency is considered very important. I don’t make any attempt to write down what I think is the real impact of our work, what I try to do is to write down what I think the research funder wants to hear.

Principal Investigator"

Concerns about the quality of some of the PtoI Planning are matched by unease about the lack of resourcing of these activities. We argue that it is highly significant that our research shows that only 3% of applicants for STFC funding included requests for resources within their PtoI Planning (Figure 2).

Figure 2: Percentage of awards requesting resource/funding via their PtoI statement

![Percentage of awards requesting resource/funding](image)

The interviews with Panel Members complement the data from submitted applications (Figure 2). In the first instance, Panel Members noted the obvious challenges that result from operationalising a plan that is under-resourced.

"Some people have said, impact is achieving something that you’re not being paid to do, i.e. it’s something beyond the direct purpose of the grant funding, which always struck me as being rather a large ask.

Panel Member"

As a possible justification for this decision-making on the part of applicants, other Panel Members argued that, in effect, researchers are under-resourcing their PtoI Planning to prioritise funding for research.26

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26 We note that members of STFC’s Advisory Panel for Public Engagement recognised the primary importance of STFC being able to maintain well-funded portfolio of research programmes, alongside effectively supporting impact-generating activities.
It’s unusual to see PtoI that requests resources. I have never seen a PtoI that has made a request for resource. My impression is that applicants are aware of the funding pressures so don’t make a case for £20K towards public engagement in their PtoI where they could ask for £20K towards the science instead.

Panel Member

The interview data showed that the majority of applicants justified their under-resourcing for PtoI Planning within grant applications along these lines, i.e. to prioritise what they perceived to be a ‘genuine’ cost for research. Further, they argued that funding for impact-generation work (including public engagement activities) would be minimal and could come from other budgets.

I’ve happily made up those costs if they do come up, because it’s usually pretty minimal, you know. It’s a taxi ride, or a train ride or something. I’m not going to break the bank over something like that. But generally – like the amateur astronomy groups or so, they’ll pay for your taxi down to them. It’s never a flight involved or anything, it’s always just something local that I’m doing, so the costs are pretty minimal. And I’m more than happy to engage…If I’m in [local city] and I’m going to an event in the city centre, you know, it’s sort of pounds, less than a fiver probably to get there. I’m not going to quibble over that.

Principal Investigator

It follows that, allied with the perceptions about quality noted previously, the types of activities that are proposed within PtoI Planning are linked to how they will be funded in relation to other priorities, e.g. what applicants perceive to be bona fide research activities. The problem with this approach is that, in proposing impact-generating activities that would in all likelihood happen in spite of STFC research funding, researchers are failing in two key respects: 1) to tailor their PtoI Planning to the proposed research; and 2) to explore the needs of those who could and/or should have a voice in the proposed research.  

This confusion and ambivalence about whether funding could, or should, be requested for PtoI Planning appears to be well-established both in the planning and assessment phases, largely due to the belief that it is ‘better for the community’ that the ‘authentic’ research element of a proposal be as fully-funded as possible, and that other routes should be explored for funding PtoI Planning. The danger of this approach is: 1) applicants select the cheapest pathways to impact; 2) planning is under-resourced, therefore operationalising PtoI Planning becomes a low priority should an award of funding be made.

This self-censoring by applicants of their Justification of Resources for PtoI Planning is also evident in the assessments made by Panels.

[...] what we do is we rank the various proposals, in scientific order, and then we have a very close look to see how much work can be done with the very limited funds that are available. And we usually pare things back to the absolute minimum, we’re working under extremely tight financial constraints. So the way that is approached is really to see what is the best scientific programme that we can fund. And we do not ring-fence any particular funds for aspects such as impact. We generally expect the people who are awarded the grants to do the best they can with the funds that we do allocate to them.

Panel Member

27 Questions about who should have a voice in research are explored in the following paper; Holliman, R. (2017). Supporting excellence in engaged research. JCom, 16(5), C04: 1–10. Online: http://oro.open.ac.uk/52439
Given the permeability of the research community (over time, applicants are likely to act as reviewers and Panel Members), allied with the feedback from panels on funding decisions and informal discussions, the perception that panels will only fund bone fide research costs has become a reality. In effect, we have found that STFC researchers are ‘self-censoring’ how they resource their PtoI Planning because of an expectation that panels will trim these costs when funding decisions are made. We note, however, that not all panels assessed PtoI Planning in the same way. This lack of consistency in assessing applications is clearly another significant issue. We will address this in more detail in the next section.

Overall it is clear that, despite ongoing efforts on the part of STFC (and other Research Councils) to offer clear and consistent guidance to support PtoI Planning, there is still confusion within the research community about:

- the distinction between academic and non-academic impact;
- how to deliver high-quality PtoI Planning;
- whether high-quality PtoI Planning is a requirement for funding; and
- from which schemes it is appropriate to seek funding.

Further, we note that the tailoring of PtoI Planning is often linked with issues of under-resourcing. In an attempt to address the issues highlighted in this section, we offer the following recommendations:

**Recommendations for STFC**

1. STFC should refresh guidance about the different funding routes that support public engagement (with research).
2. STFC should refresh the guidance that supports PtoI Planning.
3. STFC should develop a communication and engagement plan in support of any changes that result from this report.

The refreshed guidance that supports PtoI Planning should address several key issues that have been highlighted by this research:

- Explain what counts as high-quality PtoI Planning, including publication of the assessment criteria.
- Offer advice on the distinction between Mode 1 and Mode 2 forms of knowledge production and, therefore, the potential to derive impacts from these different forms of knowledge production.
- Ensure that the requirements of the Impact Summary and the PtoI Plan are clearly and consistently stated.
- Maintain the distinction between academic versus social and/or economic forms of impact should be clearly and consistently maintained.
- Encourage applicants for STFC grant applicants and grant holders to:
  - Go beyond transmitting information and to include greater opportunities for dialogue and collaboration.
  - Explore and use previous PtoI Planning as justification the proposed pathways, methods, plans for measurement and reporting, etc.
- Reinforce the need to demonstrate how leadership and management of PtoI Planning will be operationalised.
- Highlight the requirement to fully justify staff time and resources to effectively operationalise PtoI Planning.
- Emphasise the requirement to document the proposed schedule of impact-generating activities in conjunction with the overall work plan for the project.
As a further consideration, STFC should review how PtoI Planning is integrated within applications for Consolidated Grants to ensure that this element of the proposed work has the potential to genuinely deliver impacts that are tailored to the funded research, and that the staff responsible for delivering these impacts are effectively supported and resourced.

(b) Reviewing and assessing Pathways to Impact Planning as part of grant applications

Confidence in the expertise of the evaluators (reviewers and Panel Members), the assessment criteria and the quality of the feedback, are essential ingredients for any successful review and decision-making process. We sought to gain insight into STFC researchers’ (applicants and Panel Members) perceptions of this assessment phase in relation to PtoI Planning. Did STFC researchers have confidence in how PtoI Planning has been assessed? Further, how did their perceptions of the assessment process influence how they prepared PtoI Planning documentation within grant applications in the past?

In exploring the practices of reviewing and assessing PtoI Planning within the context of grant applications, we found that there was no agreed process for considering and assessing PtoI documents across the STFC portfolio. Whilst Panel Members used the guidance in the STFC Handbook, the interpretation of it varied between panels.

The impact section is one of the criteria we look at when we’re assessing proposals. We tend to split the proposals into themes, which may be part of a proposal, and then for each of those themes we will do an assessment of the various criteria... PtoI is one of those criteria. And for the impact criteria, we look at what the guidelines are, and we will judge that against those criteria.

Panel Member

We don’t score plans - they are OK or not OK - we have criteria which are shared - we want to see that applicants have thought about what they have done in the past and link this to a plan for the future, and that it links very clearly to the research. We are looking for a convincing argument - for clarity. We will grade the plan as unacceptable if it is not clearly linked to the research (i.e. it is generic rather than specific public engagement); there are other grants available if this is the case and we will signpost those. We are very clear about this - if you are asking for public engagement resources in the grant then it must be closely-linked to the project.

Panel Member

Each grant panel used a slightly different process; grant managers argued that this was partly down to the expertise of Panel Members. Panels which included members with public engagement expertise were more likely to scrutinise PtoI Planning in detail and provide better quality feedback to applicants. However, some standardised feedback was in place for at least one of the panels.

The STFC office has given us three different sentences to use. One is words to the effect of not good enough, one is words to the effect of good enough, and one is words to the effect of, wow, this is really quite good. […] We are free to change them, but I’m prepared to bet nobody does […] it all comes back to the fact that there’s no money in the game. So there’s no incentive for the proposers to really put a lot of effort into it, and there’s no incentive for Panel Members. If there were resources, I think you’d see it taken quite seriously.

Panel Member
Two panels scored PtoI Planning against set criteria, but most panels simply considered whether the plan met the ‘acceptability’ threshold. It is noteworthy, given this context, that Grant Managers argued that there is no clear definition of what constitutes ‘acceptable’ PtoI Planning.

We have a ‘threshold of acceptability’ test - either it’s okay/good enough or it’s not okay. This is about whether they have thought through what they can do within the context of the project.

Panel Member

If PtoI Planning was deemed to be unacceptable, panels offered applicants an opportunity to revise and resubmit this aspect of their application. This is the only aspect of an STFC application that can be resubmitted. Upon resubmission, PtoI Planning is assessed by STFC and not by panels.

If the PtoI is really terrible they will still get a chance to revise it and still be funded – this is not the case for the science – if the scientific case was terrible the application would not be funded.

Principal Investigator

We have not identified a single application for funding where an application deemed worthy of funding because the science was considered excellent, had funding subsequently refused because the PtoI Planning was unacceptable.

As we noted in the previous section, researchers are aware of the different thresholds by which the proposed research (excellence) and PtoI Planning (acceptability) are assessed. We argue that the evidence that we report here clearly indicates that this differential in benchmarking what is and is not worthy of funding has created a negative feedback loop for PtoI Planning. An obvious solution would be to require excellence in all aspects of a funding proposal, and to be clear to researchers about what this means for PtoI Planning.

Overall, most panels judged applications on the science alone and thus PtoI Planning made no quantifiable difference to the assessment process. However, we also encountered some enthusiasm for encouraging more creative approaches to deriving social and/or economic impacts from STFC research.

Ideally it would be good to see plans that go beyond public engagement - e.g. how skills developed as part of the grant will have wider impact; or if there’s an algorithm that’s been developed that has potential impact in industry, for example, within the financial sector. Anything which explores these areas would be good to see - e.g. a workshop for industry where postdocs present their algorithms - if I saw something like this with costings I’d be minded to fund it. But I think that as the stakes are so low, at least some level people are rather cynical about developing much beyond a ‘passable’ PtoI plan.

Panel Member/Principal Investigator

28 The Oxford English Dictionary (http://www.oed.com) defines ‘acceptable’ as ‘1. Capable or worthy of acceptance; pleasing, agreeable, welcome. 2. Tolerable or allowable, not a cause for concern; within prescribed parameters’.
The findings from the interviews with Panel Members were reflected in the perceptions of applicants where we encountered considerable variance in how researchers thought PtoI Planning was assessed:

- 50% of the interviewees argued that PtoI Planning was considered during panel meetings, but played no quantifiable part in the assessment of the application;
- 30% of the interviewees argued that PtoI Planning was assessed by panels either before or during the meeting;
- 20% of the interviewees argued that PtoI Planning was not considered by panels and played no part in assessment.

The lack of clarity in how PtoI Planning was assessed by panels, allied with a perceived emphasis on solely assessing the quality of the proposed scientific research, was also reflected in the interviews.

“I don’t know [how PtoI Planning is assessed]. But they certainly didn’t ask me anything about PtoI in the interview. The interview was only 25 minutes and focussed on the science.
Principal Investigator

I’m still not sure, what is the purpose of Pathways to Impact? The grants panels judge the scientific merit of grants. We know we have to include PtoI to get the grant. But what difference does it make to write a really good plan? I’m not convinced it makes any difference to your scientific case.
Principal Investigator

We found that there was no official, panel-specific guidance on assessing and reviewing PtoI Planning other than that provided within the guidance documentation. In effect, some Panel Members used the same online guidance as applicants; others had developed unofficial, panel-specific criteria.

There is almost no guidance about assessing Pathways to Impact: nothing which is panel specific anyway. Any guidance would be helpful to be honest, particularly some indicators about what we are supposed to be assessing in the PtoI plans. I’m sure there are links to the RCUK guidance.
Panel Member

Recently, after much agitation from those involved, we’ve introduced, prior to the meeting, a scoring system for the proposals, that’s done by the Panel Members. That is an unweighted 1 to 5 scoring system on each of the four criteria that we have for the projects… they are: technical excellence, knowledge exchange, economic and societal impact, and added value. [Do you have criteria statements relating to each of these?] I certainly don’t have objective criteria. I think it’s just one is poor, two is fair, medium, good, very good. The 3s are my mediums. I look at them and I say, ‘Are they all about the same?’ 4s are better. And I look at them and say, Can I quantify… can I see something that makes that better than the ones that are getting 3? And usually you can’t. So, I do find it’s a very difficult thing to do. But it is actually do-able. Once you start comparing things with each other, then they do tend to fall into categories. And credibility is a big thing in economic and societal impact, I think. Have you measured it? Have you shown that it’s possible to achieve it? Have you shown what the impact is?
Panel Member
Notably, one of the interviewees was clearly aware of the practices of this particular panel.

“We know they look at them separately from the science and they are scored from 1-5 and this feeds into the assessment but it’s not clear how. We know if they are unacceptable as they get sent back before the science is considered. This has never happened to me.”

Principal Investigator

We argue that the interviews demonstrate that the current system for assessing PtoI Planning is both inconsistent and unclear. To address these issues, STFC should publish assessment criteria and ensure consistency in the application thereof across panels. It is important to acknowledge that, given these suggestions, STFC can expect to encounter some resistance to changing the current system. We note, for example, that the majority of panel members argued that the current guidance and assessment processes were fit for the purpose, in part because they were not overly prescriptive.

“At the moment it’s done quite sensibly - given the amount of money available that is available for it.”

Panel Member

We also explored the views of STFC staff, in particular those who support panels in making their assessments. Specifically, we were interested in whether Panel Members were confident in making assessments of PtoI Planning.

“Yes, we have some notes from STFC which we pass onto the ‘introducers’ for each project. They are very broad - to be honest with you I would prefer it if public engagement was assessed by the STFC public engagement team. I would be more comfortable with the plans being assessed by the experts.”

Panel Member

The role of STFC staff in supporting the assessment and review of PtoI Planning has changed in the past five years. Previously, STFC’s public engagement team was involved in assessing PtoI Planning and liaising with panels to provide feedback to applicants. In line with the remit of other Research Councils, following the review conducted in 2014 and published in 2015, this is no longer the case. Many panel members expressed a preference for this system due to lack of time and expertise within panel meetings.

“Panels have bought into the importance of acknowledging impact. […] Our panel decided that a minimum requirement was that plans should cite some contact with local impact specialists within their HEI. The priority was on the scientific quality of proposals, but two or three plans were sent back for revision with instructions about how to improve the quality to make them acceptable. We took a dim view of any proposals that said the nature of the science meant they could not do any impact work.”

Principal Investigator who was previously a Panel Member

29 STFC Panel Members are appointed on the basis of their expertise in assessing particular scientific fields.
30 ‘RCUK reaffirms its commitment to PtoI following review’.
http://webarchive.nationalarchives.gov.uk/20180322123822/http://www.rcuk.ac.uk/media/news/150115
A further issue for consideration is the quality of feedback on PtoI Planning that is offered to (un)successful applicants. The interviews revealed that the provision of feedback was inconsistent.

“Never had any comments - would be good to know whether they think it’s OK, good, or great - e.g. ‘great to see you are doing x, y, z’. I know they give comments to people who need to revise/resubmit their plans. So, I guess that no news is good news. We really have no idea about what STFC think is good quality impact - we just do as well as we can, but we don’t know if this is good enough. We hope it is!”
Principal Investigator

Overall, we argue that the current system for assessing PtoI Planning is both inconsistent, unclear and lacks rigour in places, and that applicants are adapting their PtoI Planning processes accordingly. This variability in the assessment of PtoI Planning is a key issue that requires attention from STFC. In the first instance, applicants should have confidence that the system is fair and transparent. To this end, the assessment criteria should be the same for all panels where PtoI Planning is a requirement. Each panel should use the same criteria and the same process for assessing the applications, supported by relevant expertise in making those assessments. To improve quality, the assessment of PtoI Planning should make a meaningful contribution to the overall assessment of whether funding is awarded and feedback should be offered. Making these changes will promote rigour, transparency, consistency and, ultimately, inspire greater confidence that excellent planning will be recognised and appropriately resourced.

In an attempt to address the issues highlighted in this section, we offer the following recommendations:

### Recommendations for STFC

1. STFC to develop and publish criteria for assessing Impact Summaries and PtoI documents.
2. Impact Summaries and PtoI documents should make a meaningful contribution towards the overall assessment of whether to support an application for funding.
3. Panels should have access to relevant and sufficient expertise to make consistent and reliable assessments of, and offer feedback on, Impact Summaries and PtoI documents.
4. Feedback on Impact Summaries and PtoI documents submitted to STFC schemes should be provided to applicants.

The assessment criteria for PtoI Planning should address several key issues that have been highlighted by this research. They should:

- Be published as part of the guidance for preparing PtoI Planning.
- Be sufficiently flexible to account for different forms of knowledge production (e.g. Mode 1 and Mode 2) giving reviewers the opportunity to consider the potential to derive impacts from the proposed research.
- Address the requirements of the Impact Summary and the PtoI document.
- Include criteria that assess how leadership and management of PtoI Planning will be operationalised.
- Assess the requirement to fully justify staff time and resources to effectively operationalise PtoI Planning.
- Evaluate the proposed schedule of impact-generating activities in conjunction with the overall work plan for the project.

31 STFC should explore how expertise in impact could help to support panels in making decisions about the quality of PtoI Planning. This could involve, but should not be limited to, training for Panel Members, and/or the introduction on a Peer Review College for assessing PtoI Planning.
• Consider the plans to generate, measure and report relevant forms of impact evidence.
• Judge the potential for the PtoI Planning to create the conditions where excellence in research impact could thrive.
• Offer a mechanism for the provision of clear and consistent feedback to applicants on the strengths and weaknesses of their PtoI Planning.

As a further consideration, STFC should review how PtoI Planning is assessed within applications for Consolidated Grants to ensure that the assessments are made fairly, equitably, consistently, and on the basis that the plans have a good prospect of generating and evidencing relevant forms of research impact.

(c) Implementing and monitoring Pathway to Impact Planning: the experience of grant holders

Having explored how researchers went about planning PtoI, and the assessment process through peer review, we turned our attention to how grant holders operationalised their PtoI Planning. Grant holders have a clear responsibility to lead and manage projects, using the funds allocated by STFC and other related sources. What levels of priority were associated with leading and managing PtoI Planning and delivering evidence of impact? What challenges have STFC grant holders encountered in the past as they operationalised PtoI Planning?

We defined grant holders as those in receipt of funding from STFC, therefore those with a responsibility for delivering associated PtoI Planning. Given that grant holders were in receipt of STFC funding, their PtoI Planning had been deemed to be ‘acceptable’ as a result of the assessment process.

We highlighted in the planning section of this report that many applicants described their PtoI Planning as part of the wider engagement strategy of their group, department or school. In this context, we note that some groups had particular individuals who led on impact and organised the delivery of activities (e.g. as public engagement professionals). In effect, in these examples responsibility for managing PtoI Planning and monitoring progress and performance was devolved to another team. In other examples, individual researchers worked to their own plans for impact-generating activities with regular reporting to departmental committees or oversight groups.

Implementing the PtoI plan is part of a bigger strategy for running the group and for impact and engagement work more generally.

Principal Investigator

Our group has two people who take responsibility for impact in both areas [public engagement and knowledge exchange]. Both these are seen as flagship activities that will be used as impact case studies for the REF.

Principal Investigator

In Figure 3, we compare these findings from the interviews with our analysis of Researchfish data. We note here that the analysis of Researchfish data covers a sub-set of all STFC awards, not just those associated directly with the interviewees.
Figure 3 shows that a talk or presentation was by far the most popular method of impact-generating engagement activity. We note that the vast majority of recorded activities fall into the category of ‘transmission’ activities. This evidence further emphasises the need for STFC to actively encourage applicants, reviewers, panel members and grant holders to consider more creative ways of delivering pathways to impact, both in terms of dialogue and collaboration.

We identified a few cases where there was no clear sense of leadership for impact work. For these grant holders, it did not appear there was bespoke PtoI planning with objectives for a programme of work that was tailored to the research objectives.

Public engagement and outreach? We do this all the time. We deliver talks to non-specialists, to astronomy groups, to children in schools. We write press releases to try to get our work reported in the mainstream media. We host meetings of amateur astronomy groups in our department. This is on-going and pretty much planned into our day-to-day work.

Principal Investigator

It would appear that these researchers were ‘doing what they already do with people they already know’. They were transmitting information through established practices of talks and via traditional channels, such as mass media. Examples where clear lines of responsibility for delivering impact were prioritised, leading to robust, responsive and responsible approaches to generate high-quality evidence of impacts, were in short supply.

Given the developments in public engagement and other related impact-generating activities over the past 20 years,32 allied with concerted efforts to change research cultures to create the conditions where a culture of excellence in engagement can flourish,33 it is both surprising and disappointing that so little of this state-of-the-art theory and practice appears to have permeated PtoI Planning in the STFC community.

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32 For examples, see NCCPE: https://www.publicengagement.ac.uk and Sciencewise: https://www.gov.uk/government/collections/sciencewise-public-dialogue-on-science-and-technology
The focus for many interviewees was on delivering activities that had been tried many times in the past, but with little evidence that they had been tested. It follows that monitoring the progress and performance of PtoI Planning within wider project grants was not a standard practice.

It’s down to the individual concerned to get on and do their work. But for public engagement this is a standing item on our monthly group meetings - we keep a list of what we do and new requests. At departmental-level there is ongoing reporting requirement in preparation for the REF. For [Knowledge Exchange], I don’t check up with colleagues about what they are doing - just assume they are doing it.

Principal Investigator

We found that there was little sense from most grant holders that the Impact Summaries and PtoI documents were ‘living documents’ that could be amended or updated as the grant progressed.

I don’t revise them - I make them as general as possible – we need to be agile and respond to developments from the research as they arise.

Principal Investigator

We found that interviewees were unaware of how they could, or should, be monitoring and reporting progress and changes to PtoI Planning to STFC: some people said it was the first time they had thought about, or been asked about this issue.

I’m unaware of any means to tell them [STFC grant managers] once the five-year plan is in place.

Principal Investigator

We get asked to report at each consolidated grants round, so would report any changes to STFC then, but I’m not aware of any mechanism to tell STFC about any successes or failures in impact.

Principal Investigator

This view was corroborated by STFC grant managers, who explained that they did not follow up PtoI Planning with applicants during their awards. Further, to their knowledge, grant managers have never encountered a grant holder who had ever contacted STFC for advice on changing their PtoI Planning.

Overall, we have identified that the planning for, and assessment of, PtoI Planning is failing to deliver excellence in the ways impact-generating activities are delivered and evidenced. Established ‘transmission’ practices are the norm for the vast majority of STFC researchers. There is little evidence of state-of-the-art practices, matched by active management of PtoI Planning in terms of progress or performance. In an attempt to address the issues highlighted in this section, we offer the following recommendation:

**Recommendations for STFC**

8. STFC should develop best practice advice to grant holders on how to implement planning for Pathways to Impact.
(d) Evidencing and reporting impacts
As the final aspect of PtoI Planning to be studied through our research, we explored how grant holders measured and reported the outcomes of their PtoI Planning. How big a priority was the evidencing of impacts in relation to other outputs from the research? How did grant holders go about collecting evidence of impact? What types of evidence did they record in Researchfish?

Although most grant holders told us that they were measuring outcomes of PtoI Planning by logging activities, quantifying reach and beginning to measure the significance and outcomes, this appears to be ‘work in progress’.

The [specialist public engagement] Fellow brought this up and told me it was important to measure and assess the impact of the public engagement work with schools. We decided I would do a short questionnaire for pupils at the beginning of Year 6 and at the end of Year 6 to see if there had been any impact in terms of their knowledge about what scientists actually do, and whether they feel this is something they could do in the future.

Principal Investigator

Based on the interviewees’ experiences of measuring the outcomes of PtoI Planning, we found that:

● 60% talked about logging activities, quantifying reach and gave some examples of how they had begun to measure the significance or outcomes of their PtoI work.

● 30% responded by talking about how they logged engagement activities and quantified the reach of their activities;

● 10% were unable to offer any clear explanation of how they evidenced their PtoI Planning outcomes.

Figure 4: Researchfish data indicating the number of engagement activities undertaken across all STFC award types, by year (2006-2016, inclusive).
These data indicate that the majority of STFC grant holders have reported outputs from PtoI Planning. However, the practices of recording data are mixed, in particular in recording the significance of the recorded impacts. Clearly, there is work to be done to support researchers in consistently measuring and reporting of all aspects of the outcomes of PtoI Planning. We note the positive steps that STFC has taken in this regard, via the publication of their Evaluation Framework for public engagement, and their work to align the assessment questions in Researchfish with that Framework.34

Analysis of the data entered into Researchfish backs this finding, also showing some positive progress. We found that a greater number of activities are being added to this database on a year-by-year basis (Figure 4).35

This is countered somewhat by the issue of compliance, however; we identified a weak correlation between the activities that were planned and the ones entered into Researchfish: 92% of applications planned public engagement activities; 59% submitted evidence of these activities to the database.

This emphasis on activity should be considered in relation to the lack of evidence of impact. In this light, several grant holders highlighted that (a) it would also be useful to measure significance and outcomes, but they did not do so at present; (b) they were unsure how to do so and lacked knowledge/expertise in this area.

I try to keep a rough idea of the events that I do myself... number-keeping to make sure we're doing something. Sometimes it's just a talk to a classroom with 20 or 30 people rather than a TV show to 100,000 viewers... just try to keep track of everything... I don't know how you would [assess significance] unless you hand out a survey at the end of a talk and get people to say if they found it interesting... useful, would they do another one? That's usually what the organisers would do, rather than me. So, I'm not sure I have much to contribute to that side of things.

Principal Investigator

34 For more information, see: https://stfc.ukri.org/public-engagement/public-engagement-grants/evaluating-your-engagement
35 2015 was the one year where this trend was not followed, that being the year immediately after the REF 2014 census period ended. This suggests that grant holders’ behaviour is influenced to some extent by the requirements of this UK sector-wide audit.
Researchers talked about trying out different techniques and working with partners to explore methods for evaluating the impact of their public engagement work. Amongst more conventional approaches to evaluation such as pre- and post-survey design, there were also examples of more innovative work in this area. There was also some evidence of using reflective evaluation to develop and improve activities, and an appetite for guidance and tools on effective methods for evaluating public engagement.

“I do this anyway, for me. We always have a goal in mind for any training or outreach we do - that is just common sense. But I didn’t realise until I read your questions that I was supposed to be doing it for STFC. Where does it say this? No-one has ever talked about it to me. I keep a head-count and details of events/engagement work I do. I also do exit surveys and some pre-post surveys for most training events - e.g. with teachers, I would ask how much they know already and then how much they’ve learnt. We need this data to help us, but I don’t do it to evidence impact. I didn’t realise I had to. I know I could pull out data over the past four years if I needed to for STFC - some data on reach and some quotes and feedback.

Principal Investigator

Feedback from STFC Grant Managers indicated they were not aware of the state of play regarding how funded projects evaluated public engagement within their PtoI work, nor about the potential link between the data generated through these activities and its potential for use within returns to Researchfish.

“...the community are not that keen on using it as it is time consuming… [they] accept providing information for Researchfish is a requirement, but they would like it to be easier.

Grant managers focus group – notes

We argue that the issues raised by the requirements to measure and report the outcomes of PtoI Planning are linked to the planning, assessment and monitoring phases of pre-award planning and post-award management. If applicants plan to measure and report outcomes, reviewers and panels assess the quality of these plans, the management of them when a grant is funded should become a more routine aspect of this work.36

We explored issues to do with using the Researchfish database. Most of the PIs and Co-Is had completed a Researchfish return. A few people expressed no view on the process, had no complaints, or had found using Researchfish straightforward. Most of the interviewees, however, expressed negative feelings towards Researchfish and suggested that it was time-consuming, cumbersome, difficult to use and duplicated data capture for other systems.37

37 STFC recently completed work to more closely align the Researchfish assessment questions for public engagement grant holders with the Evaluation Framework (see footnote 34). The aim of this work was to ensure that the questions better reflect the types of work that grant holders were undertaking, and to allow grant holders to give richer information on the outputs and outcomes arising from their work.
Further, researchers were not clear about the rationales for completing a Researchfish return. Across all respondents, very few people were aware of the purpose of Researchfish, or how the data they submitted was used by STFC.

"It’s a pain. I don’t really know what the point of it is. Where does the information go and why is it needed? The website is very cumbersome. There seems to be a lot of duplication of effort between Researchfish and grant applications – for instance, you have to input publications and past experience into grant applications that is already in Researchfish. Why can’t there be synergy?"

Principal Investigator

"I have no idea what happens to the data. We make this huge effort and it would be good to know where it all goes and what STFC use it for."

Principal Investigator

"What do they do with the data? Which bits are Government most interested in? What’s the benefit of the scale and level of the information? They ask for a lot. I suspect I’ve been told but I don’t recall details."

Principal Investigator

The interviewees called for STFC to clarify the purpose of Researchfish and why certain data are needed, and to better disseminate any Council- or UKRI-level outputs based on these data.38

Several interviewees went further, requesting feedback on their returns to ensure they were inputting the right information.

"I would like to know what they do with the data as I have no idea. It would be good to have more examples of what they are looking for and what not to include - I found a grid that helped - an outcome map in Researchfish."

Principal Investigator

The focus group with grant managers highlighted a need for more information and understanding about Researchfish within STFC, as well as amongst the external community.

"We don’t know whether the Researchfish questions are appropriate because we haven’t seen them and don’t have any involvement. Any questions are referred to the evaluation team."

Grant managers focus group – notes

38 STFC publishes outputs from Researchfish, e.g. World-Class Research: Outputs from STFC Frontier Research; https://stfc.ukri.org/about-us/our-impacts-achievements/annual-impact-reports

The existence of these reports is not widely known amongst STFC research community.
Overall, it is clear that the measuring and reporting of PtoI outcomes is a work in progress. Whilst we found that greater numbers of activities are being recorded, there is still some way to go to ensure that the impact of these activities is rigorously measured and reported consistently. A greater emphasis within the guidance for PtoI Planning on the need to plan upstream for evaluation and reporting, and the inclusion of a criterion within the assessment process to evaluate these plans, are essential first steps to improving this situation.

We also found that researchers and grant managers are unclear about the purposes of the reporting and how the outputs are used. Researchfish, and to some degree the requirements to report social and economic impacts within the REF, are still relatively new to the research community. Clear and consistent communication about these requirements, and how the data are being used, should be a priority for STFC going forwards.

In an attempt to address the issues highlighted in this section, we offer the following recommendation:

**Recommendations for STFC**

9. STFC should review reporting requirements for impact.

In making this recommendation, we reiterate the importance of impact within REF, and emphasise that STFC should work with the community to more intelligently align the guidance for planning and reporting impact in both Pathways to Impact and the REF.
In the Foreword from the Review Chair for this report, Richard Holliman highlighted two key issues that have informed the Pathways to Excellence in Public Engagement review:

- The requirements to plan for, assess, monitor and report impact are still relatively new aspects of what is in many other respects a well-established system for supporting research through public funds.

- Public engagement is one of the most significant Pathways to Impact for many STFC-funded researchers; hence, it has been the focus of this report.

It follows that the most important aim of this report has been to shine a light on how STFC researchers and staff have made sense of public engagement as a pathway to generate impacts from research. However, this work could have wider implications. It would be a useful exercise for STFC to consider whether and to what extent the findings we describe in this report could apply to other pathways to social and economic impact.

We have found that some aspects of the guidance and implementation for Pathways to Impact are effective; others less so. However, the findings documented in this report show that, to some degree, all aspects of Pathways to Impact – planning, assessment, monitoring and reporting – could be improved. We have, for practical reasons, focused on the parts of the system that could most usefully be revised, producing nine recommendations in the process.

In particular, we note that the planning and assessment phases are not consistently delivering high-quality evidence of impact. We argue that comprehensive, upstream, tailored planning should become an essential requirement for PtoI Planning. However, clear and consistent advice and guidance for researchers will be insufficient, in itself, to improve the planning phase. We have found that the assessment system for PtoI Planning is currently inconsistent, often opaque and can lack rigour. Panel Members are sometimes being asked to make judgements about parts of research applications where they may have less expertise than the applicants. Improving confidence in the assessment process through greater rigour, transparency and consistency, allied with expert, independent reviewers, should be a major focus of any changes to the assessment of proposals.
We argue that the focus for change should fall on improving the planning and assessment phases of PtoI Planning. Addressing these aspects is essential to ensure that monitoring and reporting will be improved in the future. If the Planning and Assessment phases can be improved, researchers will gain confidence that their PtoI Planning should be better than acceptable; rather that it should have a realistic prospect of generating high-quality evidence of social and economic impact.

**From STFC to UKRI?**

The recommendations discussed in this report clearly have the potential to be explored beyond the confines of STFC. It is in this light that we offer the following recommendations for consideration by UKRI as a whole:

- This report offers a snapshot of the practices of STFC researchers. Further work could be commissioned by UKRI to explore whether the findings and recommendations presented in this report have relevance to the communities of other Research Councils.

- The requirements for submitting PtoI Planning to equivalent funding schemes should be consistent across UKRI.

- The distinction between academic and social/ economic impact should be maintained consistently across UKRI.

- The criteria for assessing PtoI Planning should be consistent across UKRI. These criteria should be publicly available to all applicants and reviewers.

- UKRI should review the threshold for funding for all research grants where PtoI Planning is a requirement, to ensure that there is a realistic prospect of generating high-quality evidence of social and economic impact.

- UKRI should produce clear and consistent communication to advise researchers on how information and data submitted to UKRI systems (e.g. Je-S, Gateway to Research and Researchfish) will be used.

- Following the recommendations in the Stern Review in relation to the REF, UKRI should move towards aligning all principles and procedures for the reporting of research impact with the requirements for planning and assessing the Pathways to Impact system.

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Acknowledgements

The authors would like to thank the STFC programme support group, and in particular Julie Gilbert, for their invaluable support during this project. In addition, we would like to thank the members of the project working group for their help, guidance, and insights at all stages of this project. We are indebted to Dr Ruth Townsley for her considerable time and effort in putting together an excellent underpinning research report. We would like to thank all of the participants, members of STFC’s Advisory Panel for Public Engagement, public engagement grant holders and researchers in universities and research groups who gave their valuable time for this review. Jane Perrone kindly commented on drafts of this report. Finally, we would like to thank grant panel chairs and members who gave their valuable time and insights and members of the STFC Grant User Forum for their further advice and comment.

Working group biographies

Dr June McCombie
June is a Senior Research Officer at the University of Nottingham. In addition to her research interests in the area of Astrophysical Chemistry and Molecular Spectroscopy, June’s professional activities encompass teaching and learning, public engagement, diversity and science communication. She has worked on a number of diversity projects in the STEM area for which she was awarded an MBE in 2013. She is a Council Member of the Institute of Physics and for a number of years has worked closely with the IOP, Royal Society of Chemistry and STFC.

Katherine Leech
Katherine is the Schools Outreach and Public Engagement Coordinator for the Department of Physics at the University of York. She is responsible for the strategic development and delivery of the Physics outreach and public engagement programme and works closely with active researchers at all points in their careers to help them develop skills to communicate their research to, and engage effectively with, diverse audiences. Prior to her university role, Katherine gained extensive education experience as a secondary school physics teacher for nine years, working in a range of educational contexts across inner-city comprehensives, international schools and independent boarding schools.
Dr Ruth Townsley
Ruth is an independent researcher who undertakes social policy research, evaluation and review work for government, academic, public sector and third sector clients, in the UK and internationally. In her previous 20 year career as an academic researcher, Ruth worked on numerous policy-related projects alongside professionals, young people, disabled people and people with learning disabilities as co-researchers, also leading the University of Bristol’s award-winning ‘Plain Facts’ project which co-produced easy-read versions of academic research findings. More recently, Ruth has worked with several of the research councils to support evaluation and review of their public engagement initiatives, including ESRC’s Festival of Social Science, AHRC’s Being Human Festival, RCUK’s Research Catalysts programme, and RCUK’s School-University Partnership initiative.

Professor Richard Holliman
Richard is Professor of Engaged Research at the Open University, UK. Through his academic work he examines tensions between theories and practices of knowledge exchange by evaluating examples where researchers and ‘publics’ have sought to (co)produce impacts derived from research. In combining research and practice through this work, he has developed the concept of engaged research, a principled approach to co-constructing ‘publics’ (stakeholders, end-users and members of the public) to work reflexively in meaningful ways to generate, reflect on and evidence social and economic impacts. He has argued most recently that engaged research should have a moral imperative to act as a route to promoting epistemic justice, or ‘fairness in knowing’.

Dr Neville Hollingworth
Neville is a Senior Public Engagement Manager at STFC and has over 25 years’ experience at the Research Councils. Since joining the public engagement team in 2011, Neville has been responsible for managing a number of national public engagement programmes including the 2017 Interact conference held at the University of Birmingham. Neville also manages the linkage of STFC’s science and technology with the formal and informal education sectors and works with strategic partners and organisations to help deliver STFC’s public engagement objectives.

Ian Fuller
Ian has worked at STFC for over five years as an Outputs Evaluation Manager in the Impact and Evaluation Team. Ian’s role involves managing the collection of outputs for STFC via an online system called Researchfish. Ian utilises the Researchfish data to highlight the work that our supported researchers carry out and how this is contributing to STFC and UKRI achieving its main strategic goals. Ian also provides analytical expertise to a wide range of assessments undertaken by STFC including large evaluation studies.
Annex: An Initial STFC Action Plan

The recommendations of *Pathways to Excellence in Public Engagement* are tremendously valuable to STFC as we plan our activities for the coming years. We have considered all of the evidence gathered during the review and have formulated a broad action plan that will allow us to work with the community to make progress in improving our systems for Pathways to Impact Planning, assessment, evaluation, and monitoring. By necessity this is a long-term plan of action, and will invariably be subject to change, but our commitment to refining the processes by which we support public engagement will remain constant.

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  - Explore mechanisms for advising the community about the range of different STFC funding mechanisms that support public engagement.  
  - Continue a range of university-based workshops that provide advice on engagement funding opportunities. |
| STFC should refresh the guidance that supports PtoI Planning. | We will aim to:  
  - Review the existing guidance for Pathways to Impact Planning so that it is accurate and easily accessible. |
| STFC should develop a communication and engagement plan in support of any changes that result from this report. | We will aim to:  
  - Release the Pathways to Excellence in Public Engagement review and promote its findings to the STFC community and beyond.  
  - Ensure that we highlight where and when we use evaluation data and information relating to impact from research (e.g. Impact reports, Researchfish etc.). |
| STFC to develop and publish criteria for assessing Impact Summaries and PtoI documents. | We will aim to:  
  - Collate and review all assessment criteria used by current and previous panels.  
  - Work with other funders to review their funding criteria for impact-generating activities. |
| Impact Summaries and PtoI documents should make a meaningful contribution towards the overall assessment of whether to support an application for funding. | |

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We will aim to:
▶ Review our existing engagement case studies and provide examples of excellent engagement delivered via Pathways to Impact.
▶ Continue a range of university-based workshops that provide advice on engagement funding opportunities.

We will aim to:
▶ Update the guidance for Pathways to Impact Planning such that it better reflects our expectations of excellent planning, leadership, management, resourcing and evaluation.
▶ Work with appropriate partners to develop updated training and mentoring functions that support the creation of excellent Pathways to Impact Planning.

We will aim to:
▶ Review the efficacy of our existing funding routes for public engagement, and make modifications as required.
▶ Undertake a review of applicant behaviour with regards to Pathways to Impact Planning.
▶ Further develop our models for training and mentoring to support excellent Pathways to Impact Planning.

We will aim to:
▶ Update the STFC community on progress with any changes, our future plans, and timescales for implementation.
▶ Share the results of any trial approaches adopted as a result of this work with other funding partners to enable shared learning.

We will aim to:
▶ Update the STFC community on progress with any changes, our future plans, and timescales for implementation.
▶ Highlight any achievements, and ongoing challenges, that have arisen from approaches adopted as a result of this review.

We will aim to:
▶ Work with partners to develop and implement consistent scoring measures for Pathways to Impact that can be used across all STFC funding panels.

We will aim to:
▶ Work with STFC grant managers and Panel Members to implement robust and transparent peer review assessment of Pathways to Impact Planning across STFC.
▶ Explore and implement identified opportunities to run one or more trial approaches to effectively assessing Pathways to Impact Planning in STFC assessment processes.

We will aim to:
▶ Review the implementation of any revised assessment criteria, comparing assessment behaviours between different panels.
▶ Amend our assessment criteria in light of relevant findings from such a review.

We will aim to:
▶ Review the results of any ongoing trials of modified peer review processes.
▶ Expand successful trial approaches and/or share learning from such processes more widely within UKRI.
### Pathways to Excellence Recommendation From 2018/19

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| Feedback on Impact Summaries and Ptol documents submitted to STFC schemes should be provided to applicants. |
| We will aim to: |
| ▶ Work with STFC grant managers to understand the barriers to effective feedback being included as part of the peer review process, and identify opportunities to overcome these barriers as appropriate. |

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▶ Explore and implement identified opportunities to run one or more trial approaches to effectively assessing Pathways to Impact Planning in STFC assessment processes.

We will aim to:
▶ Implement a system of structured feedback on Pathways to Impact Planning from all STFC peer review panels.
▶ Provide support to STFC grant managers to enable effective feedback to applicants.

We will aim to:
▶ Promote and support the importance of continuous review and updating of Pathways to Impact Planning.
▶ Work to ensure that STFC project oversight committees review progress of impact-generating activities alongside scientific and technical milestones.

We will aim to:
▶ Work with our community to explore how reporting requirements can become mutually beneficial.
▶ Explore to what extent aspects of STFC’s reporting framework for public engagement grants could be used in the wider STFC & UKRI grant portfolio.

We will aim to:
▶ Review the results of any ongoing trials of modified peer review processes.
▶ Expand successful trial approaches and/or share learning from such processes more widely within UKRI.

We will aim to:
▶ Review operation of the feedback system(s) and identify opportunities to share good practice across UKRI.

We will aim to:
▶ Review the results of REF2021 to identify and showcase instances of well-scored case studies based on high quality Pathways to Impact Planning.
STFC sites around the UK

Daresbury Laboratory, Cheshire

UK Astronomy Technology Centre, Edinburgh

Boulby Underground Laboratory, North Yorkshire

STFC Headquarters, Swindon

Chilbolton Observatory, Hampshire

Rutherford Appleton Laboratory, Oxfordshire
Key STFC Engagement Publications

Public Engagement Strategy (2016)

Our Public engagement with science, technology, engineering and mathematics has always been important to STFC. We are funded by the UK public: listening, understanding, and discussing their views of the impact of science and technology on society is both our responsibility and our privilege.

Our public engagement strategy contains five key aims that help us achieve our vision of a society that values and participates in scientific endeavour.


Our Evaluation Framework provides an approach that aids the systematic planning and evaluation of public engagement activities, in order to help report, improve, and celebrate the outcomes and impacts of public engagement.
The Public Engagement: Attitudes, Culture and Ethos report (2016)

Commissioned by STFC and compiled by an expert working group, the PEACE report explored the attitudes of STFC’s research community towards engagement.

The Pathways to Excellence in Public Engagement report (2018)

The Pathways to Excellence in Public Engagement report explores the issues encountered by STFC grant applicants and panel members with Pathways to Impact. Arising from findings in the PEACE report, it examines the various stages of the peer review system, from pre-award planning to post-award monitoring and reporting.
The Science & Technology Facilities Council is one of Europe’s largest research organisations. We enable the UK’s natural sciences, computing, and engineering communities to continue their world-leading research by working with universities, national laboratories, scientific facilities, and regional campuses, in the UK and abroad.

Public engagement with science, technology, engineering, and mathematics (STEM) has always been important to us. We love to talk about our work with the public – sharing the curiosity, excitement, and ambition that drives us to discover and understand new things, and develop technologies that improve our lives.

We are funded by the UK public: listening, understanding and discussing their views of the impact of science and technology on our society is both our responsibility and our privilege.

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