Engineering and Physical Sciences
Research Council

ANNUAL REPORT AND ACCOUNTS 2017 - 2018

EPSRC
Investing in research for discovery and innovation

Engineering and Physical Sciences Research Council

ANNUAL REPORT AND ACCOUNTS 2017-18

EPSRC
Investing in research for discovery and innovation

Presented to Parliament pursuant to Schedule 1 of the Science and Technology Act 1965

Ordered by the House of Commons to be printed on 12 July 2018

HC1227

This publication is available at www.gov.uk/government/publications

Any enquiries regarding this publication should be sent to:

UKRI
Polaris House
North Star Avenue
Swindon SN2 1FL

ISBN 978-1-5286-0386-7

CCS0518609414

Printed on paper containing 75% recycled fibre content minimum

Printed in the UK by UKRI's Internal Service Provider on behalf of the Controller of Her Majesty's Stationery Office

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The overview provides a short statement from the Chair and CEO of EPSRC setting out some of the key highlights for the year, with the main body of the overview summarising progress against the organisation's Delivery Plan for the period 2017-18.

Statement from the Chairman and Chief Executive

As we write this statement for our Annual Report we are just a few weeks away from the formation of UK Research and Innovation (UKRI). Our investments and achievements through the year have already demonstrated our commitment to be a strong and valued partner in this new organisation, contributing to new initiatives and leading in areas where we excel.

Following the publication of the Government's Industrial Strategy, EPSRC has played a significant role in delivering key investments through the Industrial Strategy Challenge Fund (ISCF) – the first major initiative to be delivered by UKRI. Our existing portfolio of £4.6bn, £3.4bn of which is relevant to industrial sectors, has been bolstered by an additional investment of £78m in battery technology research and £42m in robotics for extreme environments.

- The Faraday Institution, part of the Faraday Battery Challenge, will drive and accelerate fundamental research and training in battery technologies, and its translation into industry.
- Four new Robotics Hubs will draw on the country's research talent in the field of robotics and provide the foundations on which innovative technologies can be built. The outcomes from this research will allow us to explore environments that are too dangerous for humans to enter without risking injury or ill-health.

As part of the Government's National Productivity Investment Fund, skills and talent has been identified as an area for increased investment. EPSRC has always prided itself on its support for people and skills and this has been recognised with investments for an additional 500 doctoral places and 80 innovation fellowships.

We also started 2018 by launching our new £492m call for Centres for Doctoral Training (CDT) and £184m investment in Doctoral Training Partnerships (DTP).

- The CDT model has proved to be highly successful, with institutions, students, industry and academics drawing in talent and external support from those with an interest in the field to provide a focus for the Centre. Building on our previous investments, and running in parallel with our DTPs, this new call will lay the foundations for further collaborations that will provide the country with the skills it needs to carry out world-leading research, make new discoveries and develop novel innovations.
- £184m has been allocated to 41 UK universities to support doctoral training over a four-year period. These awards will cover a two-year period, giving institutions certainty and time to plan and support excellent doctoral students.

Support for people and skills is dependent on the ability to draw from the widest pool of talent. EPSRC has taken a leadership position on the issue of equality, diversity and inclusion.

- Our Inclusion Matters call is a bold and ambitious step to tackle and accelerate culture change, with funding of up to £5m available to support inspiring and ambitious proposals to create a more diverse, fair and inclusive engineering and physical sciences community.
- EPSRC has also established a new Mixed Gender Peer Review Policy. We are pleased to report that female panel membership has increased from 17% in 2012-13 to 34% in 2017-18 and has also seen a significant increase in the number of female panel chairs.

EPSRC continues to facilitate strong and effective business and academic collaborations. 2017 saw the announcement of our first round of Prosperity Partnerships.

Overview

- A £78m initiative funded in collaboration with EPSRC, ISCF, industry and universities has resulted in ten universities leading on 11 projects that range from the future networks for digital infrastructure to offshore wind. The projects promise to create a series of exciting avenues of research leading to industrial implementation and are a great new example of how, in partnership, we can harness our collective capabilities to strengthen our economy.

As the Year of Engineering launched in 2018, EPSRC announced an investment of £6.6m through the Engineering for a Prosperous Nation call to support projects with potentially transformative impact in fields ranging from autonomous vehicles to energy storage and healthcare technology. Engineers are creators, innovators and problem solvers; their pioneering work creates a better future for us all. The Year of Engineering is a fantastic opportunity to celebrate the UK's proud heritage in this field and highlight the impact that engineering has on the UK and the world. Through this, we hope to inspire a future generation to continue and improve on that legacy in the future.

The year culminated in our Science for a Successful Nation Conference that showcased the revolutionary impact that engineering, mathematical and physical sciences have on our world. Held at The Royal Society in London, the event featured panel discussions themed around EPSRC's four Prosperity Outcomes - Connected, Healthy, Productive, Resilient - and more than a dozen exhibitors demonstrating the impact of EPSRC-supported research in areas as diverse as healthcare, energy, cybersecurity and even musical instruments.

As part of UKRI, EPSRC will actively contribute to the new organisation's vision. As demonstrated by the highlights above, our mantra to research, discover and innovate is a solid foundation from which to build.

Overview

Brief History and Statutory Background

The Engineering and Physical Sciences Research Council (EPSRC) was founded as a Research Council and received its Royal Charter in 1994 following a review of its predecessor body, the Science and Engineering Research Council (1981-1994). It traces its history back to the foundation of the Science Research Council in 1965. Based in Polaris House, Swindon, it operates alongside the other Research Councils and Research Councils UK (RCUK). EPSRC is a Non-Departmental Public Body sponsored by the Department for Business, Energy and Industrial Strategy (BEIS).

Nature of Organisation

EPSRC is at the heart of discovery and innovation in the UK, and is the UK's main agency for funding research in engineering and the physical sciences. EPSRC invests £1bn a year in research and postgraduate training to help the nation handle the next generation of technological change. The areas covered range from information technology to structural engineering, and mathematics to materials science. This research forms the basis for future economic development in the UK and improvements for everyone's health, lifestyle and culture.

The objectives for which EPSRC was established are formally laid out within the Royal Charter:

(i) to promote and support, by any means, high-quality basic, strategic and applied research and related postgraduate training in engineering and the physical sciences

(ii) to advance knowledge and technology (including the promotion and support of the exploitation of research outcomes), and provide trained scientists and engineers, that meet the needs of users and beneficiaries (including the chemical, communications, construction, electrical, electronic, energy, engineering, information technology, pharmaceutical, process and other industries), thereby contributing to the economic competitiveness of our United Kingdom and the quality of life

(iii) in relation to the activities as engaged in by the Council under (i) and (ii) above and in such manner as the Council may see fit:

- to generate public awareness
- to communicate research outcomes
- to encourage public engagement and dialogue
- to disseminate knowledge
- to provide advice.

The Vision and Goals as laid out within the Strategic Plan published in 2015 are:

VISION – The EPSRC vision is for the UK to be the best place in the world to research, discover and innovate
GOALS – The vision is supported by two goals which emanate from the Charter:

Research and Discover – For the UK to be positioned as an international research leader, where discovery thrives and our support generates the highest-quality research in engineering and the physical sciences.

Research and Innovate – For the UK's excellent research base and talented researchers to work with us to accelerate innovation for the benefit of society and the economy.

EPSRC has continued to deliver high-quality research and training in Engineering and the Physical Sciences (EPS). We have responded to changes in the wider environment by developing our delivery plan and strategies to reflect the opportunities afforded by external influences, economic situation and government strategies. This has enabled us to maintain focus on core strengths whilst ensuring that the UK maintains its world-leading position in research and innovation. The following table summarises progress on our priorities for 2017-18.

Priority/Objective	Deliverables/Milestones	Progress/Commentary
Building on our strong foundations to maintain and enhance excellent research in Engineering and Physical Sciences (EPS) disciplines.	• Performance at UK level as seen in analyses of citation impact of EPS disciplines, benchmarking it against world average and comparator countries. • Performance of EPSRC-supported research as seen in analysis of outcomes submitted to the Researchfish outcomes collection system.	• Relative impact of publications from EPSRC-funded research remains consistently high across all the EPS disciplines. • Publications arising from EPSRC-funded research appear 3 times more often in the top 1% of cited publications in the EPS discipline than the world average. • 120,000 publications, 1500 policy influences and £6.5bn of further funding have been reported from EPSRC investments in the Researchfish data collection for EPSRC outcomes and outputs in 2017[1].
A more productive, connected, resilient and healthy nation.	• Investment priorities to deliver prosperity for the nation.	• We continue to build on the strong foundations of past investments to make the UK a successful nation in research and innovation and deliver on the four prosperity outcomes outlined in the delivery plan 2016/17-2019/20. '**Science for a Successful Nation 2018**' event showcased the impact engineering, maths and physical sciences research has had on the UK and the world[2]. • Some other notable key investments made during 2017-18 that will help us realise the goals of the four prosperity outcomes include: – A £19.5m EPSRC and ESRC[3] investment in a new research centre, the UK Centre for Research on Energy Demand (UKCRED), to develop and deliver internationally leading research, focusing on energy demand from a systemic, socio-technical perspective. – £14m (including £0.5m from NERC[4]) for five new projects to take novel approaches to challenges in data science which include new ways to explore application of machine learning methods and develop algorithms to deal with large data.

[1] This covers outcomes of grants/fellowships which were current at start of 2017 or which had ended after November 2009 (a period covering around 9 years)
[2] https://epsrc.ukri.org/newsevents/news/sfsn2018/, https://epsrc.ukri.org/newsevents/lori/
[3] Economic and Social Research Council (ESRC)
[4] Natural Environment Research Council (NERC)

Overview

Priority/Objective	Deliverables/Milestones	Progress/Commentary
Protecting the UK's long-term capability.	• A programme of long-term excellent research with a 60:40 balance between 'community-driven/ investigator-led research' and 'strategic research'. • A portfolio of research that fosters multidisciplinary research to answer key questions. • Investment choices/ priorities at research area level, derived from EPSRC's leadership and extensive knowledge of the EPS landscape.	• Our expenditure in 2017-18 was £989.7m[5]. For research grants and fellowships we achieved a balance of 56:44 for community-driven/ investigator-led research to strategic research. On track to achieve 60:40 by 2019-20. • 56% of our research grant portfolio on 31 March 2018 is multidisciplinary[6]. • EPSRC enables researchers to push the frontiers of discovery; 59% of applications received and 83% of funded research and fellowship grants were judged by the peer review panels to be 'adventurous' (i.e. showing high levels of creativity and having the potential to be transformative). • We have taken a proactive, agile approach to monitoring our portfolio through evolving the way we deliver our 'Balancing Capability' strategy. The strategy is now embedded across our portfolio through an ongoing process of monitoring research areas and making updates within the context of the changing research funding landscape. • Our in-depth knowledge of the portfolio gathered through extensive engagement with the EPS community has enabled us to respond effectively to new investment opportunities as they arise, including funding associated with the Government's Industrial Strategy.

[5] Payment made in 2017-18 on research, training and fellowships grants

[6] Multidisciplinary is defined as a joint funded grant with another Research Council or where the PI/CoIs on the grant are in different disciplines (based on mapping departments to disciplines). Fellowships are excluded as they are awarded to individuals. Data: current research grant portfolio on 31 March 2018.

Priority/Objective	Deliverables/Milestones	Progress/Commentary
Highly skilled numerate individuals.	• Training provision at all career stages to nurture people with leadership potential.	• In 2017-18 there were 2500 new postgraduate research students. This includes 223 Industrial CASE students[7] which brings the total number of current students supported to 10,000. • We have supported researchers to develop their capability and leadership in the research environment by investing £53m to fund 61 fellowships at different career stages. • EPSRC launched a call for Centres for Doctoral Training (CDTs) on 17 January 2018, with decisions expected in December 2018. We expect to commit £492m to support 90-120 CDTs. • 40% of our doctoral graduates go on to work in the private sector and around 35% are employed in the higher education sector.[8]
Ensuring that national funding has real impact.	• Investment in resources and support to enable impact and timely exploitation of innovative opportunities.	• EPSRC awarded £60m to 33 Universities to realise impact through Impact Acceleration Accounts[9] (IAAs) in July 2017. The previous awards which ended in March 2017 after running for four and a half years were very successful, resulting in – Funding of 3000 projects – Creation of 142 spin outs – Filing of 549 patents – Development of 870 prototypes as a step towards product development – Funding of 783 secondments to enhance skills and knowledge transfer – Leveraging of £292m from collaborating partners

[7] Industrial Cooperative Awards in Science & Technology (CASE) provides funding for PhD studentships where businesses take the lead in arranging projects with an academic partner of their choice.

[8] Calculation based on EPSRC's analysis of data from Destination of Leavers survey 2015/16 which provides detailed information on the activities of students six months after leaving higher education

[9] IAAs offer flexible support for institutions to operate tailored schemes that facilitate the realisation of the impact of their EPSRC-funded research, in a manner that best suits the strategies and opportunities of the institution. The figures quoted here are from analysis of the annual reports submitted by the IAAs.

Priority/Objective	Deliverables/Milestones	Progress/Commentary
Provision of state-of-the-art infrastructure.	• Investment in internationally competitive scientific infrastructure including world-class laboratories.	• An independent study commissioned by EPSRC to assess the socio-economic value of research equipment vital for 'world-class labs' highlighted significant impact on the equipment supply chain and training of researchers. • EPSRC invested £20.2m in 2017-18 as part of its strategic equipment programme. Besides this, £6.8m of research equipment was funded on standard EPSRC grants across all themes in the same period. This vital investment supports research throughout the EPSRC remit and enables activity in a large proportion of the EPSRC portfolio. • EPSRC continues to fund world-class facilities for EPS communities and to facilitate multidisciplinary working. To reflect the national importance of its mid-range facilities to the research community, the facilities were rebranded in 2018 as 'EPSRC National Research Facilities'.[10]

[10] https://epsrc.ukri.org/newsevents/pubs/nrfbrochure/

Priority/Objective	Deliverables/Milestones	Progress/Commentary
World-class international collaborations.	• Enhanced partnerships with global research leaders. • A portfolio of research addressing UN development goals which contribute to UK's commitment to Official Development Assistance (ODA).	• EPSRC continues to develop collaborative working relationships with international partners in Europe, Japan and USA. For example, the lead agency funding agreement with Science Foundation Ireland has been expanded to include joint UK-Republic of Ireland PhD training centres in the latest EPSRC Centres for Doctoral Training call. • A total of £9m UK funding has been committed this year through three Newton Fund activities: in sustainable deltas (with NSFC, China, and NWO, Netherlands); offshore renewable energy (with NERC and NSFC); and energy demand reduction in the built environment (with ESRC and DST, India). • Five grants with a total value of £5.5m were funded through the EPSRC GCRF call in "Resilient and sustainable energy networks for developing countries" launched in June 2017. • A new pilot funding initiative was launched in December 2017 to partner with the best international researchers. Up to £15m is available to support 10-15 consortia under the International centre-to-centre research collaborations.

Priority/Objective	Deliverables/Milestones	Progress/Commentary
Realising the benefits of government investment in grand challenges.	• Ambitious multidisciplinary investments in grand challenge infrastructures announced by the government.	• EPSRC is delivering and managing the new Rosalind Franklin Institute following a £100m investment by the government in early 2017. The institute reached an important milestone when it announced its first grant to fund development of a time-resolved high-resolution transmission electron microscope in February 2018. • EPSRC are funding the Faraday Institution, the UK's first independent national institute for battery research. £78m will be administered through EPSRC to include the formation of the institute and to kick start the first tranche of research activities. • EPSRC have also awarded £44.5m over three and a half years for four research hubs to develop robotic solutions to enable safer working environments in the areas of off-shore energy, nuclear energy and space. This is part of the £68m funding awarded from ISCF to the latest ground-breaking research and innovation projects in robotics and artificial intelligence systems.
Enhanced equality and diversity.	• Policies to attract and support the best researchers from a diverse population into the research and innovation ecosystem.	• Female panel membership has increased from 17% in 2012/13 to 30% in 2016/17 and 34% in 2017/18. • EPSRC launched a call in November 2017 to fund projects aimed at improving equality, diversity and inclusion within the EPS. This is the first of its kind in the Research Councils and is being managed as a pilot by EPSRC as part of the Research Councils' collective approach to Equality, Diversity and Inclusion during the transition to UKRI. • EPSRC seeks to harness talent from all available sources; in 2017-18, 16% of our funded investigators were female, an increase on previous years.
Driving an efficient research base.	• Efficiencies in admin resources with a target of less than 2% of our annual budget. • Efficiency saving through shared resources.	• EPSRC admin spend for 2017/18 was 1.6% of the total budget. • EPSRC continues to work with other research councils and partner organisations to drive operational efficiencies where possible.

Priority/Objective	Deliverables/Milestones	Progress/Commentary
Partnership with Universities.	• Successful partnerships with Universities to maximise impact from EPSRC's investments and to increase strategic cohesion across the innovation landscape.	• EPSRC supported Principal investigators and Co-investigators in 240 organisations, some of which are international organisations (due to international funding agreements and ODA schemes like GCRF and Newton fund)[11]. • We have continued the positive engagement with our 36 framework, strategic and corresponding partner Universities which has enabled us to respond to changing policy landscapes and deliver additional funding allocations.
Partnerships with business and innovation funders.	• Leverage from partnerships maximised. • Co-investment with partners in the innovation ecosystem to take our research to innovation in order to maximise impact and innovation potential of our investments	• 50% of our portfolio is collaborative with users including businesses, charitable organisations, government departments and others. This year 3900 user organisations have engaged with our portfolio of research and training, of which 546 were 'new' to EPSRC (i.e. they had not collaborated on EPSRC investments over the last 10 years). • Total leverage on the EPSRC portfolio on 31 March 2018 from user organisations was £1.2bn. • 78% of research grants announced in 2017-18 have direct relevance to various industrial sectors, including but not limited to Aerospace, Defence and Marine, Chemicals, Construction, Communications, Energy, Electronics, Healthcare, IT, and Manufacturing.[12] • In 2017-18 we have invested £24m to support activities with Innovate UK to take research in areas such as energy, industrial biotechnology and quantum technologies through to innovation. EPSRC continues to lead on delivering Innovation and Knowledge Centres, with Innovate UK and BBSRC, to support emerging technologies, as well as providing £2m per year to support Innovate UK-managed Knowledge Transfer Partnerships.

[11] As at 31 March 2018
[12] Analysis based on number of grants announced in 2017-18

Priority/Objective	Deliverables/Milestones	Progress/Commentary
		• EPSRC has been leading on a new pilot initiative intended to improve knowledge sharing between research universities and the Catapults. Several Research Councils, (AHRC, EPSRC, ESRC and NERC) have been involved in the development of the Researchers in Residence (RiR) activity that seeks to support the development of new collaborations through research visits/ residencies for academics to spend time at Catapults. Over the life of the pilot it is anticipated that the RCUK Catapult RiR initiative will support 52 awards linked to nine Catapults and will be funded to a total of £2.6m.
Reforming the Research Councils.	• A strong and positive contribution to the implementation of UKRI, whilst carrying on business as usual and minimising disruption to the research base – working with BEIS and shadow UKRI partner organisations.	• As part of UKRI, EPSRC is working towards actively contributing to the new organisation's vision and success. Our achievements and investments through the year demonstrate our commitment to be a strong and valued partner in this new organisation. • Chief Executive of EPSRC continued as chair of RCUK during the run up to UKRI and led the RCUK transition programme as Research Councils prepared to join UKRI.

Overview

Financial Highlights

A more detailed analysis of the financial highlights noted below can be found in the Financial Statements on pages 76 to 79.

Statement of Comprehensive Net Expenditure	2017-18 £000	2016-17 £000
Total Operating Income	(32,717)	(27,962)
Total Operating Expenditure	1,091,556	968,058
Net Operating Expenditure	**1,058,839**	**940,096**
Other Comprehensive Net Expenditure		
Net (Gain)/Loss of Revaluation of Property Plant and Equipment	(194)	(589)
Total Comprehensive Net Expenditure	**1,058,645**	**939,507**

Statement of Financial Position	As at March 2018 £000	As at March 2017 £000
Total Non-Current Assets	15,537	12,089
Total Current Assets	56,028	44,231
Total Current Liabilities	(56,739)	(49,397)
Total Taxpayers' Equity	**14,826**	**6,923**

Statement of Cash Flows	2017-18 £000	2016-17 £000
Net Cash Outflow from Operating Activities	(1,054,980)	(914,617)
Net Cash Flow Inflow/(Outflow) from Investing Activities	0	(74)
Net Cash Flows from Financing Activities	1,064,313	925,240
Net Increase/(Decrease) in Cash and Cash Equivalents in the period	**9,333**	**10,549**
Cash and Cash Equivalents at the beginning of the period	23,201	12,652
Cash and Cash Equivalents at the end of the period	32,534	23,201

Key Issues and Risks

A summary of the principal risks facing EPSRC and details of how these are being managed can be found in the Governance Statement on page 45.

These risks cover a broad range of concerns and are those which would have the most impact on our ability to deliver our mission. Mitigation strategies are in place and risks are discussed at a senior level. They are fully shared with Council and its Audit and Risk Assurance Committee.

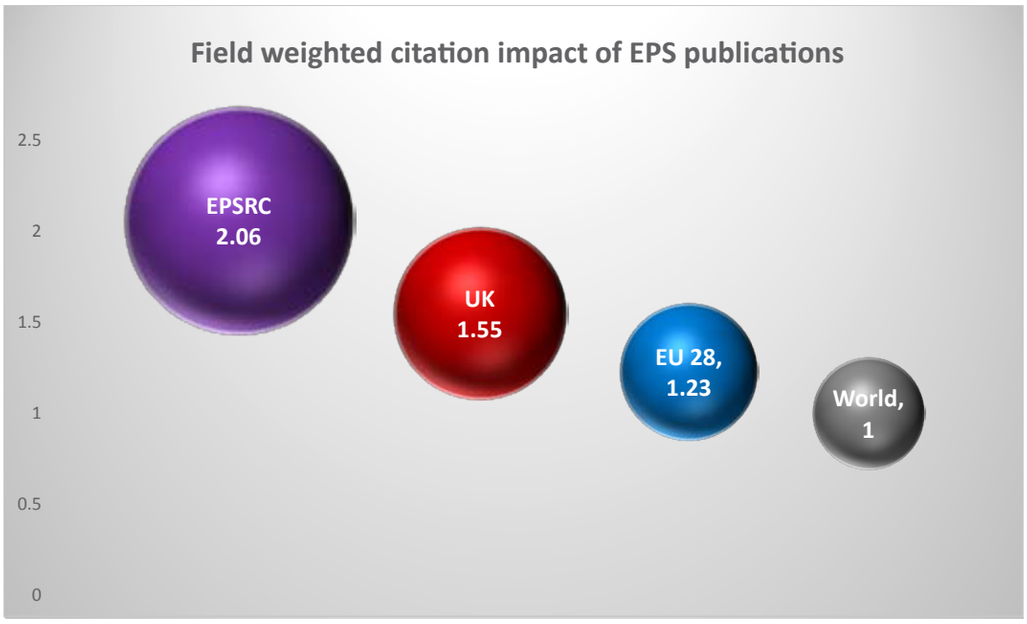
Going Concern

The financial statements have been prepared on a going-concern basis. For full disclosure please refer to Note 1 on page 80 of the accounts.

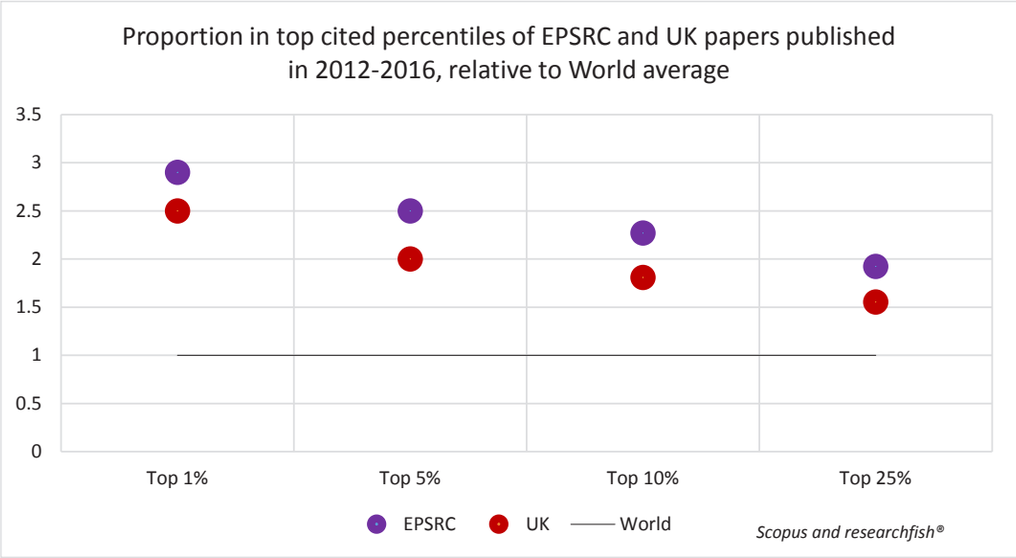
Building on our strong foundations to maintain and enhance excellent research in Engineering and Physical Sciences (EPS) disciplines

EPSRC continues to play a pivotal role in nurturing, catalysing and supporting high-quality research and training across EPS. Through its policies, support and strategic engagements, EPSRC seeks to enhance the success of the research base, not just in EPS but across all disciplines through the wider impact of the EPS activities supported.

Publications from EPSRC-funded research continue to reflect the strength of UK research in EPS. EPSRC-funded publications appear relatively more frequently than expected in top citation percentiles[13], for example, almost three times more than the expected UK or world average in the top 1% of highly cited articles[14]. The Field-Weighted Citation Impact (FWCI)[15] for EPSRC-funded publications continues to remain well above the world and UK average in these subjects.

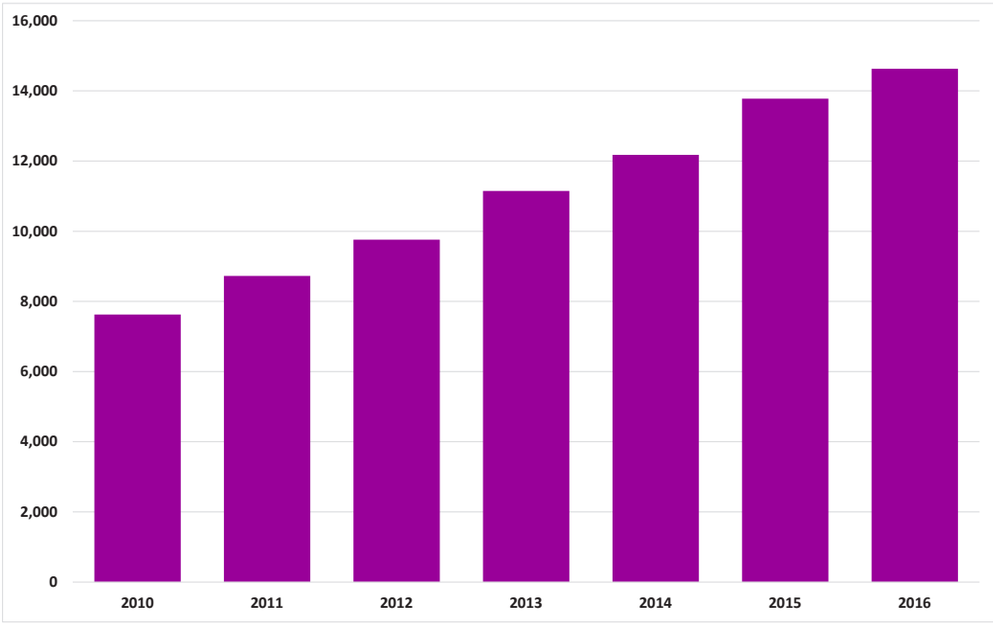


[13] Citation percentiles: the number of publications that belong to the world's top x per cent of most cited publications.
[14] Results based on analysis of publication mostly from researchfish submission using Scival. Data download Dec 2017.
[15] FWCI compares the actual number of citations received with the average number of citations for a publication of the same subject, document type and publication year. It therefore accounts for differences in citation practices between subjects and is benchmarked against the world average, set at 1.00.



*Citations take time to accrue; hence the publication window chosen for analysis is 2012-2016

Number of publications (by publication year) based on researchfish submissions



The dataset for 2017 of 13000 publications is incomplete due to lag in data input and hence has been excluded from this graph. This is consistent with the observation that counts of publications for the year go up in subsequent years as more submissions come in through Researchfish.

Performance Analysis

Research Outputs and Outcomes (from researchfish 2017 submissions)

In common with most of the other research councils, 2017 was the third time EPSRC used researchfish® to collect information from Principal Investigators (PIs) and students about the outputs, outcomes and impacts of their funded research. In order to present a richer picture, EPSRC combines the data gathered from researchfish® with other data sources, for example Companies House and the European Patent Office, and presents it in the form of an 'outputs report'[16].

Highlights from the report include:

- EPSRC-funded research is relevant to a wide range of industrial sectors, with highest numbers of impacts reported relevant to energy, digital/communications/information technologies and healthcare.
- 14,000 journal articles were published from EPSRC-funded research in 2016 and 13,000 recorded so far for 2017.
- 40% of new collaborations[17] reported, of which 83% are with the private sector. 60% of the private sector collaborations are with small- and medium-sized businesses (SMEs).
- 40% of the awards reported further funding totalling £6.5bn.
- 1500 influences on policy or practice across a wide range of sectors.
- 1300 patent applications in the past decade from EPSRC-funded research, of which 45% were granted (as of July 2017).
- 530 spin-outs from EPSRC-funded research since 2004.

Impact story based on submission to researchfish (exemplar): Quantum secured encryption technology

EPSRC-funded researchers and students co-founded KETS Quantum Security Ltd (KETS) in July 2016 to deliver optical communications technology that enables the strongest digital encryption. This was born out of the research pioneered by Professors Jeremy O'Brien and Mark Thompson at the Centre for Quantum Photonics (CQP) at the University of Bristol and supported by the Quantum Communications Hub. The company was founded by Dr Chris Erven, Dr Jake Kennard, Dr Phil Sibson and Mark Thompson. Professor Thompson has been supported through a number of EPSRC awards over years; Dr Chris Erven is a co-investigator on the EPSRC-funded Quantum Technologies Hub for Quantum Communications Technology; Dr Jake Kennard received an EPSRC Industrial CASE award and Dr Phil Sibson's PhD was funded by EPSRC and is now a Quantum Technology Enterprise Centre Fellow and Research Associate at the Quantum Engineering Technology Labs at the University of Bristol. KETS Quantum Security have developed the world's first quantum secured encryption technology in an integrated platform.

The company's integrated technology uses existing semiconductor fabrication processes to manufacture cutting-edge optical microchips that are fast, efficient to manufacture and can be integrated with existing electronics. It is the only quantum solution which meets the challenging size, weight, and power (SWaP) requirements demanded by customers, enabling large scale adoption of quantum encryption in a multitude of different applications that just weren't accessible before – including defence, telecoms, and critical infrastructure; with end-users from finance, government, and data centres. Recently, KETS Quantum Security have been announced as winners of a major venture capital initiative led by BT, the Telecom Infra Project (TIP) and Facebook, which will provide them with access to investors with funds totalling £125 million.

[16] Research outputs 2017, EPSRC, www.epsrc.ac.uk/newsevents/pubs/researchoutputs2017/

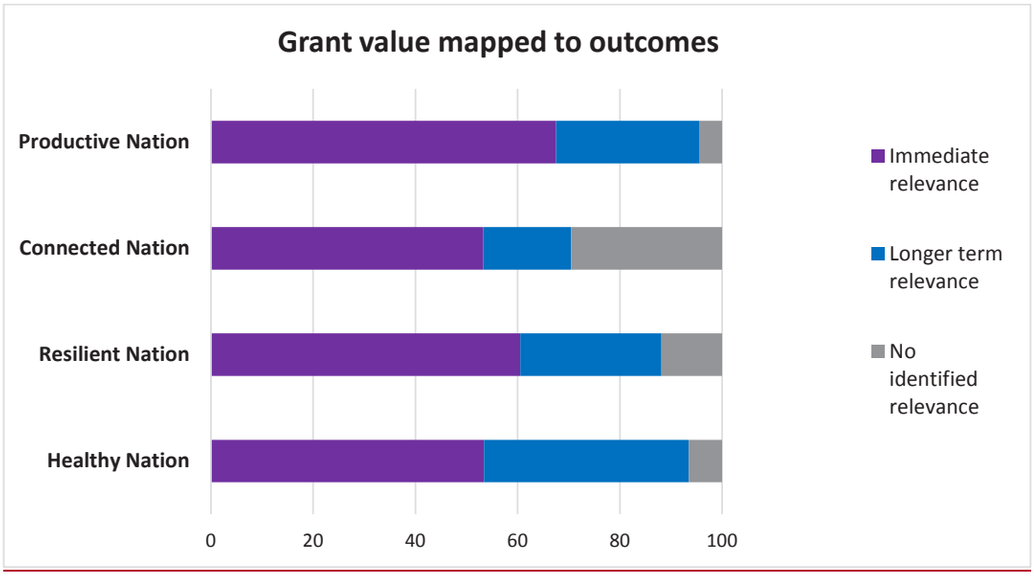
[17] These are collaborations that were put in place after the start of the grant and as such would not be reported under collaborations captured at the application stage

Performance Analysis

EPSRC delivery plan 2016-2020: Ambitions to deliver prosperity for the nation

EPSRC places emphasis on supporting excellence across the breadth of its portfolio of research and training and, managing a balanced portfolio of 'investigator-led' discovery research and research with 'strategic intent' focused on immediate national needs. EPSRC's policies and funding provides the support for ambition, exploration and collaboration while simultaneously steering research priorities where appropriate and fostering partnerships to deliver economic and societal benefits. Impacts arising from EPSRC-funded research over the years have laid the strong foundation that has enabled us to aspire to a more productive, connected, resilient and healthy nation in our Delivery Plan for 2016/17-2019/20. The four prosperity outcomes are congruent with the vision of UKRI.

The four prosperity outcomes are one of the ways that we communicate the ambitions and impact from our investments. As of 31 March 2018 the percentage of our portfolio relevant to the four prosperity outcomes of a productive, connected, resilient and healthy nation was as follows:



Each bar provides an overview on the proportion of the whole portfolio in relation to the relevant outcome.

Below and over the page are a few examples highlighting how the research that we fund continues to contribute to national prosperity through the four interconnected outcomes of productive, connected, resilient and healthy nation as outlined in the current delivery plan.

Productive Nation

EPSRC has invested £6.6m through the Engineering for a Prosperous Nation call to support projects with potentially transformative impact in fields ranging from autonomous vehicles to energy storage and healthcare technology. Research areas include the development of intelligent driver seats to act as co-pilots in autonomous cars; the use of diamond quantum technology to investigate neurological diseases such as Alzheimer's Disease; the use of novel materials to create artificial leaves for use in solar power generation; and the investigation of new solutions to antimicrobial resistance in wastewater systems. EPSRC, alongside the UK's other Research Councils and Innovate UK, is supporting the Year of Engineering, a year-long government-wide campaign to celebrate UK engineering and inspire a new generation into engineering

careers, and the 28 new projects supported through the Engineering for a Prosperous Nation call are a testament to our firm belief that novel, transformative research will help to make the UK a more prosperous and productive nation.

Connected Nation

In January 2018, EPSRC invested £14m to five new research projects that take new approaches to challenges in data science. The projects will bring together statisticians, computer scientists and, in one case, environmental scientists, alongside an array of public and private sector partners and stakeholders. The projects will also look to partner with other bodies like The Alan Turing Institute and will have relevance to a wide range of sectors including health sciences, security, transport, smart cities, finance, and the environment. In addition to EPSRC's funding, the projects between them have attracted further contributions from partners worth £3.7m.

Resilient Nation

In 2017 EPSRC funded four interdisciplinary, multi-institute consortia and seven topic-specific projects that will look at new ways to counteract global warming by removing greenhouse gases from the atmosphere.

The £8.6m programme has support from cross-research council and Government and will involve around 100 researchers from 40 UK universities and partner organisations, and will investigate how a variety of different methods can be utilised to remove greenhouse gas. The UK is committed to the 2015 Paris Agreement to keep global temperature rise well below 2°C and pursue efforts to limit the temperature increase to 1.5 °C above pre-industrial levels. Alongside significant emission reductions, large-scale removal of greenhouse gases from the atmosphere could considerably increase the likelihood of achieving this goal.

Healthy Nation

Three EPSRC Interdisciplinary Research Collaborations (IRCs) were allocated additional funding of £11m in December 2017 to continue healthcare sensing systems research that is revolutionising how we identify and respond to outbreaks of infectious diseases, diagnose and manage lung diseases, and recognise and solve emerging health and wellbeing issues in the home environment. The IRCs are centres of internationally acknowledged scientific and technological excellence, bringing together researchers, clinicians, industry and other professionals to make a real impact in areas of key future industrial relevance to the UK. All three IRCs have made significant progress in their first four years; researchers at PROTEUS developed a camera that can 'see' through the body; a team at i-sense has developed mobile phone- connected tests to diagnose infections, including HIV and Ebola, in low-resource settings; and SPHERE was named as the winner of the health and technology category at the 2016 World Technology Awards.

The three IRCs were initially established in 2013 with a £32m investment by EPSRC. The IRCs Next Steps funding will provide them with the support they need to become three self-sustaining centres of excellence in the respective areas of sensing in healthcare.

Protecting the UK's long-term capability

EPSRC is focused on maintaining and enhancing a healthy pipeline of research and training from 'discovery' research through to innovation. A key part of delivering the successful pipeline is to encourage and support collaboration with users of research, for example businesses, government departments, charities, public and others. It has also involved providing mechanisms and support to bring together the strengths of individual disciplines to solve real-world problems and reach the goals of the research through new and faster pathways.

56% of our research grant portfolio on 31 March 2018 is **multidisciplinary**

3000 user organisations are collaborating with our portfolio as of 31 March 2018

78% of our grants portfolio on 31 March 2018 has direct **relevance to industrial sectors**

EPSRC along with the Economic and Social Research Council (ESRC), invested £19.5m in a new research centre, the **UK Centre for Research on Energy Demand (UKCRED)**, to develop and deliver internationally leading research, focusing on energy demand from a systemic and socio-technical perspective. The centre will bring together a world-leading and multidisciplinary group of researchers involving 40 academics at 13 institutions across the UK from a range of disciplinary backgrounds.

Upcycling

EPSRC-funded research has enabled manufacturing company Armacell to reuse 95% of its production waste. The sound-absorbing technology licensed to Armacell has been exploited globally with an average market value of £10m. It has led to the development of ArmaSound, a high-performance sound-absorbing product, and over 500 tonnes of plastic waste reused each year, preventing it from being sent to landfill.

Armacell produces high-performance acoustic material technology products that offer 50% better sound absorption than competitors' products of a similar size. The product, ArmaSound, is used across several industries including petrochemical (industrial piping), domestic appliances (boilers) and air handling (ventilation ducts) and in heavy automotive (tractors and excavators). By reusing industrial polymeric waste, Amarcell is able to prevent more than 500 tonnes of spent plastic from going into landfill every year. The underpinning research behind ArmaSound has relied on advanced analytical, computational and experimental methods to examine and optimise the acoustic and mechanical properties of porous elastomeric coatings. This research has led to new sound-absorbing materials that could be produced from waste industrial plastics and rubbers. Researchers were able to enhance the acoustic-absorption and vibration-damping performance of these products while maintaining quality and enabling the scale-up for manufacturing worldwide.

Simple innovations

Inspired by the simplicity of litmus paper, commonly used for the rapid assessment of acidity in water, an interdisciplinary team of researchers from the University of Bath's Water Innovation & Research Centre and Centre for Sustainable Chemical Technologies, with funding from EPSRC, have published new findings reporting the proof of concept of a revolutionary microbe-based paper sensor for detecting toxic compounds in water. The device not only has the potential to make water assessment rapid and cheap – each device is expected to cost no more than £1 – but is also environmentally friendly since the paper sensor is made of biodegradable components. It is also easy to use and transport, weighing less than 1g.

Breakthrough in diagnostics

In a clinical first, researchers at the EPSRC Centre for Synthetic Biology and Innovation at Imperial College London have developed a tool which 'lights up' when it detects the chemical signature of harmful bacteria in the lung. In a small, proof-of-concept study, the team found that their biosensors could accurately detect markers of *Pseudomonas* bacteria - a leading cause of chest infections in people with weak immune systems or chronic conditions, such as cystic fibrosis. The researchers are hopeful they could eventually develop their cell-free sensors into a range of rapid diagnostic tests which could be used either at home, in GP surgeries or hospital clinics, or even in remote areas of the world with limited access to hospital diagnostics, at a fraction of the price of existing tests.

Investing in highly skilled numerate individuals

Supporting individuals to develop high-level skills necessary for UK's prosperity and leadership in research is a key EPSRC strategy. In a rapidly changing world dynamic and balance of power, specialist high-level skills in EPS disciplines are needed to maintain UK's economic competiveness. Specialist skills in EPS disciplines are also needed for the UK to reap the benefits of emerging and evolving technologies, especially in areas such as artificial intelligence, robotics and data analytics. EPSRC's doctoral training programmes across a wide range of disciplines including engineering provide flexible support, opportunities for mutually beneficial collaborations and transferable skills. In addition to expertise in subject areas, the wide range of training provided helps to prepare a workforce able to contribute to all areas of the economy. In addition to doctoral training we also support researchers across all career stages to develop their capability and leadership in the research environment. **40% of our doctoral graduates go on to work in the private sector and 35% are employed in the higher education sector**[18].

During 2017-18 we funded 61 fellowships which included 25 Early Career Research Fellowships, 13 fellowships to support established researchers, 8 postdoctoral fellowships and 15 other fellowships. Over the same period we supported 2500 new PhD students.

We have a continued focus on enhancing our training so that we are in a position to address the systemic skills shortages in the UK. Over the last ten years our training grants have involved 1400 businesses, charities and other users of research, leveraging £420m worth of support. A mid-term review of the Centres for Doctoral Training (CDTs) held in 2017 highlighted the breadth, impact, outstanding best practice and exemplars of the excellent research undertaken so far[19]. We have used the findings of the review to inform the 2018 CDT call.

[18] www.hesa.ac.uk/news/29-06-2017/sfr245-destinations-of-leavers. Figures based on our analysis of the HESA Destination of Leavers from Higher Education (DLHE) data 2015/16

[19] Building skills for a prosperous nation EPSRC Centres for Doctoral Training, www.epsrc.ac.uk/newsevents/pubs/cdtprosperousnation/

In January 2018 EPSRC committed £492m for a call to support the next group of CDTs. The CDTs will focus on cohort-based doctoral training in areas where both breadth and depth of research training are required to address UK skills needs at doctoral level across the EPS landscape. The importance of developing science, technical, engineering and mathematics (STEM) skills is a key part of the Government's Industrial Strategy, ensuring that all areas of the UK embrace innovation and build the skills the economy needs to thrive. CDTs are one of the three main ways by which EPSRC provides support for Doctoral Training. The other routes are the Doctoral Training Partnerships (DTPs) and Industrial Case Studentships. In addition to the CDTs, 41 Universities were awarded DTP funding in February 2018 totalling £184m to support doctoral training over a four-year period.

Skills training to harness benefits from 'big data'

The EPSRC CDT in Cloud Computing for Big Data at Newcastle University is tackling an acute global skills shortage by training the next generation of experts in the analysis of big data using advanced statistical methodologies and cloud computing technology. With total funding of £5m, it is receiving £3.4m in EPSRC support and £1.6m from Newcastle University, with additional sponsorship from Microsoft, Red Hat, AkzoNobel and the Savas Parastatidis Foundation.

Major multinational AkzoNobel operates in a range of markets, including decorative paints, performance coatings and speciality chemicals. To explore how the huge data mountains generated by the company could be exploited to support its activities in the ship paint sector, AkzoNobel approached the EPSRC CDT in Cloud Computing for Big Data. The aim was to assess the feasibility of extracting value from data on the position of every ship worldwide (information collected every 15 minutes) and on which ships were coated with AkzoNobel paints. A team of four CDT students undertook the project, analysing the data in the 'cloud' over an eight-week period. This produced valuable findings that the company could harness to inform its commercial strategies and help shape its decision-making as it sought to expand its share of the ship paint market. As well as producing insights into vessel movements over time, the students developed a clear understanding of the skills needed to tackle data cleansing/modelling and of different challenges and priorities relating to the utilisation of data resources in future.

Investing to ensure national funding has real impact

EPSRC's funding supports the excellent and broad research in EPS disciplines. In order to derive maximum benefit from the research and training that we fund, we provide flexible support to enable variety of impact. We facilitate generation of impact through multiple routes, for example through co-investments with the users of the research, through close collaboration across different disciplines alongside targeted investments which accelerate impact.

In order to deliver impact for national prosperity EPSRC investments have very close ties with 'users' of research. The users of research could be businesses, charities, government departments and other organisations which see benefit in engaging with the research that we fund. 50% of our research and training portfolio is collaborative with users of research, this includes 3,900 organisations of which there are 540 newly engaged organisations. Our research and training portfolio as on 31 March 2018 leveraged £1.2bn from user organisations, an indication of engagement and benefits of the research and training that we fund to these organisations.

EPSRC Impact Acceleration Accounts (IAAs) are flexible funds that enable universities to support a range of knowledge exchange activities to accelerate the impact from EPSRC-supported research. The IAAs are meant to speed up the contribution that scientists make towards new innovation, successful businesses and the

economic returns that benefit the UK. The IAAs have helped bring research outputs to translation and the timely intervention has resulted in many spinouts from university research, intellectual property protection for ideas and research outputs, collaboration with businesses for taking research through to innovation and further funding to progress research outcomes.

IAA helping energy storage pilot project for London Underground

IAA funding at University of Sheffield was used for collaborative research and development. The work resulted in a feasibility study into installing energy storage on the London Underground (LU) train network. It involved finding a suitable location on the LU network for the energy storage system, modelling estimated energy saving and other benefits and full costing to install the pilot. The successful completion of the study using LU's extensive in-house modelling was captured in a report with the business case and selected location. Since completion of the project, a number of large and small industrial partners have approached LU with an interest in collaborating on the energy storage pilot. Agreement has been reached to pursue a £3.5m Innovate UK (IUK) bid between LU, Siemens and an SME. Further IAA money has allowed a 3-month scoping study between Siemens and the Principal Investigator (PI) to evaluate possible technologies in preparation for the IUK bid. The project has led to a number of collaborations between the PI, Siemens Energy and Siemens Rail.

In July 2017, EPSRC announced two investments totalling £138m that are aimed at strengthening links between the research base, industry and business partners. The investments are:

- A new initiative of Prosperity Partnerships that represent £31m of government funding from the EPSRC and the ISCF, matched by a further £36m from partner organisations in cash or in-kind contributions, and £11m from universities' funds, resulting in a £78m investment.
- EPSRC investment of £60m for 33 universities to advance their IAA. The IAAs' aims are to promote movement between universities, businesses and other organisations; to support the very early stage of turning research outputs into a commercial proposition; to improve engagement with businesses, government and the third sector to sow the seeds of new collaboration and more strategic engagement, and to reach out to researchers who do not normally engage in exploitation activities and driving culture change within the university.

Enhancing rail reliability, maintenance and capacity

EPSRC-supported researchers at Loughborough University have developed a new fault-tolerant points mechanism that could revolutionise the global rail industry. Developed by the university's Control Systems Group and supported by the UK Rail Safety and Standards Board (RSSB), the team's ingenious Repoint system uses safety concepts derived from the aerospace and nuclear industries in a robust and reliable locking mechanism that overrides track switch failures. In the event of a single failure, the system enables rail traffic to continue to pass along the track while remedial maintenance is scheduled. Immediate disruption to services is avoided. This ultimately improves safety and maintenance costs while enhancing network capacity. The technology was conceived in fundamental research funded by EPSRC/RSSB and has since progressed through key commercial milestones with support from the university's EPSRC IAA, the Higher Education Innovation Fund and RSSB. Repoint's innovative solution is globally significant. The UK alone has 20,000 switch and crossing units and, despite representing only 5% of network mileage, they account for 15% of the track maintenance budget. In 2016, the project won a prestigious Innovation Award from the Institute of Engineering and Technology in recognition of its potential to improve safety, reduce maintenance and increase capacity. The technology also featured in a 2017 report by the Institute of Mechanical Engineers (IMechE) looking to put Britain's railways back on track.

Investing in state-of-the-art infrastructure

EPSRC continues with its commitment to provide its researchers access to cutting-edge scientific research infrastructure and provides flexibles routes to fund 'world-class' labs as well as facilities across the scale of operation in a challenging funding environment. We continue to emphasise and encourage sharing of equipment that we fund and strive to better what we have achieved in terms of access and sharing, whilst balancing the primary requirements of the research community.

EPSRC invested £20.2m in 2017-18 as part of its strategic equipment programme. This investment, allocated to 26 institutions across the UK, provides researchers across the EPSRC remit access to cutting-edge equipment in priority research areas. Besides this, approximately £6.8m of research equipment was funded on standard EPSRC grants across all themes in 2017-18. This vital investment supports research throughout the EPSRC remit and enables activity in a large proportion of the EPSRC portfolio.

EPSRC equipment funding has significant impact on research and training.

A recent independent study commissioned by EPSRC explored the value, benefits and impact of its investments in mid-range research equipment over the last 10 years. The so-called mid-range equipment (defined for this study as costing between £130,000 and £14m) provides the backbone for research and innovation. Although similar studies have been undertaken on large-scale facilities, this is the first such study focused on mid-range instrumentation.

The report by Cambridge Policy Consultants highlights the socio-economic impact from EPSRC funding of equipment[20].

Key findings from the report are:

- Access to 'world-class labs' is essential for training of world-class scientists
- For every £100,000 of EPSRC funding on mid-range equipment grants, an additional £212,000 net was leveraged from other non-EPSRC sources, indicating significant engagement with stakeholders in the research.
- High-value supply chain involves UK scientific equipment manufacturers, adding value to the economy.
- The funding of research equipment has positive benefits in terms of co-design and co-production between academia and equipment manufacturers.
- Capability and capacity enhanced by equipment funding facilitates collaboration within academia and with industry.
- The increase in capability and training brought about by cutting-edge equipment has significant impact on the development of high-end skills.
- State-of-the-art equipment brings about health and societal benefits – for example, increased accuracy in medical diagnosis and contribution to energy security.

As part of its world-class laboratories portfolio, EPSRC funds state-of-the art facilities for the EPS research communities to use. These facilities provide leading-edge capabilities and technique development at a national level and/or access to European research facilities. To reflect their importance in the world-class laboratories landscape, and to the research community, we have rebranded these facilities in 2017-18 as the EPSRC National Research Facilities (NRF). The EPSRC NRFs provide additional capability to a diverse user base and I would like to encourage more academic and industrial researchers to benefit from these strategic resources of national importance.

[20] https://epsrc.ukri.org/newsevents/news/reporthighlightsimpactofepsrcfundedresearchequipment/

Harwell X-ray Photoelectron Spectroscopy Facility (Harwell XPS)

Delivered since August 2017 by Cardiff University, University College London (UCL) and the University of Manchester, Harwell XPS helps researchers achieve insights into materials' surfaces that are essential to making crucial advances in fields ranging from biology to tribology. Some exemplar projects that the facility is being used for by universities are:

- Exploring how phosphate coatings with anti-wear additives could provide improved protection and performance, for example for racing-cart engines
- Studying the potential of silver-based antibacterial polymer coatings for use in catheters and other medical devices
- Assessing the potential use of graphene-based materials in energy storage applications

Investing in international collaborations

EPSRC continues to work closely with international partners to enhance the investments we make in research and training. We also ensure that the value of scientific advances benefits developing countries and actively supports the UK government to meet its commitments towards Official Development Assistance (ODA) and the United Nations' (UN) sustainable development goals[21].

EPSRC and the National Institute for Health Research (NIHR) have committed £16m in January 2018 to develop new healthcare technologies to tackle international health challenges, ranging from the prevention of limb loss by Syrian refugees to faster diagnosis and treatment for parasitic diseases such as malaria. The fifteen projects funded are designed to address two key challenges:

- The development of affordable, robust, reliable and portable imaging and diagnostics tools that can be used to diagnose and monitor both infectious and non-communicable diseases. Projects were required to ensure that the technologies developed are transportable to remote locations and can be used by non-experts.
- The development of prosthetics and orthotics that combine both novel approaches and technology, and functionality through their affordability, robustness, reliability and fitness for purpose in low- or middle-income countries.

This investment is part of EPSRC's Global Challenges Research Fund (GCRF) allocation.

Also, through EPSRC's 2017-18 GCRF allocation, £4.1m was used to support the EPSRC research community through institutional sponsorship, in considering the potential development applications of their work in order to realise the potential of GCRF.

[21] http://www.un.org/sustainabledevelopment/sustainable-development-goals/

An EPSRC Newton-funded project that has advanced technology to create cleaner, more sustainable and affordable energy to improve the quality of life in villages in India has been awarded the Newton Prize worth £200,000 in November 2017. The Newton-Bhabha APEX-II programme is a flagship project in solar energy between India and the UK, building on the achievements of an earlier programme that focuses on addressing the challenges of perovskite solar cells (PSC), which utilise perovskites, a class of easily synthesisable and cost-effective materials. This has proved successful in terms of efficiency and costs but has shown materials and device instability from ambient humidity and oxygen in the air.

The project has advanced the technology and led to patents. Cheaper and low upfront cost processing has attracted interest in India and abroad and businesses may wish to adopt PSC technology for manufacturing once it gains stability against ambient factors.

In addition, the project has built up strong partnerships between academic groups from the two countries, marked by several offshoot projects, high-quality, high-impact joint publications, patents and 50 exchange visits of early-career researchers.

Scientists and preservation experts joined forces to help save historic York Minster Cathedral from decay and erosion from atmospheric pollution. The international collaboration supported by EPSRC, AHRC and the US National Science Foundation used advanced X-ray techniques to determine the condition of the Minster's limestone and mortars. A single-layer water-resistant coating that enables the stone to 'breathe' was developed by the team and used to treat the stone to prevent further decay. The findings from the project could help conserve other historic limestone buildings around the world.

Realising the benefits of government investment in grand challenges

The Alan Turing Institute

The data economy is key to the UK's prosperity and growth. It is predicted that data will benefit the UK economy by up to £241bn between 2015 and 2020[22]. To maintain the UK's leadership in data analytics and data innovation, EPSRC has established the Alan Turing Institute (ATI). Some key achievements of the institute in the period from its launch in October 2015 to 31 March 2018 include:

- Establishing the new ATI headquarters in the British Library, and building a community of 250 researchers
- Launching strategic partnerships to build collaborative research programmes in data-centric engineering with Lloyd's Register Foundation, data science at scale with Intel, defence and security with GCHQ and MOD, and economic data science with HSBC
- Building an in-house Research Engineering team that is already collaborating on 20 research projects. Additionally, launching research programmes in the areas of Public Policy and STEM
- Building new collaborations with the British Library, Microsoft and the Office for National Statistics
- Building a doctoral programme, attracting 70 UK and international students starting research projects either full-time in the Institute, or as part of a one-year enrichment scheme

[22] The Value of Big Data and the Internet of Things to the UK Economy 2016, CEBR report, https://www.sas.com/content/dam/SAS/en_gb/doc/analystreport/cebr-value-of-big-data.pdf

- In November 2017 ATI was assigned the role of a national research centre for Artificial intelligence (AI) which enables AI fellows to join the ATI.
- 130 publications by researchers under the ATI affiliation.

Quantum technology hubs

The quantum technology (QT) hubs have made significant progress as highlighted in the second annual report published recently.[23] They have also successfully showcased technology demonstrators, prototypes and early breakthroughs in the quantum technologies showcase held in 2016 and 2017 which had significant involvement and interest from businesses.

Oxford Ion Trap group (part of the networked quantum technologies hub; NQIT) demonstrated a laser-driven quantum logic gate between ions of two different isotopes of calcium. The work, published in Nature, was chosen as one of Physics World's top ten physics breakthroughs of the year, alongside a similar experiment performed concurrently at NIST in the USA.

The UK QT Hub in Enhanced Quantum Imaging (QuantIC), with the help of strong engagement with businesses, for example, Aralia Systems, Bridgeporth, Chromacity, Kromek, Lockheed Martin, M Squared Lasers, Thales UK and others, has been successful in early-stage development of new products which include a new kind of gravimeter for gravity mapping applications[24], 'Gas-Sight', a low-cost camera for gas imaging[25] and a new multiplexed imaging system for life sciences[26].

Henry Royce Institute

Funding for the Henry Royce Institute was announced in the Autumn Statement 2015. The £235m investment from Government will provide building and equipment to support the accelerated discovery and translation of advanced materials research. The institute will bring together world-leading academics from across the UK, working closely with industry to ensure commercialisation of fundamental research. It will address the gap in the UK innovation chain allowing the iterative design of advanced materials for various applications, at speed and reasonable cost, reducing the timescale to translate discoveries into applications and products, generating UK economic growth.

In 2017-18, the first building in the programme was completed, with the University of Sheffield's new translation centre starting to commission research facilities, significant progress on the Royce Hub building at Manchester has taken place with construction well underway on the University of Manchester Campus. The first suites of equipment are now available for use, with details of the equipment listed on the Royce website[26], with more items of equipment due to come online throughout 2018-19.

Rosalind Franklin Institute

In February 2018, the first grant was awarded through the new Rosalind Franklin Institute, an innovative multi-disciplinary science and technology research centre delivered and managed by EPSRC following a £100m government investment. £1.55m has been awarded through the Institute to fund the development of a time-resolved high-resolution transmission electron microscope, the first stage of a £10m project to build a ground-breaking microscope which will be the first of its kind in the world. The project will significantly

[23] Quantum hubs annual report 2016-17, http://uknqt.epsrc.ac.uk/files/nqitannualreport/; http://uknqt.epsrc.ac.uk/files/nqitannualreport1516/; https://www.quantumsensors.org/wp-content/uploads/2017/08/qt-hub-annual-report-2015-2016-web.pdf; http://uknqt.epsrc.ac.uk/files/quanticannualreport1516/
[24] https://quantic.ac.uk/quantic/wp-content/uploads/2016/10/Wee-g-Bridgeporth-CASE-STUDY-final.pdf
[25] https://quantic.ac.uk/quantic-partners-with-horiba-on-new-industry-project/
[26] https://quantic.ac.uk/quantic/wp-content/uploads/2016/10/M-Squared-Gas-Sight-Case-Study_FINAL_WEB.pdf
[27] http://www.royce.ac.uk/equipment-and-facilities/

advance electron microscopy for life sciences within the UK, a technique which allows visualisation of structures at near-atomic scale in time and space. The ability to quickly image structures before they become damaged will allow researchers to understand how drugs interact with their targets and enable understanding of many biological processes in exquisite detail.

Partnership with universities, business and innovation funders

EPSRC continues to build on its active engagement with stakeholders (HEIs, businesses, charities, innovation funders and others) in the knowledge and innovation ecosystem to maximise impact and deliver benefits for the scientific community as well as contribute to national prosperity.

The focus on strengthening the positive engagement with our strategic partner universities and businesses has enabled us to respond to the changing political landscape and deliver new funding streams at pace.

EPSRC-supported research focuses on responding to national needs. The impact from our research and innovation is accelerated and aided by collaborations with user organisations like businesses, charities and government bodies. Our research and training portfolio which has strong links and relevance to industrial sectors is key to the success of the Industrial Strategy. The portfolio of research and the strong partnerships that we have developed over the years are already helping to deliver the ambitions of the Government's Industrial Strategy.

Industrial Strategy Challenge Fund (ISCF)

Faraday Institution

As part of a coordinated activity between Innovate UK and the Advanced Propulsion Centre (APC), EPSRC funded the Faraday Institution in 2017 that will drive and accelerate fundamental research in developing battery technologies, and its translation. This investment is part of the government's ISCF and will have a budget of £65m over four years. In January 2018, the Faraday Institution awarded £42m to four UK-based consortia to conduct application-inspired research aimed at overcoming battery challenges to accelerate the electric vehicle (EV) revolution.

Robotics and Artificial intelligence

In November 2017 EPSRC awarded £44.5m, for four research hubs that will develop robotic solutions to enable safer working environments in the areas of offshore energy, nuclear energy and space, opening up new cross-disciplinary opportunities which are not currently available. These will be national hubs delivering internationally leading research and will be supported by an additional £51.6m from commercial and international partners. The UK Space Agency is co-funding one of the hubs.

Prosperity Partnerships

To continue with our support for fostering research partnerships that will strengthen the links between the UK's research base, industry and business partners, we have announced a set of Prosperity Partnerships in July 2017. They provide an opportunity for co-investment in large-scale research programmes between businesses and universities, building on existing strategic relationships at pace. The Prosperity Partnerships represent £31m of government funding from the EPSRC and the ISCF, matched by a further £36m from partner organisations in cash or 'in-kind' contributions, and £11m from universities, resulting in a total investment of £78m.

Performance Analysis

Partnership with Innovate UK

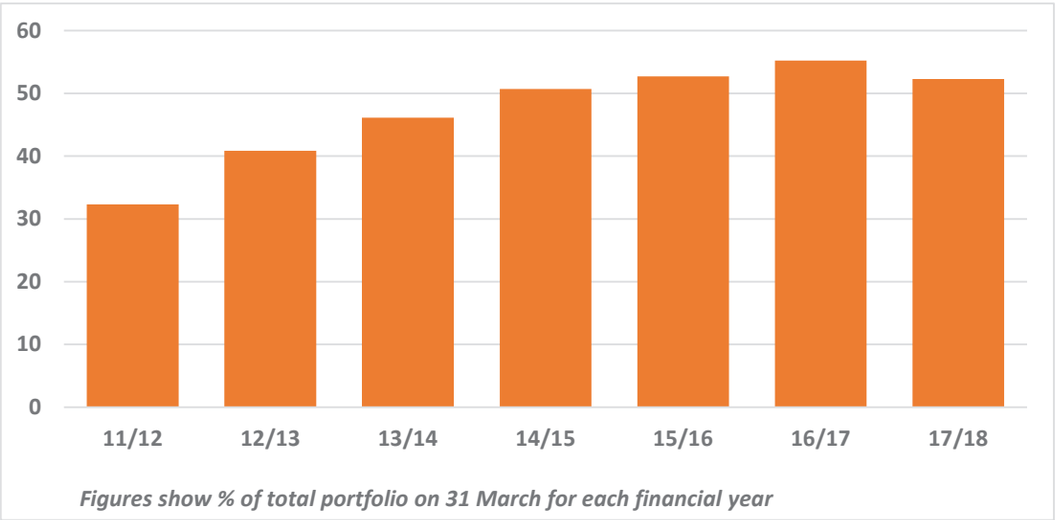
We are working closely with Innovate UK to deliver government's industrial strategy. We also continue to strengthen the relationship to take EPS research, especially in areas of energy, industrial biotechnology, quantum technology, through to innovation.

EPSRC co-funds Knowledge Transfer Partnerships (KTPs) with Innovate UK and contributes around £2m to the scheme per year. KTPs are Europe's leading programme helping businesses to improve their competitiveness and productivity through the better use of knowledge, technology and skills that reside within the UK knowledge base. As of now, there are 120 active projects which involve 49 academic institutes and 120 unique businesses. Of the businesses involved in the KTP projects, 65% are SMEs.

Performance against key performance indicators

EPSRC's performance is measured against its objectives using a number of key performance indicators (KPIs) which help the EPSRC Council to monitor progress. Some of these are highlighted below.

Proportion of portfolio that is collaborative with user (non-academic) organisations.

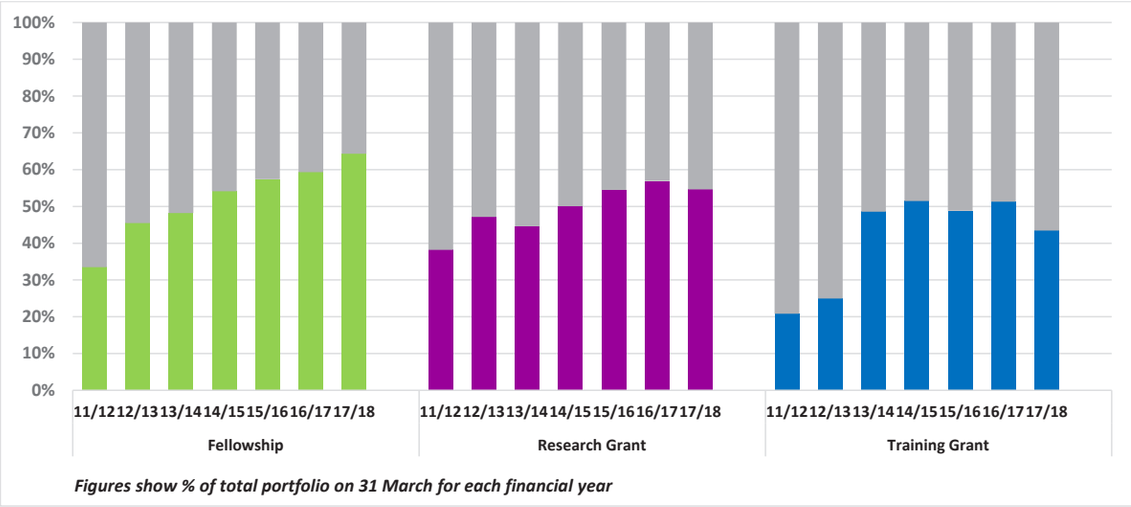


52% of our portfolio on 31 March 2018 remains collaborative with users of research including industry, government departments, charitable organisations, civic and local bodies, hospitals, NHS trusts, professional bodies and others.

Performance Analysis

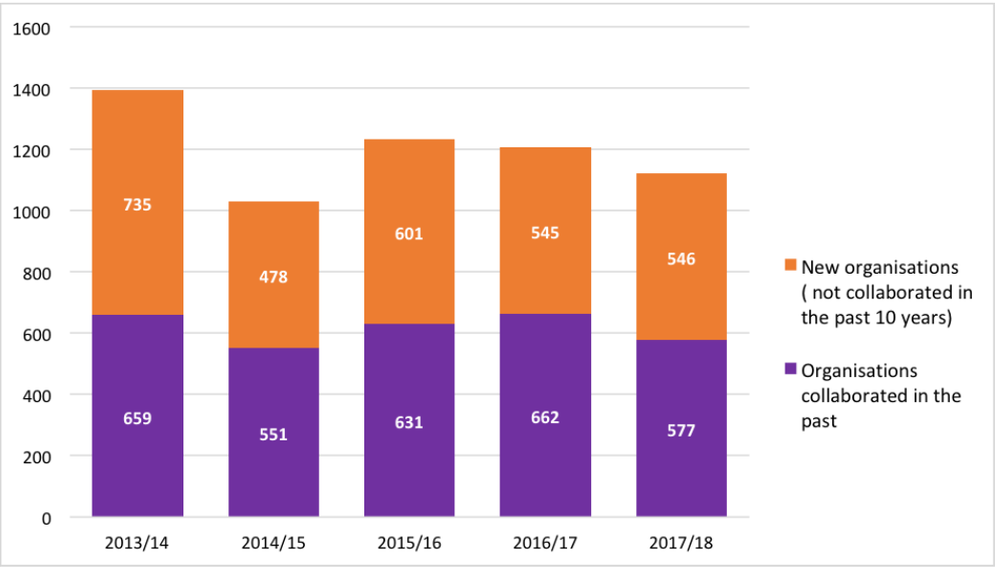
The proportion of fellowships which are collaborative has almost doubled over the last 7 years, rising from 33% to 64%. There has been an overall increase from 40% to 55% in collaboration within the research portfolio. The figure for collaboration in doctoral training has remained around 50% since 2014, following a significant rise due to the announcement of a new tranche of Centres for Doctoral Training (CDT) with high levels of user engagement. The dip in 2018 is due to the timing of the data relative to the start and end dates of CDT grants and it is expected that this will increase again in future years.

The collaborative portfolio for different award categories are as follows Grey: not formally marked as collaborative; coloured: collaborative



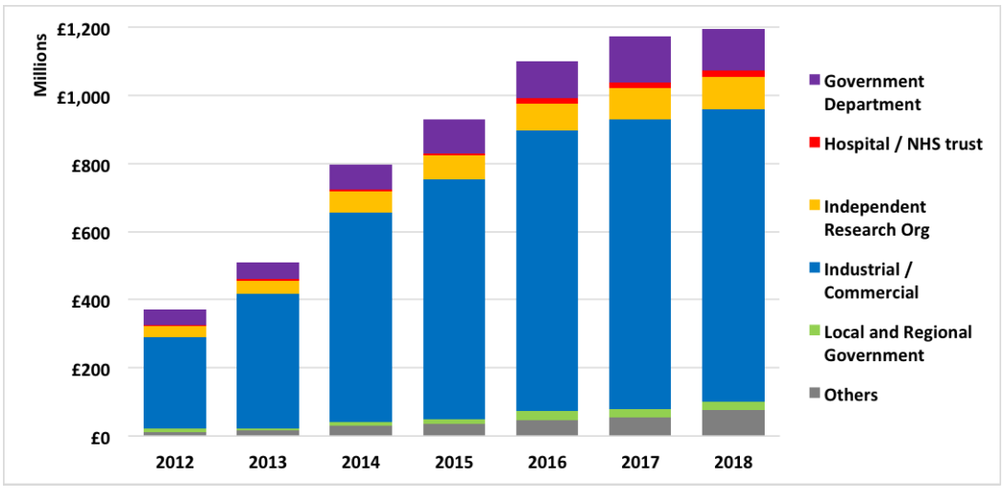
Figures show % of total portfolio on 31 March for each financial year

Collaborating user (non-academic) organisations on grants awarded in the year



In 2017-18, we have collaborated with 546 new organisations; these are organisations we have not collaborated with on any awarded EPSRC grant in the last 10 years. There are 3900 collaborating user organisations on the EPSRC portfolio as of 31 March 2018.

Leverage on portfolio from user organisations - Leverage on total portfolio on 1 April each year [28]

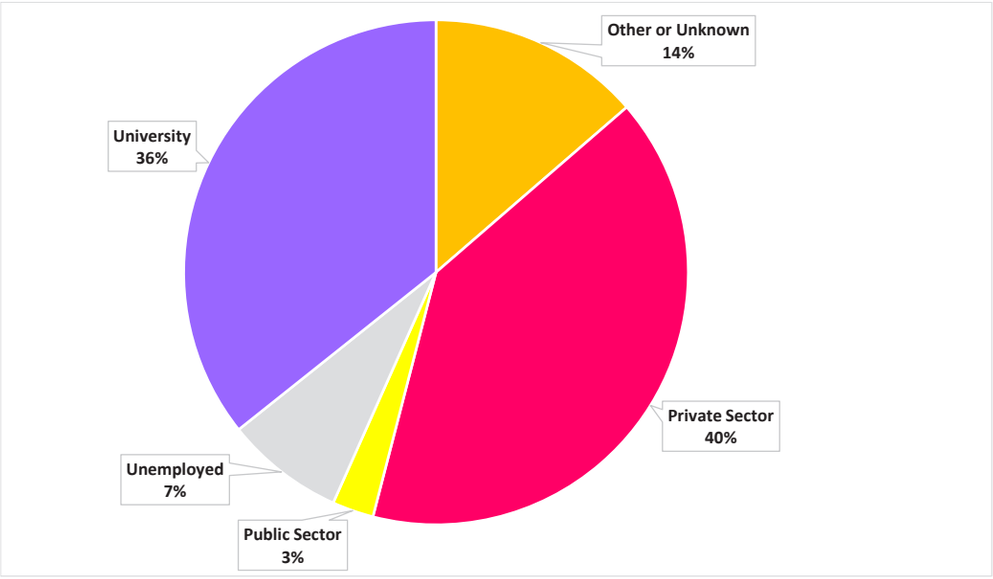


As of 31 March 2018, the total leverage on our portfolio from user organisations is around £1.2bn.

[28] Others includes: Professional institution, Public research organisation, Trade Associations and RTOs, civic organisations, charities and others

Destinations of EPSRC-supported PhD students

2500 PhD students graduate each year having received EPSRC support. The chart below shows the destinations of our students for 2015-16 (latest DLHE data available) as percentages in relevant destinations.

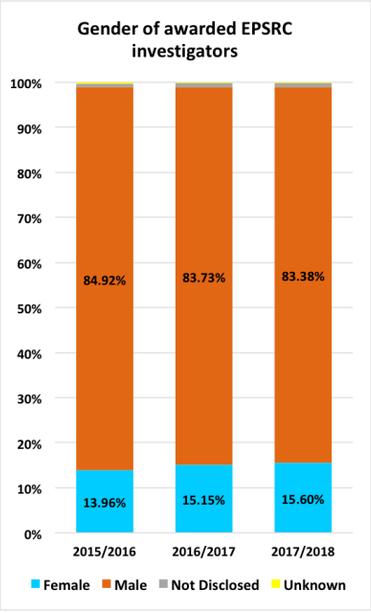


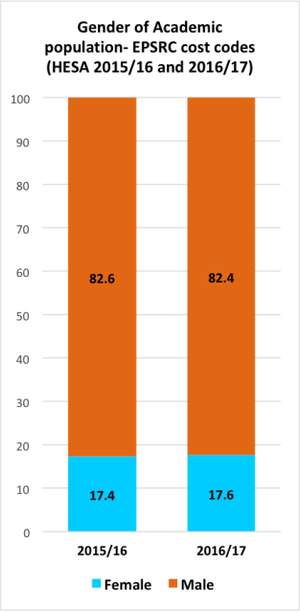
This chart is based on analysis of EPSRC-relevant data from the Destinations of Leavers from Higher Education (DLHE) survey which asks leavers from higher education what they are doing six months after graduation. About three-quarters of leavers complete the survey.

The latest DLHE data shows that 40% of our students are in Private sector and 35% in University employment.

Gender of awarded investigators

Gender of awarded investigators by financial year of decision





In 2017-18, 15% of awarded investigators on EPSRC research grants were female. The latest HESA data on the gender profile of the relevant academic population is shown for comparison[29].

[29] EPSRC has identified HESA cost centres that closely match populations of researchers who might apply to the Council. The EPSRC individuals are from the following cost centres: Chemistry, 'General engineering, Chemical engineering', 'Mineral, metallurgy & materials engineering', 'Civil engineering', 'Electrical, electronic & computer engineering' and 'Mechanical, aero & production engineering', 'Information technology & systems sciences & computer software engineering', 'Mathematics' and 'Physics' Data on Staff full-person equivalent, Staff (excluding atypical), Academic employment function, Teaching & research

Performance Analysis

Financial Performance

EPSRC's main source of financing is through Grant-in-Aid (GIA) from BEIS, which is based on the annual allocation (outlined on page 35). Income contributions are derived from arrangements with third parties within and external to central government.

GIA allocation from BEIS for 2017-18 was £1067m compared with £930m for 2016-17. This represents an increase of 14.7%. The increase is predominantly as a result of new funding for the ISCF and specific projects such as UKCRIC and the Henry Royce Institute.

The accounts for the year ended 31 March 2018 recorded net expenditure of £1059m compared with £940m for 2016-17, which is an overall increase of 13%. The increase is consistent with the overall increase in funding from BEIS.

Research and Development expenditure as at the end of March 2018 was £1,054m, compared with the 2016-17 figure of £933m. The increase of 13% is consistent with the increase of funding for new research activities.

Overall, 97% of the 2017-18 financial year expenditure related to Research and Development, which highlights EPSRC commitment to maximising funding in these areas.

EPSRC administration expenditure per management accounts amounted to 1.6% of allocation.

Financial Position

EPSRC's non-current assets consist of:

- investment in the supercomputer ARCHER
- share in the land and office premises held by Research Councils in Swindon. At the end of March 2018, the carrying value of tangible non-current assets was £6.6m (31 March 2017 £12m).
- prepayment created by a usage grant where usage profile has subsequently lengthened.

EPSRC's current assets as at 31 March 2018 were £56m, while the current liabilities were (£57m). The current liabilities consist mainly of grants where EPSRC is awaiting final expenditure statements or grants that have just commenced and are awaiting their first payment.

EPSRC receives a budget allocation from BEIS to deliver its programme and administration activities, the costs of which are met through the GIA it receives. For the 2017-18 financial year, EPSRC fully allocated its £1,067m budget but, due to the timing of payments, only needed to draw down £1,064m of GIA as per the Statement of Cash Flows on page 77.

Performance Analysis

Outturn	Resource	Capital	Total
	£000s	£000s	£000s
Allocation	884,494	192,225	1,076,719
Outturn	874,916	181,371	1,056,286
In-year underspend	**9,578**	**10,854**	**20,433**

Reconciliation of Net Expenditure Between Allocation, Outturn and Accounts	
BEIS Allocation:	
Administration	8,527
RCUK Administration	6,981
Programme	859,286
Capital	192,225
Programme Non Cash	9,500
Administration Non Cash	200
Total	**1,076,719**

Administration Expenditure per Management Accounts	16,909
Programmes Expenditure per Management Accounts	852,637
Capital Expenditure (Capex) Per Management Accounts	181,371
Depreciation Expenditure per Management Accounts	5,687
Admin Non Cash per Management Accounts	(317)
Expenditure Per Management Accounts	**1,056,287**
Notional Service Charge	2,235
Movement between Reserves per Statement of Changes in Taxpayer Equity	317
Net Expenditure	1,058,839
Movement of Net (gain)/loss on revaluation of non-current assets	(194)
Total Comprehensive Net Expenditure for the year	**1,058,645**

Performance Analysis

Long-term expenditure trends

The graphs highlighted in this section provide a visual representation of the critical areas that drive the performance of EPSRC. With GIA being determined by our sponsor department, it is vital funding is utilised in the most effective way to ensure EPSRC's medium- and long-term objectives are continually met.

Constraints in the administrative allocation element over the last few years have meant that it has become increasingly important to deliver high-quality back-office services in the most efficient way possible. EPSRC efficient use of resources resulted in administration spend accounting for 1.6% of its total allocation in 2017-18.

The allocation from BEIS is made up of the three components shown in the graph on the next page.

The 2017-18 programme allocation shows an increase of 15% compared with 2016-17 due to the costs incurred for the ISCF, UKCRIC and the Henry Royce Institute. For 2017-18 the ratio of resource to capital allocation is 82:18 (for 2016-17 88:12).

Total research and postgraduate spend has increased by 13% reflecting the additional GIA received to fund new activities.

Total staff costs have increased from 2016-17 by 17.4%, which is mainly as a result of the growth of the RCUK Executive Directorate which EPSRC hosts on behalf of all Research Councils.

Purchase of goods and services increased by 49% when compared with the 2016-17 figure. The increase is mainly due to the growth in costs of the RCUK Executive Directorate who have delivered an increased volume of cross-council activity.

Total operating income for 2017-18 was £32,717k compared with £27,962k (2016-17), an increase of 17%. This was mainly due to an increase in grants from central government.

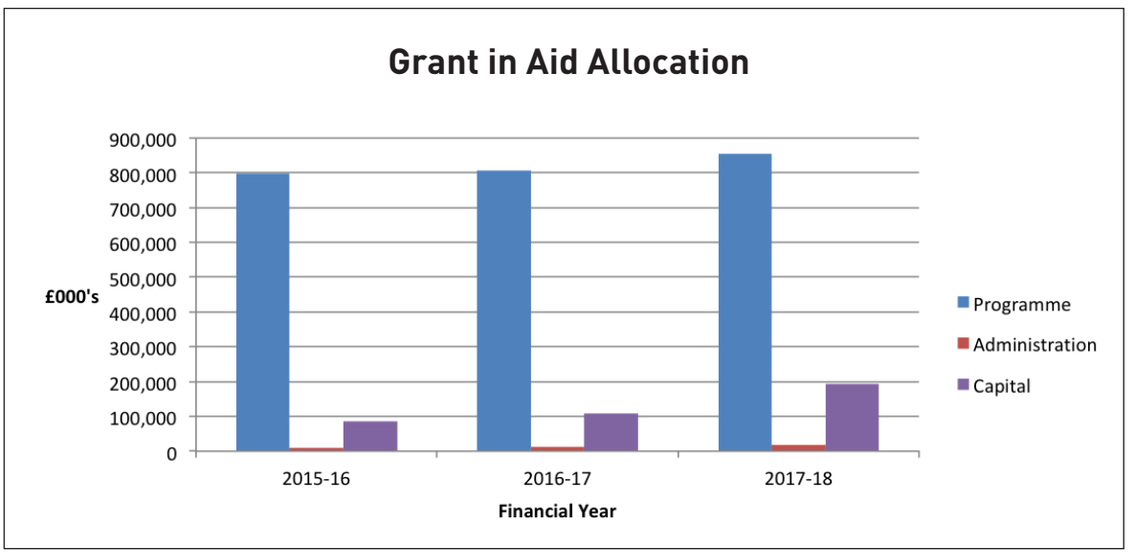
EPSRC Comprehensive Spending Review Allocations

	2012-13 £000	2013-14 £000	2014-15 £000	2015-16 £000	2016-17 £000	2017-18 £000
Programme Resource	758,150	781,400	783,822	791,770	807,854	855,909
Administration Resource	14,400	7,747	10,919	10,919	13,216	18,885
Sub Total Resource	**772,550**	**789,147**	**794,741**	**802,689**	**821,070**	**874,794**
Programme Non-Cash	9,200	8,823	7,672	7,672	9,787	9,500
Administration Non-Cash	300	323	1,191	300	200	200
Sub Total Non-Cash	**9,500**	**9,146**	**8,863**	**7,972**	**9,987**	**9,700**
Total Resource	**782,050**	**798,293**	**803,604**	**810,661**	**831,057**	**884,494**
Capital Allocation	65,000	150,620	118,400	144,400	109,170	192,225
Total Capital	**65,000**	**150,620**	**118,400**	**144,400**	**109,170**	**192,225**
Total Allocation	**847,050**	**948,913**	**922,004**	**955,061**	**940,227**	**1,076,719**

Performance Analysis

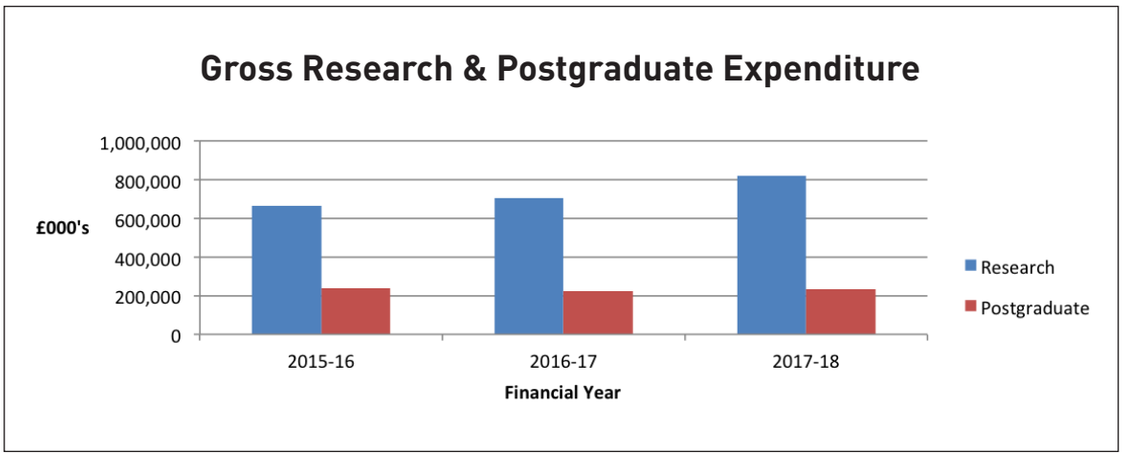
EPSRC Expenditure

	2012-13 £'000	2013-14 £'000	2014-15 £'000	2015-16 £'000	2016-17 £'000	2017-18 £'000
Programme Resource	753,435	750,830	782,485	799,137	807,323	851,457
Administration Resource	13,343	10,673	10,518	9,082	12,715	18,090
Sub Total Resource	**766,778**	**761,503**	**793,003**	**808,219**	**820,038**	**869,546**
Programme Non-Cash	10,104	15,293	7,119	9,421	9,806	5,132
Administration Non-Cash	205	354	331	244	243	238
Sub Total Non-Cash	**10,309**	**15,647**	**7,450**	**9,665**	**10,049**	**5,370**
Total Resource	**777,087**	**777,150**	**800,453**	**817,884**	**830,087**	**874,916**
Capital Allocation	59,273	126,584	144,400	86,700	107,817	181,371
Total Capital	**59,273**	**126,584**	**144,400**	**86,700**	**107,817**	**181,371**
Total Outturn	**836,360**	**903,734**	**944,853**	**904,584**	**937,904**	**1,056,286**

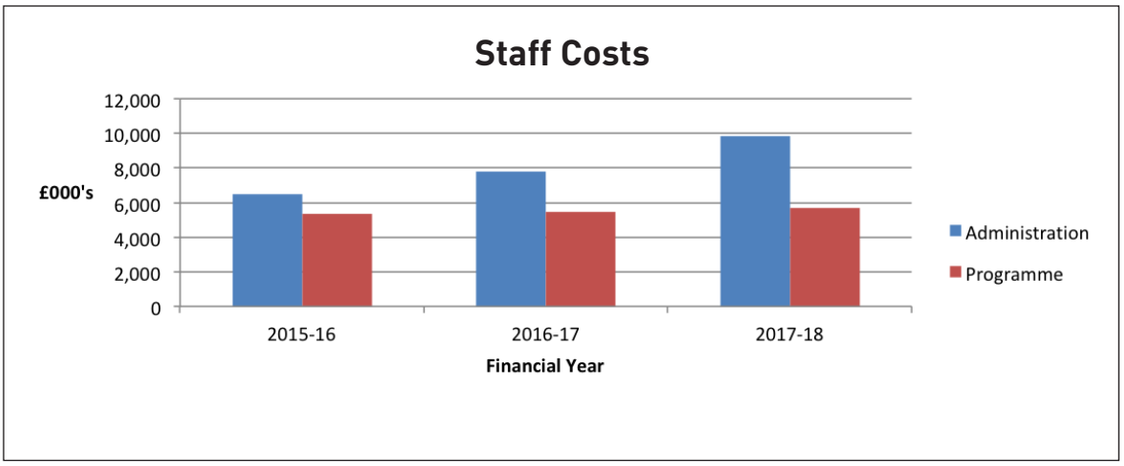


The allocation from BEIS is made up of the three components as in the graph above.

The 2017-18 allocation shows an increase of 15% compared with 2016-17 mainly due to the capital element. For 2017-18 the allocation of programme to capital is 82% and 18% (for 2016-17 88% and 12%, respectively).

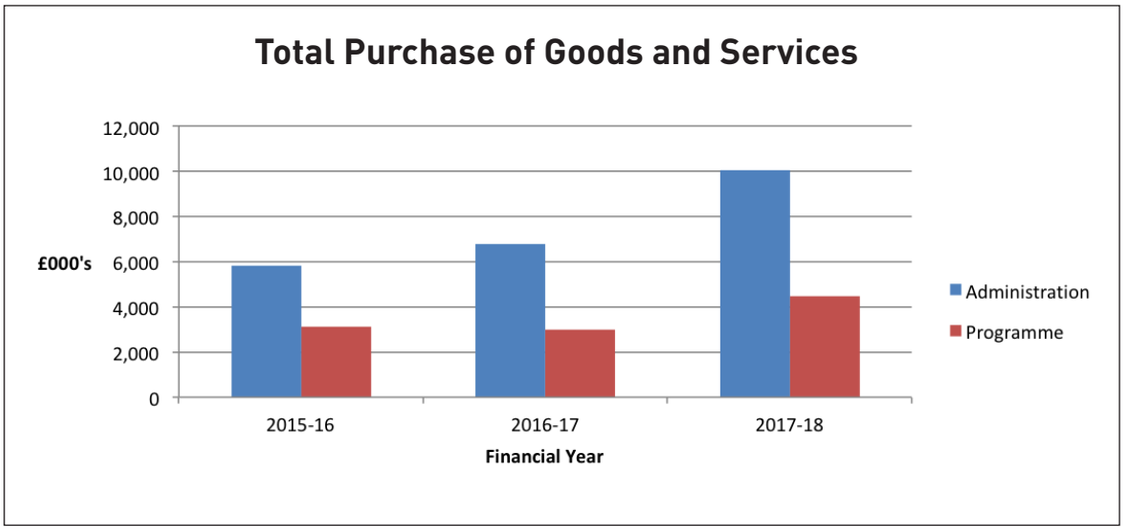


The total research and postgraduate spend has increased by 13% reflecting increased funding received to support delivery of ISCF and creation of new institutes such as the Henry Royce Institute.

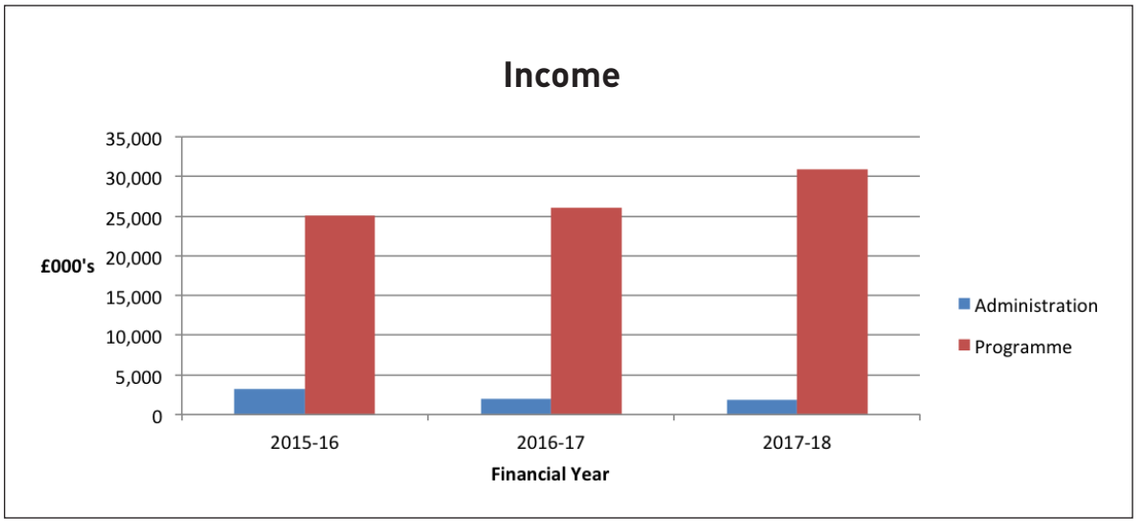


Total staff costs have increased during 2017-18 by 17.4%, which is mainly as a result of the growth of the hosted RCUK Executive Directorate. RCUK is delivering a greater volume of cross-council activity and now hosts the grants processing team (which transferred from UK SBS in 2016-17).

Performance Analysis



The purchase of goods and services includes non-staff expenditure without depreciation. There was an overall increase of 49% when compared with the 2016-17 figure. The increase is mainly as a result of new activities within the RCUK Directorate Executive as it supported the transition of Research Councils into UKRI.



The 2017-18 total operating income figure was £32,717k compared with £27,962k (2016-17), which represents an increase of 17.0%. This was mainly due to an increase in grants from central government:

- DCMS (Cyber Security/Internet of Things);
- DHSC (GCRF);
- UKSA (Robotics).

Performance Analysis

Creditor's Payment Policy

EPSRC observes HM Treasury Guidance and makes every effort to pay creditors within five days of receipt of invoice. Where this is not possible, EPSRC observes the CBI's Prompt Payers' Guide, and adheres to the Principles of the Prompt Payers' Code, endeavouring to ensure compliance with the agreed terms of payment of creditors' invoices and to pay them within 30 days of receipt of goods and services. During 2017-18 an average of 78% of payments were made within five days (2016-17 82%).

UK SBS

UK SBS provides operational and transactional services to EPSRC covering Finance, Human Resources, Information Systems, Procurement and Payroll. A review of UK SBS service delivery and the associated assurance issues are covered within the Governance Statement on page 57.

Social Matters

EPSRC's committment to diversity and equality, employee engagement and health and safety is detailed on page 69 of the Remuneration and Staff Report.

Environmental Policy

The Natural Environment Research Council (NERC) has developed a cross-Council Environmental Policy, which is supported by the EPSRC. EPSRC continues to work with other Research Councils and tenants of Polaris House, Swindon, in ensuring the building's impact on the environment is as limited as possible. Currently 72% of waste is recycled – paper, metal, plastic, wood, food waste, old PCs and printers, mobile phones, toner cartridges, batteries and spectacles are all routinely recycled. An environmental plan for the site contains a number of objectives including ongoing waste reduction, introducing solar electricity and water heating, promoting and encouraging a site culture of recycle, reduce and reuse, and enhancing the natural environment on site.

A Travel Plan for Polaris House has also been written and endorsed by RCUK's Executive Group to promote sustainable travel and reduce the environmental and social impacts of travel – both commuting and business travel. The plan outlines a number of short-, medium- and long-term objectives, including promoting car share schemes and installing electric vehicle charging points for staff and visitors.

Due to its headcount and the floor area it occupies EPSRC is out of scope and has received an exemption from BEIS for reporting against the Greening Government and Sustainability requirements.

Professor Philip Nelson, Accounting Officer
25 June 2018

Accountability Report
Corporate Governance Report

Directors' Report

EPSRC is an independent non-departmental public body of the Department for Business, Energy and Industrial Strategy (BEIS), established by Royal Charter. EPSRC's working relationship and lines of accountability with its sponsor department BEIS are defined through a Management Statement and Financial Memorandum, which are subject to periodic review.

EPSRC's Chief Executive, in the role of Accounting Officer, is accountable to the public via Parliament. Parliament monitors and influences EPSRC's work through its Select Committees and the Parliamentary Ombudsman.

Council and Management Board

Council members' remuneration for 2017-18 is listed in the Remuneration and Staff report (page 59). The Chairman is Dr Paul Golby and the Chief Executive Officer is Professor Philip Nelson.

COUNCIL MEMBERSHIP 2017-18

EPSRC Council Membership 01-04-2017 to 31-03-2018

Chair of Council	**Organisation**
Dr Paul Golby, CBE, FREng	EPSRC
Chief Executive	
Professor Philip Nelson, CBE, FREng, Accounting Officer	EPSRC
Council Members	
Mr Jack Boyer OBE	Entrepreneur
Professor Muffy Calder OBE, FREng, FRSE	University of Glasgow
Professor the Lord Ara Darzi of Denham OM, KBE, PC, FRS, FMedSci, FRCSI, FRCS, FRCSE, FRCPGlas, FACS, FRCP, FREng	Imperial College London
Ms Bonnie Dean OBE (Chair of ARAC)	Independent
Professor Anthony Finkelstein CBE, FREng, MAE, FCGI	The Alan Turing Institute
Professor Sir Richard Friend FRS, FREng	Cavendish Laboratory
Professor Tim Jones	University of Birmingham
Professor Richard Jones FRS	University of Sheffield
Dr Helen Neville RSC	Procter & Gamble
Rt Hon Baroness Pauline Neville-Jones DCMG, PC	House of Lords
Professor Matthew Rosseinsky FRS	University of Liverpool
Professor Mark Smith MA, PhD, CPhys, FInstP	Lancaster University
Professor Tim Whitley BSc, PhD	BT Group Plc
In attendance	
BEIS Representative	BEIS

EPSRC AUDIT AND RISK ASSURANCE COMMITTEE

MEMBERSHIP 2017-18

Name	Organisation
Mr Richard Dale	University of Newcastle
Ms Bonnie Dean OBE (Chair of ARAC)	Independent
Professor Anthony Finkelstein CBE, FREng, MAE, FCGI	The Alan Turing Institute
Mr Stephen Hawker CB	Independent
Professor Richard Jones FRS	University of Sheffield
Ms Jane Madeley MBA, ACA	University of Leeds
Dr David Watson CBE, FREng	IBM UK Ltd/Independent

In attendance:	
NAO and GIAA	
Professor Philip Nelson, CBE, FREng, Chief Executive Officer	EPSRC
Mr Andrew Lewis, Chief Operating Officer	EPSRC

EPSRC STRATEGIC ADVISORY NETWORK (SAN)

MEMBERSHIP 2017-18

Name	Organisation
Professor Claire Adjiman FREng	Imperial College
Professor Paul Beasley	Siemens Technology
Professor David R Bull CEng, FIET, FIEEE	University of Bristol
Dr Alison Burdett CEng, SIMEE, FIET	Sensium Healthcare
Dr Jenny Cooper	Independent
Professor Sir Ian Diamond FRSE	University of Aberdeen
Professor Alison Etheridge	University of Oxford
Dr Paul Gosling BSc, DPhil, FInsP, CEng, CPhys	Thales UK Ltd
Mr Anthony Harper BSc, CEng, FIMechE, FREng	Jaguar Land Rover
Professor Karen Holford CEng, FIMechE, FICE, CPhys, FInstP, FLSW	Cardiff University
Dr David Jakubovic	Procter and Gamble Technical Centres Ltd
Mr Jonathan Legh-Smith	BT Group plc
Professor Chris Linton	Loughborough University
Professor Allan Matthews FREng, BSc, PhD, CEng, FIMMM, FIMechE, FIET, FIMF	University of Manchester
Professor Francesca Medda	University College London
Professor Lydia Plowman FAcSS	University of Edinburgh
Professor Mary Ryan FREng, FIMMM, FICorr	Imperial College
Professor Ifor Samuel FRSE	University of St Andrews
Dr Richard Seabrook PhD, MBA	Wellcome Trust
Mr Philip Sharman	Independent
Professor Helen Sharp PhD, PGCTLHE, CEng, CITP, MBCS, FHEA	Open University
Professor Sarah Sharples BSc(Hons), MSc, PhD, PGCAP, FIEHF	University of Nottingham
Professor Mark Smith PhD, MBA, CPhys, FInstP	Lancaster University
Professor Tim Softley MA, PhD, FRSC, FInstP	University of Birmingham
Professor Nigel Titchener-Hooker CEng, FIMechE, FREng	University College London
Dr Ceri Williams BSc, PhD	University of Leeds

Conflict of Interest

The potential for conflicts of interest for EPSRC is fully disclosed in Note 13 to the accounts on page 92. Full registers of interest for EPSRC Council, Strategic Advisory Network and Audit and Risk Assurance Committee can be found on the EPSRC website (www.epsrc.ac.uk/about/governance).

Directors Review

We as management have ensured that the National Audit Office team have been given all that they need in order to complete their audit.

Personal Data-related Incidents

There were no protected personal data-related incidents formally reported to the Information Commissioner's Office in 2017-18. The table below outlines 13 Incidents that were not deemed to be significant.

Please note that EPSRC data security policy and controls are disclosed in the Governance Statement.

Summary of other protected data-related incidents in 2017-18

Category	Nature of Incident	Total
I	Loss of inadequately protected electronic equipment, devices or paper documents from secured Government premises	-
II	Loss of inadequately protected electronic equipment, devices or paper documents	1
III	Insecure disposal of inadequately protected electronic equipment, devices or paper documents from outside Government premises	-
IV	Unauthorised disclosure	-
V	Other	12

Freedom of Information

EPSRC is subject to the Freedom of Information Act. During 2017-18, EPSRC provided information in response to 58 requests.

Corporate Governance Report

Statement of Accounting Officer's Responsibility

Under Section 2(2) of the Science and Technology Act 1965, the Secretary of State with the consent of HM Treasury has directed EPSRC to prepare for each financial year a statement of accounts in the form and on the basis set out in the Accounts Direction. The accounts are prepared on an accruals basis and must give a true and fair view of the state of affairs of EPSRC and its net expenditure, changes in taxpayers' equity, and cash flows for the financial year. In preparing the Accounts, the Accounting Officer is required to comply with the requirements of the Government Financial Reporting Manual (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/669344/2017-18_Government_Financial_Reporting_Manual.pdf) and in particular to:

- observe the Accounts Direction issued by the Secretary of State including the relevant accounting and disclosure requirements, and apply suitable accounting policies on a consistent basis;
- make judgments and estimates on a reasonable basis;
- state whether applicable accounting standards as set out in the Government Financial Reporting Manual have been followed, and disclose and explain any material departures in the financial statements; and
- prepare the financial statements on a going-concern basis.

The Department for Business, Energy and Industrial Strategy has appointed the Chief Executive as Accounting Officer of EPSRC. The responsibilities of an Accounting Officer, including responsibility for the propriety and regularity of the public finances for which the Accounting Officer is answerable, for keeping proper records and for safeguarding EPSRC assets, are set out in the NDPB Accounting Officers' Memorandum issued by HM Treasury and published in 'Managing Public Money'.

As far as the Accounting Officer is aware, there is no relevant audit information of which the entity's auditors are unaware. The Accounting Officer has taken all the steps that ought to have been taken to be made aware of any relevant audit information and to establish that the entity's auditors are aware of that information.

The Annual Report and Accounts as a whole is fair, balanced and understandable and the Accounting Officer takes personal responsibility for the Annual Report and Accounts and the judgments required for determining that it is fair, balanced and understandable.

Governance Statement

1 Purpose

This Governance Statement sets out my assessment of EPSRC's potential vulnerabilities and capability to deal with the challenges facing us in our operating environment.

2 Scope of Responsibility

As Accounting Officer, I have personal responsibility for maintaining a sound system of governance and internal control, which supports the achievement of EPSRC's policies, aims and objectives. I also safeguard the public funds and EPSRC assets for which I am responsible, ensuring they are properly accounted for and used economically, efficiently and effectively, in accordance with 'Managing Public Money' and the requirements set out in the Management Statement and Financial Memorandum agreed between EPSRC and its sponsoring department, the Department for Business, Energy and Industrial Strategy (BEIS). I am supported in my role as Accounting Officer by a governance framework, which includes the Council, its Committees and Senior Management.

In forming my assessment I have examined the following sources of information:

- all Council and committee meeting minutes;
- the work of internal audit;
- work undertaken to evaluate funding assurance on research investments;
- the assessments of individual directors as covered in their stewardship reports.

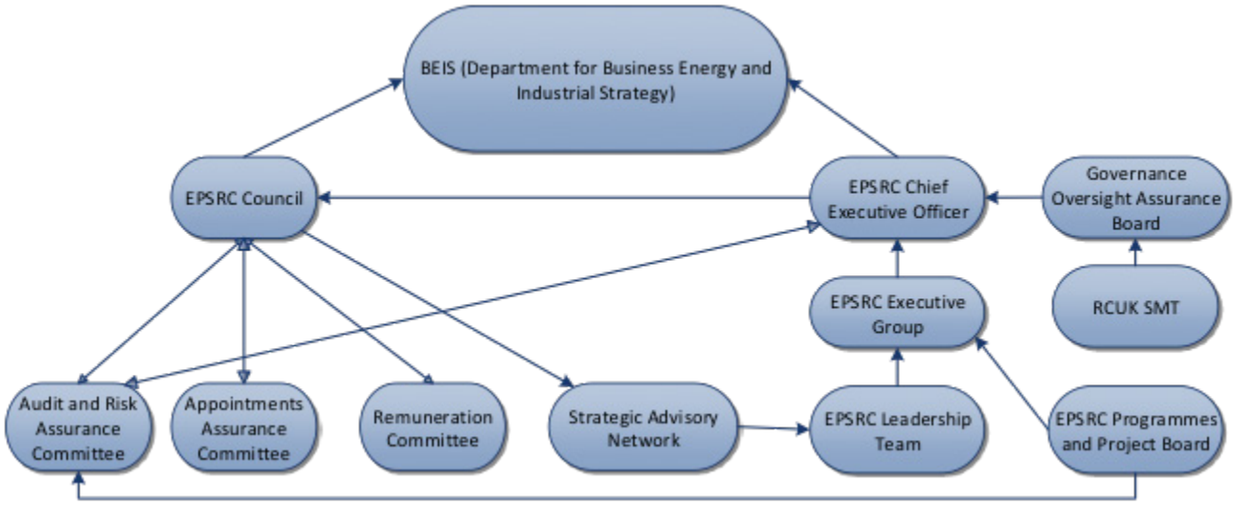
3 Governance Framework

EPSRC is governed by its **Council** which establishes and agrees the overall corporate strategy, key strategic objectives and deliverables of EPSRC, as set out in its Strategic and Delivery Plans. The responsibility for implementing the decisions of Council is delegated to me as the Chief Executive and Accounting Officer. The Council also reviews regular financial reports on the management and performance of EPSRC ensuring that appropriate action is taken to address any concerns identified, thus ensuring the good financial management of EPSRC. The Council also monitors the overall EPSRC risk profile as well as individual risks carrying a high degree of threat.

In carrying out this work the Council is advised by the **Audit and Risk Assurance Committee (ARAC)** and **Appointments Assurance Committee**. The Council sets the vision and strategic direction for EPSRC. The responsibility for the delivery of key strategy is delegated to me as the Chief Executive.

Corporate Governance Report

A diagram of the EPSRC's governance structure follows with further details found below and on www.epsrc.ac.uk.



In 2017-18 the council met five times and discussion, among other matters, included:

- Funding for the EPSRC Institutes/Centres;
- Balancing doctoral students and postdoctoral researchers in the portfolio;
- Mid-term review of the Centres for Doctoral Training and the next investment activity;
- International Strategy and EU funding;
- 'Big Ideas' pipeline;
- Progress on the Delivery Plan;
- Archer 2 project;
- Transition to UK Research and Innovation (UKRI);
- Lessons learnt from the Balancing Capability project;
- ISCF;
- Review of EPSRC Public Engagement activities;
- EPSRC Council – legacy policies and business model.

Council members are recruited through advertisements in the national press, with oversight provided by the Office of the Commissioner for Public Appointments (OCPA). Final appointments are subject to Ministerial approval. Members of Council and EPSRC's committees are listed on pages 40-42.

Members were asked to complete a short feedback survey to help develop a baseline view of Council's own operating procedures.

ARAC, which includes independent members in addition to Council members, met five times during the year. Members are appointed by Council.

ARAC provides assurance to Council and to me, as Accounting Officer, by reviewing the adequacy and effectiveness of EPSRC's framework of governance, risk management and controls, reviewing the annual accounts, and accounting policies, on behalf of Council and overseeing the outcomes of work by the internal and external auditors. The Committee also supports discussion at Council through updates and briefings

from the Committee Chair who is also a Council member. A formal review of the Committee's effectiveness was not undertaken in 2017-18; however, the Committee did provide a hand-over to the new UKRI Audit, Risk, Assurance and Performance Committee and no issues in respect of effectiveness were raised. Members also took part in a Research Council-organised cross-Council Audit Committee awareness day. Council raised no issues in respect of the quality of data received throughout the year.

The attendance of members at Council and the ARAC, for which they were eligible to attend, can be found in the following table.

Name	Attendance at Council	Attendance at Audit and Risk Assurance Committee
Mr Jack Boyer	4 out of 5	
Professor Muffy Calder	5 out of 5	
Mr Richard Dale		4 out of 5
Professor Lord Ara Darzi	1 out of 5	
Ms Bonnie Dean (Chair of ARAC)	5 out of 5	5 out of 5
Professor Anthony Finkelstein	3 out of 5	3 out of 5
Professor Sir Richard Friend	5 out of 5	
Dr Paul Golby (Chair of Council)	5 out of 5	
Mr Stephen Hawker		5 out of 5
Professor Richard Jones	4 out of 5	3 out of 5
Professor Tim Jones	5 out of 5	
Ms Jane Madeley		5 out of 5
Professor Philip Nelson (CEO)	5 out of 5	
Dr Helen Neville	3 out of 5	
Rt Hon Baroness Pauline Neville-Jones	5 out of 5	
Professor M Rosseinsky	5 out of 5	
Professor Mark E. Smith	4 out of 5	
Dr Dave Watson		5 out of 5
Professor Tim Whitley	5 out of 5	

Corporate Governance Report

EPSRC Leadership Team (ELT) is the Executive body for EPSRC and comprises myself as Chief Executive, Directors and Associate Directors. It normally meets weekly and its governance responsibilities are to manage EPSRC operations and finances in line with EPSRC's 2016-2020 delivery plan, as well as monitoring associated risks.

The **Programmes and Project Board** provided strategic advice, assurance on the management of project governance arrangements for new institutes and other significant facilities within the EPSRC portfolio. The board reported to the Chief Operating Officer until the end of December and then to the Chief Executive Officer with updates provided to ARAC at each meeting. The Board is chaired by the EPSRC Director of Programme Delivery and membership includes an independent member of ARAC. The Board met five times during 2017-18 and the projects under current review are shown below. All governance and process issues in respect of these projects have been addressed with all projects being reviewed and under active management:

- Rosalind Franklin Institute;
- Flagship Nuclear Magnetic Resonance Facility;
- Warwick Advanced Steel Research Hub;
- Archer 2;
- Henry Royce Institute;
- UK Collaboration for Research in Infrastructure & Cities;
- Cavendish Laboratory;
- National Nuclear Users Facility;
- Faraday Institution
- National Innovation Centre for Data;
- Robotics and Artificial Intelligence Hub.

The **Remuneration Committee** is responsible for advising the Council on matters relating to the remuneration of Directors and other pay-related matters for senior staff. BEIS determines the salary for my role as Chief Executive Officer.

The **Appointments Assurance Committee** is a subcommittee of Council comprising three Council members, one of whom is the chair of the ARAC, the others being the Chair of Council and EPSRC's Chief Executive Officer. It normally meets three times a year. It is responsible for reviewing the adequacy and robustness of the nomination and selection processes and confirming new appointments to ARAC and to EPSRC's strategic advisory bodies, **Strategic Advisory Network (SAN)** and **Strategic Advisory Teams (SATs**). In addition, this sub-committee also provides advice to Council on its own composition and assists with the development of recruitment specifications for Council vacancies.

The SAN provides the Executive of EPSRC with strategic advice that assists us to develop, implement and modify plans, and to make appropriate recommendations to our Council. The Network is devised as a flexible resource, enabling the Executive to obtain the advice it needs in a timely manner, and drawing on a range of perspectives from across our key stakeholder groups including academia, business, third sector and Government.

The SAN is made up of around 30 prominent and highly regarded individuals who have an established record of achievement and bring a broad strategic view to bear. Members bring expertise from their own background, but are required to advise across the breadth of EPSRC's portfolio.

The **Governance Oversight and Assurance Board (GOAB)** continued to provide oversight of the RCUK Executive Directorate through the review of:

- governance and internal control frameworks;
- existing risk management arrangements and specific high-level risks;
- mutual EPSRC/RCUK organisational policies and creation of appropriate new policies.

Membership consists of the EPSRC CEO, the Chief Operating Officer (COO) and the RCUK Executive Director. The departure of the RCUK Executive Director during the year (September 2017) and latterly the EPSRC COO (January 2018) has been managed through the adoption of a process of stewardship reporting to the CEO. This required those individuals, charged with management and delivery of the RCUK Executive Directorate business, to provide periodic assurance statements directly to the CEO for their respective areas of responsibility.

EPSRC continues to comply with the policies set out in the Cabinet Office 'Principles of Good Corporate Governance in Executive Non-Departmental Public Bodies'.

4 Risk Management and Internal Control Framework

a) Risk Framework

A harmonised risk management policy operates within the Arts and Humanities Research Council (AHRC), EPSRC and the Economic and Social Research Council (ESRC) (the Professional Support Unit (PSU) Councils). This is based on the guiding principles of managing risk within the public sector, representing best practice whilst being proportionate to the level of risk exposure and risk appetite within the PSU Councils.

EPSRC's role is to support independent, high-quality research and postgraduate training, as well as the impact that EPS research can have in the business, public and third sectors. At any one time we support a significant number of researchers and postgraduate students in academic institutions and independent research organisations. Some research, by its pioneering and innovative nature, carries risk, but we have a very low risk appetite in terms of the way we conduct our business. We work only with eligible research organisations and make our investment decisions using a transparent peer review process, details of which can be found at: https://www.ukri.org/funding/peer-review/.

EPSRC's risk management process is designed to manage risk and not eliminate it. The quarterly review process allows risk owners to comment on mitigation actions and provide assurance that risks are being managed.

Strategic risks are identified through the ELT and reviewed by ARAC and Council at each meeting, who pay particular attention to those highlighted as significant high-level risks. It is through this review process that EPSRC is able to manage the key headline risks that could impact on the delivery of the EPSRC's programmes and operations and enables mitigating actions to be agreed and implemented.

Overall, I am satisfied that, with effective input from Council and ARAC, risk is being managed effectively within EPSRC.

b) Significant Risks in 2017-18 and Key Mitigations

This section covers the most significant risks faced in 2017-18 and the key mitigations in place. These risks are either of a long-term, ongoing nature and require continued risk management or have yet to be managed down sufficiently.

- **UK Research and Innovation**

  Thetransition to UKRI and the need for new governance and reporting arrangements has caused some uncertainty for the organisation and its staff. This is being managed through involving staff and keeping them up to date with developments. The UKRI Transition Programme has also created staffing pressures with a number of staff being involved in the work streams and working groups; additional recruitment has helped to build resilience to manage the position.

- **Industrial Strategy Challenge Fund (ISCF)**

  EPSRC recognise that, if the BEIS and UKRI processes around the operations and governance of ISCF are not in place, or are not effective with a lack of clarity over accountability, this may impact on EPSRC's ability to engage with ISCF. EPSRC have been working with the UKRI Shadow Executive to ensure the appropriate arrangements are put in place. Within the overall framework for ISCF, challenge projects will be run across Research Councils with two or more Executive Chairs being jointly accountable for each project.

- **Demands on Staff**

  In addition to the pressures placed on staff by the transition to UKRI, a number of new initiatives have also placed an additional burden on staff time, e.g. ISCF. ELT have been monitoring the position and, as mentioned above, additional staff have been recruited.

- **General Data Protection Regulation (GDPR)**

  The introduction of GDPR, on 25 May 2018, brings about substantial changes to the existing Data Protection Act 1998. The Information Commissioner's Office has indicated that they expect to see organisations striving for compliance rather than achieve full compliance on day one. Nevertheless, failure to comply could result in fines up to the higher of 20m euros or 4% of turnover and significant reputational damage to EPSRC. A cross-Council and Innovate UK project, led by the AHRC Director of Resources as Senior Reponsible Officer (SRO), has been established to take forward the changes. A 'health check' led by the PSU, with assistance from internal audit, identified the project as a 'medium risk' bordering on a 'low risk'. This, however, continues to be a key risk for all Research Councils due to the significant impact of non-compliance if there is an incident where we are at fault. The cross client audit on GDPR, referred to on page 55, received 'Limited Assurance', with the recommendations being taken forward by the GDPR project.

- **Cyber Security**

  The cyber security threat is severe, increasing and requires constant monitoring and vigilance. Firewall and anti-spam processes are in place which provide us with confidence in the security of our infrastructure. The PSU Information Systems team has undertaken continued assessment of controls and achieved Cyber Essentials accreditation during 2017-18.

- **Exiting from the EU**

  Following the referendum on 23 June 2016, the UK is now scheduled to leave the EU on 29 March 2019. This means that future access to EU research funding and the nature of future immigration arrangements with the EU for researchers is subject to the negotiations between the UK and EU which at the time of the laying of this report are still underway. To address the uncertainty in relation to future EU funding, in August 2016 the UK Government announced that it would guarantee certain EU funded projects after the UK has left the EU. The Research Councils and Innovate UK continue to monitor developments and we are addressing this risk by working closely with colleagues in government and the wider sector to ensure an effective and joined up approach to the implications of leaving the EU.

c) Pay Remit

Pay-setting arrangements throughout the Civil Service are set out in guidance issued by HM Treasury. I can confirm that EPSRC was compliant with the requirements.

d) Information Management

The PSU Information Management Team is responsible for:

- Records Management;
- Freedom of Information;
- Data Protection;
- Information Security.

This service is provided for EPSRC alongside the other PSU Councils, providing a common approach and a body of expertise.

EPSRC has in place a system of control for information risk, which is reflected in the annual Information Security Health Check submitted to BEIS. The health check requires organisations to have plans in place to deliver full compliance with mandatory security outcomes. Internal audit reviewed the health checks of all Research Councils prior to submission to BEIS and were satisfied that the appropriate plans were in place.

EPSRC is committed to safeguarding information and personal data and continues to work with its key service providers to improve resilience and protect its information assets from cyber threats.

In 2017-18, the PSU were accredited with Cyber Essentials, which provides me with assurance that the appropriate systems and level of controls are in place to support EPSRC. Also, as discussed above, EPSRC is working towards implementing the changes required to meet the GDPR which will be implemented as part of a Data Protection Bill on 25 May 2018.

During the year EPSRC staff have been provided with suitable advice, policy and guidance in respect of information management.

In 2017-18, there were no significant incidents where a lapse in the security of personal data resulted in the need to report an incident to the Information Commissioner's Office.

e) Health and Safety

PSU have produced a health and safety report for 2017-18 which was presented to the PSU Management Committee and contained no issues which need to be reported in this statement.

f) Transparency

EPSRC is committed to the transparency agenda introduced by the Government to allow visibility on how public funds are used and managed. I can confirm compliance with all the disclosure requirements which are made on our website and which are referenced on the DATA.GOV.UK website. The transparency disclosure made by EPSRC covers:

- EPSRC organisation structure;
- Salary bands and senior posts;

- Government Procurement Card transactions;
- All expenditure.

g) Ministerial Directions

There were no Ministerial directions given in 2017-18.

h) Tax arrangements of public sector appointees

The HM Treasury 'Review of the tax arrangements of public sector appointees' – the "Alexander Review", published in May 2012, made a number of recommendations to ensure that the highest standards of integrity could be demonstrated in the tax arrangements of senior public appointees. I can confirm that all of EPSRC's senior staff are paid through a formal payroll facility and that arrangements are in place through retained HR to provide assurance that appropriate tax arrangements are in place to cover any other appointees covered by the report.

In 2017-18 EPSRC identified no contractors who fell within the Alexander Review criteria.

Council members are 'office holders' as defined within HMRC guidance, and their remuneration is subject to Pay as you Earn with income tax and employee National Insurance Contributions deducted at source through the payroll.

As such, EPSRC is in compliance with the recommendations in the Alexander Review.

i) Macpherson Review

The review of quality assurance of Government analytical models undertaken by Sir Nicholas Macpherson and published by HM Treasury in March 2013 made a number of recommendations for government departments and their Arm's Length Bodies. To comply with this review and the BEIS requirements, EPSRC have reviewed their use of analytical modelling in 2017-18 and have not identified any that were considered to be business critical.

j) Austerity Measures

EPSRC has robust control processes, checks and reporting arrangements in place to review and manage expenditure in keeping with the austerity measures introduced by Government in May 2010. This includes all expenditure being approved through a formal process of delegated authority and monthly reporting to budget holders.

k) Regularity and Propriety

EPSRC requires all staff, including Council and groups within the governance structure, to act honestly and with integrity and to safeguard the public resources for which they are responsible.

EPSRC follows the harmonised Counter Fraud & Bribery policy which is subject to annual review by the PSU Head of Risk & Governance. All staff are reminded of the policy on an annual basis which is available through the PSU portal, thus ensuring that there is an awareness of their responsibilities to report fraud and the process by which to do so. E-Learning awareness was rolled out to all staff during 2017-18 with the PSU Risk and Governance Team undertaking additional training.

The Research Councils have representation on the BEIS Counter Fraud Working Group and the Cabinet Office Fraud Network where best practice is shared and current fraud issues discussed.

Consistent with all the other Research Councils, EPSRC has established a harmonised Whistleblowing Policy. The Whistleblowing Policy encourages and enables employees to speak out when they encounter or suspect malpractice. It guarantees whistleblowers protection consistent with the Public Interest Disclosure Act and facilitates whistleblowing through a number of routes.

I can confirm that for 2017-18:

- neither I nor my staff authorised any course of action, the financial impact of which is that transactions infringe the regulatory requirements as set out in 'Managing Public Money';
- there were no novel, contentious or repercussive transactions that required BEIS or Treasury approval;
- there were no cases of whistleblowing;
- there were no instances of fraud identified within EPSRC or within UK SBS which impacted on EPSRC.

5 UK Research and Innovation

The Higher Education and Research Act, which included the provisions for the creation of UK Research and Innovation (UKRI) on 1 April 2018, received Royal Assent on 27 April 2017. UKRI will operate across the whole of the UK with a combined budget of more than £6bn and is bringing together the seven Research Councils, Innovate UK and a new organisation, Research England. UKRI intends to be an outstanding organisation that ensures the UK maintains its world-leading position in research and innovation.

Our present system is a success and key elements of it will remain including controls existing in 2017-18 which will continue in 2018-19. UK and International asset transfers are well underway and are scheduled to complete before October 2018, during which time the existing legacy bodies will remain legal entities. The structures and committees for the internal governance of UKRI are all agreed and terms of reference exist for the main committees (the Strategy Committee, the Investment Committee, the Finance and Operations Committee and the Audit, Risk, Assurance and Performance Committee (ARAPC)).

6 Professional Support Unit (PSU)

The PSU, hosted by AHRC, provides professional services to AHRC, EPSRC and the ESRC (the PSU Councils) in: Finance; Human Resources; Information Technology (it also hosts services on behalf of non-PSU Councils); Project Management; and Reprographics. The Head of PSU received the appropriate 2017-18 delegations from the PSU Councils which allowed the services to be delivered.

The PSU is overseen by a Management Committee comprising the Chief Executive Officers and a Director from each of the PSU Councils, which meets quarterly. The Management Committee received regular reports and an annual report from the Head of PSU that provided assurance on the level of service being delivered, the financial position and the risks being managed.

The Head of PSU also produced an Annual Assurance Statement covering 2017-18. The statement provides assurance to the CEOs that the PSU has in place appropriate systems and controls to support the services being delivered.

During 2017-18, the PSU was fully engaged in the UKRI Transition Programme with staff contributing to the work streams, with the PSU Project Office providing a significant amount of support to the various working groups that have been created. PSU has continued to provide support to EPSRC; however, with the increasing pressures on PSU staff and with staff seeking opportunities within the UKRI Transition Programme, the resilience of PSU service delivery has been tested and regularly monitored through the PSU Senior Management Team with regular reporting to the PSU Management Committee. There were no issues in respect of service delivery raised with PSU through the PSU Management Committee.

7 Review of Effectiveness

As Accounting Officer, I have responsibility for reviewing the effectiveness of governance, risk management and other internal controls at the EPSRC to ensure a sound system of internal control is being maintained. In 2017-18 this review has been informed by the work of the EPSRC's Directors, the ARAC, the internal audit service, comments from the external auditors and cross-Council assurance programmes. The conclusion of my review is covered below.

a) EPSRC Directors

EPSRC Directors produce an annual statement on the internal control framework within their areas of responsibility. The statements are then consolidated into a single report, which provides me with a level of assurance on the internal control framework. The main issue raised concerned the disaster recovery arrangements for Oracle, where ongoing work is taking place to improve the position. This issue is also reflected in the EPSRC risk register and therefore managed through the existing risk management process. I am content that the 2017-18 reports provided me with reasonable assurance that a sound internal control framework is in place.

b) Audit and Risk Assurance Committee

I attend ARAC meetings and no major issues of concern have been raised with me by the Committee which require disclosure here.

c) Internal Audit

Internal Audit is provided by the Government Internal Audit Agency (GIAA). The Head of Internal Audit is required to provide me with an opinion on the overall adequacy and effectiveness of EPSRC's framework of governance, risk management and internal control. This opinion is informed by the internal audit work completed during the year, in line with the internal audit plan agreed by management and the ARAC. The work of GIAA provides assurance in two areas: core EPSRC activities and cross-Council activities with an EPSRC involvement.

In 2017-18, based on the audit work covered below, GIAA was able to provide EPSRC with an overall moderate level of assurance on the adequacy and effectiveness of EPSRC's internal controls, risk management and governance processes.

During the year a number of audits and assurance work were undertaken within the two areas of activity. The implementation of recommendations that relate specifically to EPSRC is monitored by PSU with progress reports presented to each ARAC meeting.

Core EPSRC Audits

The Core audits undertaken in 2017-18 were:

- Initialisation of Major Projects and Programmes – Moderate Assurance;
- UKRI Readiness for change – Moderate Assurance;
- Hosted Functions: RCUK Executive Directory and Grants Service – (Limited Assurance);
- PSU Financial Accounting and Management – Moderate Assurance;
- Performance Measurement and the Delivery Plan – Moderate Assurance;

- PSU Cyber Security Application and Compliance – Moderate Assurance;
- Holmes Hines Memorial Fund – Advisory;
- Follow up of Audit Recommendations – Advisory.

All accepted recommendations in relation to the above audits have implementation plans in place.

The audit in respect of Hosted Functions received Limited Assurance. The actions associated with three of the recommendations were rejected as they would have limited impact given the impending transition to UKRI. In these cases I did however write to senior UKRI staff alerting them to the issues raised and asking them to be mindful of these as the UKRI transition process is completed. The remaining recommendation was accepted and a number of actions have been taken to reduce the identified risk to an acceptable level.

Cross-Council Audits

In 2017-18, GIAA carried out 23 cross-Council activities that were relevant to EPSRC. The following audits received Limited Assurance and, where appropriate, EPSRC will work with UKRI colleagues to ensure that the issues raised are fully addressed:

- Transfer of Assets, Liabilities and Regulatory Permissions to UKRI;
- Change Management: RCUK Digital and Technology Project (Phase 1);
- Change Management: RCUK Digital and Technology Project (Phase 2);
- General Data Protection Regulation (GDPR). Implementation Project (Phase 3);
- Retained Function Assurance: GPC and iExpenses.

Where recommendations relate specifically to EPSRC their implementation is closely monitored by PSU on behalf of EPSRC. The recommendations of a cross-Council nature are monitored through the cross-Council Governance, Risk, Assurance & Improvement Network or through the appropriate functional governance group within the Councils.

d) Funding Assurance

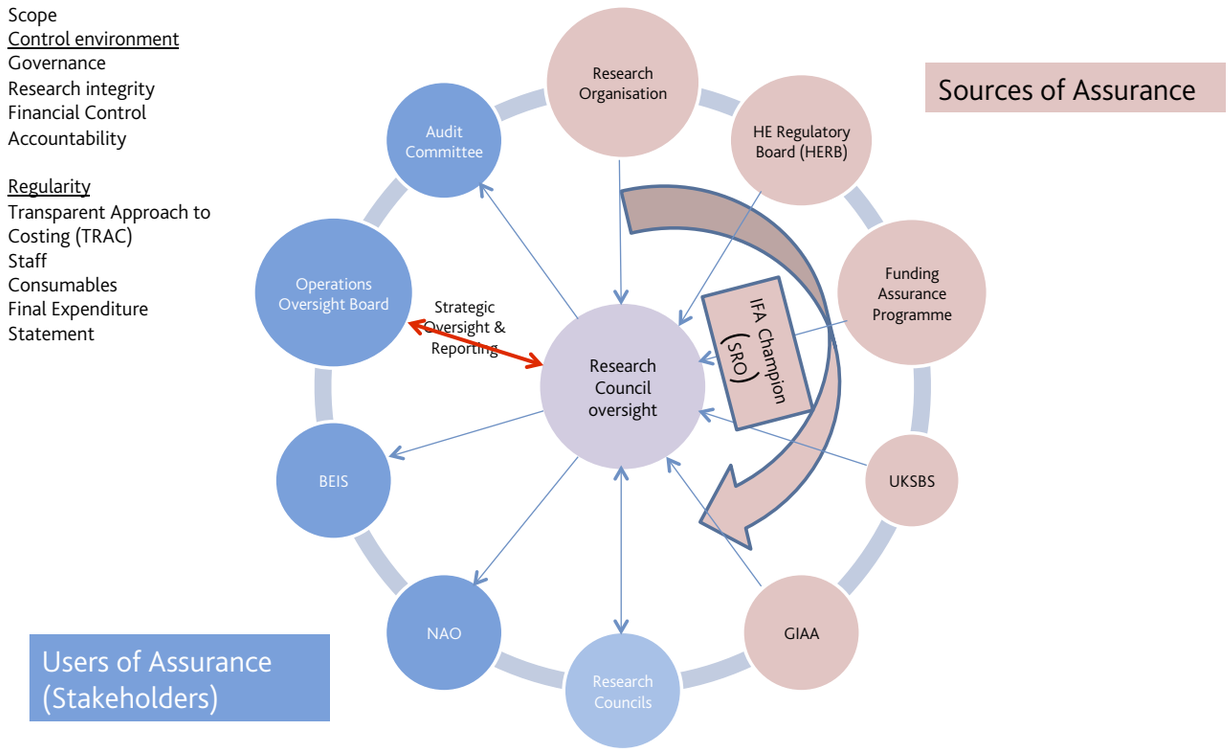
Across the RCUK community, research funding totals £3.3bn, of which £1,053.9m relates to EPSRC. The funding landscape has two major funding streams: 1. Grants administered through the Siebel system of c£989.3m and awarded to eligible Research Organisations (ROs); 2. Funding distributed outside the Siebel system of c£64.6m including Strategic Partnerships.

The Funding Assurance Working Group (FAWG) has continued to review the Integrated Funding Assurance (IFA) framework and improve the approach to IFA. This framework is predicated on establishing appropriate accountability within the RO in receipt of funding and collating assurance from a range of sources for key stakeholders (see Figure 1 overleaf).

Siebel Grants

The International Assurance sub-group (including the funding assurance team) has continued to develop and refine the approach to due diligence and assurance for overseas funding.

Figure 1: IFA Framework



The assurance provided through this framework indicates a low level of current and historic errors for all Councils. In his report the Head of Funding Assurance provides Moderate Assurance based upon the programme of work undertaken.

Some of the key changes during the year have been:

- Amendments to the grant terms and conditions – to provide clarity on RCs' expectations relating to due diligence and assurance;
- Auditing of UK research organisations' approach to due diligence and assurance;
- Development of draft international funding assurance policy, framework and process;
- Increased resources for funding assurance team;
- Further development of the processes relating to GCRF.

In addition to the Research Councils' demonstration of compliance with the Cabinet Office Minimum Grant Standards in 2017, they have also been taking part in the Grants Accelerator work. Data has been provided evidencing the Councils' overall position as being 'established/advanced', which will be used as part of the overall BEIS assessment.

Non-Siebel awards/funding

Funding to Universities and Independent Research Organisations represents the major part of EPSRC non-Siebel funding (£42.5m); this is covered by the assurance arrangement outlined above for Siebel funding and other specific conditions and agreements. A significant amount of non-Siebel funding (£16.7m) is also to BEIS, BEIS Partner Organisations and other Government Departments, and these organisations already have a well-managed control and audit regime in accordance with 'Managing Public Money'. No issues were identified in 2017-18.

The remaining areas include EPSRC's funding for other research contracts and individual subscriptions which are covered by specific conditions and agreements. No issues were identified in 2017-18.

Audit Activity

During 2017-18 GIAA conducted two audits relevant to the IFA framework:

- Retained Function: Grants Processing (Moderate Assurance);
- Integrated Funding Assurance: Non-Siebel Funding Activity (Moderate Assurance).

The recommendations from the report will be taken forward as part of the assurance work within UKRI.

Summary

By taking assurance from the Higher Education Regulatory Bodies that the control systems within HEIs are working effectively and combining this with the transaction-level testing undertaken by the Funding Assurance Programme (FAP), Research Councils are able to provide a high level of assurance to the public that funds are being spent in accordance with the principles contained within 'Managing Public Money'.

The assurance provided through the IFA framework indicates a number of funding pressures and the very nature of the activities is that they are complex and novel. Nevertheless, I am reassured through the mechanisms described here that they are being managed in an appropriate manner and that there are no major issues that warrant reference here.

e) UK Shared Business Services Ltd (UK SBS) Assurance

UK SBS Ltd (UK SBS) provides processing services in human resources, procurement, payroll, finance and IT to all 7 Research Councils.

The UK SBS Executive Director has written to me stating that the Head of Internal Audit GIAA has provided an opinion of Moderate Assurance for both the internal operations within UK SBS and for its customer-facing operations.

To provide additional assurance GIAA has reviewed the adequacy and effectiveness of controls operated by the retained functions within the Research Councils, the outcomes of which were:

- Grants Processing – Substantial;
- Payroll – Moderate;
- Human Resources – Moderate;
- GPC and iExpenses – Limited;
- Order and Payment Processing – Moderate;
- Procurement – Moderate.

The accepted audit recommendations in these areas will be taken forward in 2018-19.

The GPC and iExpenses audit received Limited Assurance raising issues in respect of:

- transaction limits;
- justification of expenditure;
- and policy violations.

The recommendations have either now been closed or identified for cross-Council action during 2018-19.

f) External Audit

The EPSRC Annual Report and Accounts are audited by the National Audit Office who produce an Audit Completion Report. The report is presented to Audit Committee with any highlighted governance issues discussed.

7 Conclusion

The conclusion of my review is that EPSRC's overall governance, risk management and internal control structures are sound and ensure that public money is properly accounted for and used economically, efficiently and effectively. I can provide assurance that the governance and control structures in place support the achievement of EPSRC's policies, aims and objectives and that effective plans for continuous improvement are in place.

Professor Philip Nelson, Accounting Officer
25 June 2018

Remuneration Report

Council Chair and Council Members except Chief Executive

Unaudited Information

Policy

The Chair and Council members receive a letter of appointment from the Department for Business, Energy & Industrial Strategy (BEIS) and are not employees of the EPSRC, although remuneration is made through the EPSRC payroll. The terms of appointment allow for members to resign from office by notice in writing to the Secretary of State. Members may also be removed from office by the Secretary of State on grounds of incapacity or misbehaviour or a failure to observe the terms and conditions of appointment.

Council Chair and Council Member appointments are Ministerial Appointments made by the Secretary of State for BEIS. The process for new appointments to the Council Chair and Council Members is regulated by the Commissioner for Public Appointments and therefore made in accordance with the Governance Code on Public Appointments set out by the Cabinet Office Centre for Public Appointments (https://publicappointments.cabinetoffice.gov.uk/). In accordance with the Code available at http://publicappointmentscommissioner.independent.gov.uk, vacancies are advertised nationally and a panel, including independent members, oversees the process. The panel reviews and shortlists applications, carries out interviews, and then forwards names of appointable candidates to the Secretary of State for selection. Once the Secretary of State has made a final decision, an offer of appointment is issued by BEIS on their behalf to the successful candidate.

Council Chair and Council Members are defined as Office Holders. They are neither employees nor civil servants. Appointments are usually made for four years. In exceptional cases members may be offered the possibility of re-appointment for up to a further four years. Appointments are non-pensionable and there is no compensation for loss of office.

As well as an honorarium in recognition of their service to EPSRC, Council Members are refunded for reasonable expenses. Remuneration rates for Council Chair and Council Members are the same across Research Councils. Members of Council who are civil servants are not entitled to receive an honorarium.

From 01 April 2018 the staff, assets and activity of the Research Councils will move to a new Non-Departmental Public Body called UK Research and Innovation (UKRI). The Research Councils will have their Royal Charters revoked once 2017-2018 business has been finalised, such as the preparation, audit, review, and laying in Parliament, of the 2017-2018 Annual Report & Accounts. Therefore, for the period from April until the Autumn, the Research Councils will remain in existence as legal shells to allow for an orderly winding up of their affairs (in line with best practice and HMG guidance). This means the governing Councils must remain quorate and so a proportion of members have had their terms extended so they will remain in place. The Royal Charters are expected to be revoked in the Autumn and all appointments to the governing Councils will cease.

Audited Information

Remuneration

Council Chair and Council Members (audited information)	Period Of Appointment	2017-18 Remuneration £000	2016-17 Remuneration £000
Dr Paul Golby (Chair) ****	01-04-12 – 31-10-18	15-20	15-20
Professor Sir Richard Friend	01-04-12 – 31-03-18	5-10	5-10
Dr Helen Neville	01-04-13 – 31-03-18	5-10	5-10
Professor Anthony Finkelstein* ****	01-04-13 – 31-10-18	-	-
Professor Richard Jones ****	01-04-13 – 31-10-18	5-10	5-10
Dr David Watson** *****	01-04-09 – 31-03-17	0-5	5-10
Professor Lord Ara Darzi ****	01-11-13 – 31-10-18	5-10	5-10
Rt Hon Baroness Pauline Neville-Jones ****	01-11-13 – 31-10-18	5-10	5-10
Dr Matthew Rosseinsky ***	23-03-15 – 31-10-18	5-10	5-10
Mr Jack Boyer ***	01-04-11 – 31-10-18	5-10	5-10
Ms Bonnie Dean** ***	23-03-15 – 31-10-18	5-10	5-10
Professor Tim Jones ***	23-03-15 – 31-10-18	5-10	5-10
Professor Muffy Calder ***	04-04-15 – 31-10-18	5-10	5-10
Professor Mark Smith ****	12-12-16 – 31-10-18	5-10	0-5
Professor Tim Whitley ****	12-12-16 – 31-10-18	5-10	0-5

*Remuneration not payable as member works in the Civil Service.

**Chair of EPSRC ARAC – Ms Bonnie Dean took over as Chair following Dr David Watson's end of tenure.

***Appointments to be revoked following legacy council expiry.

****Council Members Extension from 31/03/18.

***** Remumeration for attendance at an ARAC meeting following end of appointment date.

Chief Executive and EPSRC Directors

The remuneration of the Chief Executive of EPSRC is decided by a Remuneration Panel chaired by the BEIS Director General of Knowledge and Innovation and approved by the BEIS Permanent Secretary.

The performance of EPSRC Directors is assessed annually by the Directors Remuneration Committee. This Committee is chaired by the Chair of Council and other membership comprises the Chief Executive and the Chair of Audit committee or Council members. Assessments are made using EPSRC's Performance Management arrangements for Research Council Directors, taking into account the following:

- Benchmarking against comparators in other Research Councils;
- Annual increases agreed for other staff pay grades within EPSRC;
- BEIS and Government pay policy guidelines and constraints.

There is no separate Remuneration Committee that considers the pay of other employees as they are covered by a collective agreement with Trade Unions (TUs) which is managed through the Research Council Harmonised Pay consortium. All pay awards are subject to a satisfactory performance assessment. The amount of any non-consolidated one-off payment is determined by the level of performance rating within the year.

Contracts of Employment

Chief Executive and Deputy Chief Executive

The Chief Executive is seconded in for the period 1 October 2014 to 31 March 2018. This is a part-time appointment at 0.95 FTE but increased to full-time 1 FTE in April 2016. The Deputy Chief Executive Officer is seconded in until 30 September 2018.

Directors

All Directors are employees of the EPSRC. The Chief Executive and all Directors are subject to a notice period of 3 months and any compensation awarded for early termination is subject to the terms and conditions of the Research Councils' Joint Superannuation Early Severance Scheme.

Executive Director of RCUK

The Executive Director of Research Councils UK (RCUK) was employed by EPSRC but her remit covered all of the Research Councils and her costs were recharged accordingly.

High Paid Off-Payroll Engagements

There were 0 engagements of longer than six months, for more than £245 per day, during the year 2017-18.

Chief Executive and EPSRC Directors

	2017-18				2016-17			
Chief Executive and Directors	Salary £000	Bonus[1] £000	Pension Benefits* £000	Total £000	Salary £000	Bonus[1] £000	Pension Benefits* £000	Totals £000
Professor P Nelson[2] Chief Executive	145-150	10-15	26[3]	180-190	140-145	5-10	26	175-180
Ian Kenyon UKRI CFO Des	45-50	-	-[4]	45-50	-	-	-	-
Professor T Rodden[5] Deputy Chief Executive	95-100	0-5	17[6]	115-120	85-90	-	16	100-105
Mr A Lewis[7] Director	75-80	0-5	64	115-120	100-105	5-10	45	150-155
Dr N Viner Director	85-90	0-5	33	120-125	80-85	-	57	135-140
Mrs H Reynolds[8] Executive Director RCUK	60-65	0-5	5	70-75	120-125	5-10	27	150-155

*The value of pension benefits accrued during the year is calculated as (the real increase in pension multiplied by 20) plus (the real increase in any lump sum) less (the contributions made by the individual). The real increases exclude increases due to inflation or any increase or decreases due to a transfer of pension rights.

[1] Performance Bonuses for 2016-2017 paid in 2017-18.

[2] Prof Nelson is an employee of the University of Southampton and is on secondment to EPSRC. The values shown above are the amounts reimbursed (excl Pension & NI contributions) to the University of Southampton. VAT is payable on the total amount invoiced but is not included in the figure above. EPSRC also covers the expense claims for travel and accommodation between Southampton and EPSRC Head Office in Swindon. This is a taxable benefit and EPSRC covers the cost of any tax and NI payable on these expenses.

[3] The pension benefit disclosure for Prof Nelson is not equivalent to the pension benefit disclosure of the other EPSRC directors, it is the re-imbursement of the contributions EPSRC makes to the University of Southampton in respect of Prof Nelson's pension.

[4] Ian Kenyon has been employed with RCUK UKRI Shadow since 1 Dec 2017. He has opted out of the Pension Scheme.

[5] Prof Rodden is an employee of the University of Nottingham and is on secondment to EPSRC. The values shown above are the amounts reimbursed (excl Pension & NI contributions) to the University of Nottingham. VAT is payable on the total amount invoiced but is not included in the figure above. The secondment is 0.8 of 1FTE and began on 18-04-16. His full-time equivalent salary for 2017-18 is in the salary band 115-120.

[6] The pension benefit disclosure for Prof Rodden is not equivalent to the pension benefit disclosure of the other EPSRC directors, it is the re-imbursement of the contributions EPSRC makes to the University of Nottingham in respect of Prof Roddens's pension.

[7] Andrew Lewis left employment with EPSRC on 31 December 2017. All disclosures are for the period 1 April 2017-31 December 2017.

[8] Mrs Reynolds was employed as Executive Director of RCUK. The role was funded by EPSRC, who host RCUK. Mrs Reynolds worked primarily in London and any claims for accommodation in Swindon were covered by EPSRC. This was a taxable benefit and EPSRC covered the cost of any tax and NI payable on these expenses. Mrs Reynolds left RCUK on 29 September 2017.

Remuneration and Staff Report

Reporting bodies are required to disclose the relationship between the remuneration of the highest-paid director in their organisation and the median remuneration of the organisation's workforce. The median excludes the pension benefits disclosed above.

Fair Pay	**2017-18**	**2016-17**
Banded remuneration of highest-paid Director (£000's)	155-160	150-155
Median remuneration of EPSRC workforce	£31,401	£30,748
Range of staff remuneration	£15,415 - £156,920	£15,263–£153,742
Ratio	5.02	4.96

Salary paid in 2017-18 includes gross salary, overtime, recruitment and retention allowances, responsibility allowances and any other allowance to the extent that it is subject to UK taxation.

It does not include severance payments, reimbursement of expenses, employer pension contributions and the cash equivalent transfer value of pensions. There has been an increase to the average annual earnings (excluding bonuses) for these members of staff of 2.17% between 2016-17 and 2017-18.

The monetary value of benefits in kind covers any benefits provided by the employer and treated by HM Revenue and Customs as a taxable emolument. There were no benefits in kind paid to any of the EPSRC Executive in 2017-18.

In 2017-18 no employees received remuneration in excess of the highest-paid director (2016-17, 0).

Decisions on whether to award non-consolidated performance awards to Directors are made by the CEO in conjunction with the Remuneration Committee. Decisions are strictly performance based and made in accordance with Cabinet Office Guidance 'Senior Civil Service pay 2013/14' document published in March 2013 and Non-Consolidated Performance Related Pay (NCPRP) guidance set out in the Government's announcement in May 2010, as well as the annual Senior Salaries Review Body report and any guidance from HM Treasury, Cabinet Office or BEIS. Directors were awarded non-consolidated awards based on how well they achieved or exceeded their personal objectives agreed with them at the beginning of the appraisal period by the CEO.

The Professional Support Unit (PSU) was created in the year 2013-14. The Head of the PSU, Mr G Raikes, is the Director responsible to each Research Council for all PSU services provided to that Council, and he reports to the CEO of each of the Councils supported by PSU. Mr Raikes' salary is paid by his employing Council (AHRC) and is disclosed in its Annual Report. A proportion of Mr Raikes' salary is recharged across the PSU Councils as part of the agreed charging process. The Remuneration of the Head of PSU is determined by the employing Council's Remuneration Committee. A PSU recharge is necessary to ensure each of the Council's costs fairly reflect the services received.

Pension Benefits

Chief Executive and Directors	Accrued pension at pension age as at 31-03-18 and related lump sum £000	Real increase in pension and related lump sum at pension age £000	CETV at 31-03-18 £000	CETV at 31-03-17 £000	Real increase in CETV £000
Professor P Nelson Accounting Officer*	-	-	-	-	-
Professor T Rodden Deputy CEO**	-	-	-	-	-
Mr A Lewis *** Director	40-45 plus lump sum 125-130	2.5-5 plus lump sum 7.5-10	828	733	52
Dr N Viner Director	35-40 plus lump sum 105-110	0-2.5 plus lump sum 5-7.5	732	657	28
Mrs H Reynolds **** Executive Director RCUK	40-45 plus lump sum 130-135	0-2.5 plus lump sum 0-2.5	917	896	4

* On secondment from University of Southampton
** On secondment from the University of Nottingham
*** Andrew Lewis left employment with EPSRC on 31 December 2017. All disclosures are for the period 1 April 2017 - 31 December 2017.
**** Mrs Reynolds left employment with RCUK on 29 September 2017. All disclosures are for the period 1 April 2017 - 29 September 2017.

Unaudited Information

Pension Schemes

The employees of EPSRC are members of the Research Councils Pension Scheme (RCPS) which is a defined benefit scheme funded from annual grant-in-aid on a pay-as-you-go basis. The benefits are by analogy to the Principal Civil Service Pension Scheme (PCSPS), except that, while the schemes provide retirement and related benefits based on final emoluments, redundancy and injury benefits are administered and funded by the Council.

The RCPS is a multi-employer scheme and the Council is unable to identify its share of the underlying assets and liabilities. As permitted by paragraph 34(a) of IAS 19, the Company has recorded the pension contributions payable for the period as its charge to the Statement of Comprehensive Net Expenditure (SoCNE).

As such, annual contributions to the RCPS are charged to the SoCNE in accordance with actuarial recommendations so as to spread the cost of the pensions over the employees' expected working lives.

Liabilities for the payment of future benefits are the responsibility of the RCPS and accordingly are not included in these Financial Statements.

The employee contribution rates are by analogy with the PCSPS rates. For the period 1 April 2017 to 31 March 2018 the rates and annualised earnings brackets were as follows:

Annualised pensionable earnings	Classic % contribution rate before tax relief	Classic Plus, Premium & Nuvos % contribution rate before tax relief
Up to £15,000	4.60	4.60
£15,001 - £21,422	4.60	4.60
£21,423 - £51,005	5.45	5.45
£51,006 - £150,000	7.35	7.35
£150,001 and above	8.05	8.05

A Partnership Pension Account was made available to new staff from 1 October 2002, based on the portable Stakeholder Pension introduced by the Government in 2001. This is a defined contribution scheme. The employers pay the RCPS 0.8% of pensionable pay to cover death in service and ill health benefits. The employers pay the balance to the employee's private pension provider. The employer contribution for 2017-18 was £799 (2016-17 £852).

The accrued pension quoted is the pension the member is entitled to receive when they reach pension age or immediately on ceasing to be an active member of the scheme if they are already at or over pensionable age. Pensionable age is 60 for members of classic, classic plus and premium and 65 for members of nuvos.

On 1 April 2015 PCSPS launched a new pension scheme called Alpha. This scheme is similar to the Nuvos career average scheme but with the retirement age aligned to the state pension age. RCPS cannot operate by analogy to the new Alpha scheme as the legislation does not permit this. Reform options are currently being discussed with HM Treasury, and BEIS have given permission for RCPS to continue 'as is' beyond April 2015.

Further details about the RCPS pension arrangements can be found at the website http://jsspensions.nerc.ac.uk.

Contributions are set at a level that is expected to be sufficient to pay the required benefits falling due in the same period with future benefits earned during the current period to be paid out of future contributions. The assets of all schemes are held separately from those of EPSRC in an independently administered scheme. It is not possible to identify the EPSRC's share of the underlying assets and liabilities of any of the pension schemes. In the RCPS, EPSRC has no legal or constructive obligation to pay those future benefits. Its only obligation is to pay the contributions as they fall due and, if the entity ceases to employ members of RCPS, it will have no obligation to pay the benefits earned by its own employees in previous years. For this reason, RCPS is treated as a defined contribution plan plan as stated in IAS 19.

In order that the defined benefit obligations recognised in the financial statements do not differ materially from those that would be determined at the reporting date by a formal actuarial valuation, the Financial Reporting Manual (FReM) requires that the period between formal actuarial valuations shall be four years, with approximate assessments in intervening years.

Formal actuarial valuations are used to determine employer and employee contribution rates. The last actuarial valuation undertaken for the RCPS, as at 31 March 2006, was completed in 2008-09. An actuarial valuation as at 31 March 2010 was initiated but not completed due to HM Treasury suspending all public sector pension scheme valuations whilst reform policies were being developed. HM Treasury has since concluded their reform policy, which enabled the Government Actuary Department to start the process of completing a revised scheme valuation. This valuation will be as at 31 March 2012 in accordance with HM Treasury revised scheme valuation directions. The conclusion of the scheme valuation is directly linked to the reform of the RCPS and therefore future employer contribution rates will be established once the

scheme reforms are implemented, which is expected in April 2019. HM Treasury and BEIS granted the RCPS permission to continue for another year beyond March 2018 to enable continuing reform implementation planning.

For 2017-18, employer's contributions of £2,458k were payable to RCPS (2016-17 £2,101k) at 26% of pensionable pay for all the salary bands.

The Cash Equivalent Transfer Value (CETV)

A Cash Equivalent Transfer Value (CETV) is the actuarially assessed capitalised value of the pension scheme benefits accrued by a member at a particular point in time. The benefits valued are the member's accrued benefits and any contingent spouse's pension payable from the scheme. A CETV is a payment made by a pension scheme or arrangement when the member leaves a scheme and chooses to transfer the benefits accrued in their former scheme. The pension figures shown relate to the benefits that the individual has accrued as a consequence of their total membership of the pension scheme, not just their service in a senior capacity to which disclosure applies. The CETV figures include the value of any pension benefit in another scheme or arrangement which the individual has transferred to the Research Councils' pension arrangements and for which the RCPS has received a transfer payment commensurate with the additional pension liabilities being assumed. They also include any additional pension benefit accrued to the member as a result of their purchasing additional years of pension service in the scheme at their own cost. CETVs are worked out within the guidelines and framework prescribed by the Institute and Faculty of Actuaries and do not take account of any actual or potential reduction to benefits resulting from Lifetime Allowance Tax which may be due when pension benefits are taken.

The real increase in the value of the CETV

This reflects the increase in CETV effectively funded by the employer. It does not include the increase in accrued pension due to inflation or contributions paid by the employee (including the value of any benefits transferred from another pension scheme or arrangement) and uses common market valuation factors for the start and end of the period.

Audited Information

EPSRC Staff Report

Staff Numbers & Related Costs

	2017-18 £000	2016-17 £000
Wages and Salaries	10,025	8,631
Social Security Costs	937	801
Other Pension Costs	2,458	2,101
Temporary Staff	248	81
Secondment Expenditure	1,884	1,630
Total Staff Costs as per Statement of Comprehensive Net Expenditure	**15,552**	**13,244**
Less recoveries in respect of outward secondments	(499)	(276)
Total Staff Costs after deduction of income received for secondments	**15,053**	**12,968**

All of EPSRC's senior staff are paid through a formal payroll facility and arrangements are in place through HR to provide assurance that appropriate tax arrangements are in place to cover any other appointees. There were no consultancy costs during 2017-18.

The average numbers of full-time equivalent persons employed during the year are documented in the table below:

Staff Numbers	2017-18		2016-17		Total	
	EPSRC	PSU	EPSRC	PSU	2017-18	2016-17
Directly Employed/Core Staff	267	11	226	19	278	245
Seconded In	28	-	19	-	28	19
Temporary Staff	-	-	2	-	-	2
Staff Numbers	**295**	**11**	**247**	**19**	**306**	**266**
Less Seconded Out	(7)	0	(5)	0	(7)	(5)
Total	**288**	**11**	**242**	**19**	**299**	**261**

Headcount has increased due to the transfer of the UK SBS Grants team to RCUK.

Remuneration and Staff Report

The average number of full-time equivalent persons of each gender within the Directly Employed / Core Staff category was as follows:

Staff Numbers	2017-18		2016-17		Total	
	Male	Female	Male	Female	2017-18	2016-17
Directors	3	-	3	1	3	4
Senior Managers	16	22	13	17	38	30
Other Employees	81	156	73	138	237	211
Total Directly Employed/Core Staff	**100**	**178**	**89**	**156**	**278**	**245**

The AHRC hosts the PSU on behalf of AHRC, ESRC and EPSRC, providing HR, Finance, Project, Reprographics and Information Services to the three Councils. The costs of the PSU are recharged to the Councils who receive a service. All new staff appointments across these functions are recruited to AHRC.

No exit packages were agreed in 2017-2018.

EPSRC Staff Policies

Sickness Absence

PSU HR and the Research Council management monitor staff sick absences on an ongoing basis with all sickness absences followed up by a return to work interview in line with the harmonised Research Council Sickness Absence Policy. Short-term and long-term absences are managed on a case-by-case basis with appropriate support from an Occupational Health Assessor.

	2017-18	2016-17
Average number of staff during year	295	245
Total days lost to sickness	2,414	1,499
Average working days lost	8	4
Days lost to long-term absences*	1,105	150

*EPSRC defines a long-term sickness absence where an employee is absent sick for twenty or more consecutive working days. In 2017-18 there were nine cases of long-term absence, of which five related to staff working within hosted units. In 2016-17 there were six cases, of which one related to staff working in a hosted unit.

	2017-18	
Top 5 causes of absence	**Days lost**	**%**
Cold / Cough / Flu	427	18
Gastrointestinal	119	5
Viral	105	4
Headache / Migraine / Concussion	91	4
Vomiting	38	2
Totals	**780**	**33**

Unaudited Information

Diversity and Equality

EPSRC policy on recruitment and selection is based on the Equality Act 2010 and focuses on the ability of the candidate to perform the job regardless of gender, colour, ethnic or national origin, disability, age, marital status, sexual orientation or religion. If disability should occur during employment, the Research Council would make every effort to maintain employment and to ensure the availability of adequate retraining and career development facilities.

EPSRC holds 'two ticks' Positive about Disabled People status, which is awarded to employers who have made a commitment to employ, keep and develop the abilities of disabled staff. The annual review was successful and retention of the award was confirmed for a further year.

EPSRC has agreed to embrace the Mindful Employer initiative. PSU HR attends seminars and networking events involving other organisations. The initiative indicates a positive attitude about mental health, and demonstrates EPSRC's commitment to improving the working lives of its employees.

The Gender Pay Gap legislation (developed by the Government Expenditure Office) introduced in April 2017 requires all employers of 250 or more employees to publish their gender pay gap for workers in scope as of 31 March 2017. More information about the UK's approach to the gender pay gap is available on the government website[1]. EPSRC's gender pay gap report has been published on the external EPSRC website[2] and on the online goverment portal[3]. This report explains our gender pay gap and puts it into an organisational context. The comparision of mean pay in EPSRC shows a gap in favour of males of 11%, whilst a comparison of median pay shows a gap in favour of males of 0.4%. The report also explains the plans within EPSRC to address the pay gap.

Employee Engagement

Employee involvement in management and policy matters continues through ongoing dialogue between all colleagues within EPSRC. The PSU, which was formed in 2013-14 and is hosted by AHRC, continues to engage with colleagues to facilitate management and policy matters for HR, Finance, IT and Project work in support of AHRC, EPSRC and ESRC.

EPSRC continues to recognise, and consults with, the Public and Commercial Services Union and Prospect on issues relating to pay and terms and conditions of employment. Consultation takes place through the Joint Negotiation Consultative Committee meeting on a quarterly basis. During the year the move to a harmonised set of non-pay employment terms and conditions has continued.

AHRC, EPSRC and ESRC actively participate in the Civil Service People Survey. Findings are discussed with all employees through Research Council working groups and there is a continuous dialogue to ensure that employees are engaged on issues which affect them at work.

EPSRC also participated in Investors in People (IiP) and was awarded the silver standard. EPSRC has participated in IiP for many years and views it as a valuable external measurement of employee engagement and a useful engagement tool.

[1] www.gov.uk/government/news/uk-gender-pay-gap
[2] https://epsrc.ukri.org/about/standards/equalopps/genderpaygapreporting/
[3] https://gender-pay-gap.service.gov.uk/viewing/search-results

Remuneration and Staff Report

Health and Safety

EPSRC is a joint member of a cross-Research Council Health and Safety Committee. This Committee considers and manages health and safety for EPSRC, ESRC, AHRC and BBSRC, and is supported and managed by PSU HR. The Committee has developed and implemented a common health and safety policy across the three Research Councils and has a continuous programme of inspections and engagement with employees in the three Research Councils. Joint Building and Office Services continues to provide health and safety support and administration across the seven Research Councils, relating to induction of new starters, first aid and fire safety.

Trade Union Facility Time

These tables are provided under section 172A of the Trade Union and Labour Relations (Consolidation) Act 1992 and make provision in connection with the imposition of requirements on public authorities to publish information in relation to facility time taken by trade union officials.

Table 1 - Relevant union officials

What was the total number of your employees who were relevant union officials during the relevant period?

Number of employees who were relevant union officials during the relevant period	Full-time equivalent employee number
3	**281.2**

Table 2 - Percentage of time spent on facility time

How many of your employees who were relevant union officials employed during the relevant period spent a) 0%, b) 1%-50%, c) 51%-99% or d) 100% of their working hours on facility time?

Percentage of time	Percentage of time
0%	0
1-50%	3
51%-99%	0
100%	0

Table 3 - Percentage of pay bill spent on facility time

Provide the figures requested in the first column of the table below to determine the percentage of your total pay bill spent on paying employees who were relevant union officials for facility time during the relevant period.

First Column	Figures
Provide the total cost of facility time	£2,814
Provide the total pay bill	£15,551,871
Provide the percentage of the total pay bill spent on facility time, calculated as: (total cost of facility time ÷ total pay bill) x 100	0.02%

Table 4 - Paid trade union activities

As a percentage of total paid facility time hours, how many hours were spent by employees who were relevant union officials during the relevant period on paid trade union activities?

Time spent on paid trade union activities as a percentage of total paid facility time hours calculated as (total hours spent on paid trade union activities by relevant union officials during the relevant period ÷ total paid facility time hours) x 100	3.75%

Parliamentary Accountability and Audit Report

Audited Information

Regularity of Expenditure

During the reporting period there were no transactions that required specific Treasury approval. All transactions complied with the requirements of regularity as defined by the Treasury documents 'Managing Public Money'.

Losses and Special Payments

EPSRC has not recognised any losses or special payments in the financial year 2017-18.

Remote Contingent Liabilities

EPSRC has no contingent liabilities as at 31 March 2018.

Audit Fees

The cost of the external audit was £68k. No remuneration was paid to the external auditors in respect of non-audit work in 2017-18.

Professor Philip Nelson, Accounting Officer
25 June 2018

The Certificate and Report of the Comptroller and Auditor General to the Houses of Parliament

I certify that I have audited the financial statements of the Engineering and Physical Sciences Research Council for the year ended 31 March 2018 under the Science and Technology Act 1965. The financial statements comprise: the Statements of Comprehensive Net Expenditure, Financial Position, Cash Flows, Changes in Taxpayers' Equity; and the related notes including the significant accounting policies. These financial statements have been prepared under the accounting policies set out within them. I have also audited the information in the Accountability Report that is described in that report as having been audited.

In my opinion:

- the financial statements give a true and fair view of the state of Engineering and Physical Sciences Research Council's affairs as at 31 March 2018 and of the Net Operating Expenditure for the year then ended; and
- the financial statements have been properly prepared in accordance with the Science and Technology Act 1965 and Secretary of State directions issued thereunder.

Opinion on regularity

In my opinion, in all material respects the income and expenditure recorded in the financial statements have been applied to the purposes intended by Parliament and the financial transactions recorded in the financial statements conform to the authorities which govern them.

Basis of opinions

I conducted my audit in accordance with International Standards on Auditing (ISAs) (UK) and Practice Note 10 'Audit of Financial Statements of Public Sector Entities in the United Kingdom'. My responsibilities under those standards are further described in the Auditor's responsibilities for the audit of the financial statements section of my certificate. Those standards require me and my staff to comply with the Financial Reporting Council's Revised Ethical Standard 2016. I am independent of the Engineering and Physical Sciences Research Council in accordance with the ethical requirements that are relevant to my audit and the financial statements in the UK. My staff and I have fulfilled our other ethical responsibilities in accordance with these requirements. I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my opinion.

Responsibilities of the Engineering and Physical Sciences Research Council and Accounting Officer for the financial statements

As explained more fully in the Statement of Accounting Officer's Responsibilities, the Engineering and Physical Sciences Research Council and the Accounting Officer are responsible for the preparation of the financial statements and for being satisfied that they give a true and fair view.

Auditor's responsibilities for the audit of the financial statements

My responsibility is to audit, certify and report on the financial statements in accordance with the Science and Technology Act 1965.

An audit involves obtaining evidence about the amounts and disclosures in the financial statements sufficient to give reasonable assurance that the financial statements are free from material misstatement, whether

caused by fraud or error. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with ISAs (UK) will always detect a material misstatement when it exists.

Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit in accordance with ISAs (UK), I exercise professional judgment and maintain professional scepticism throughout the audit. I also:

- identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for my opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Engineering and Physical Sciences Research Council's internal control.
- evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- conclude on the appropriateness of management's use of the going-concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Engineering and Physical Sciences Research Council's ability to continue as a going concern. If I conclude that a material uncertainty exists, I am required to draw attention in my auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify my opinion. My conclusions are based on the audit evidence obtained up to the date of my auditor's report. However, future events or conditions may cause the entity to cease to continue as a going concern.
- evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the consolidated financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

I communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that I identify during my audit.

In addition, I am required to obtain evidence sufficient to give reasonable assurance that the income and expenditure reported in the financial statements have been applied to the purposes intended by Parliament and the financial transactions conform to the authorities which govern them.

Other Information

The Engineering and Physical Sciences Research Council and the Accounting Officer are responsible for the other information. The other information comprises information included in the annual report, other than the parts of the Accountability Report described in that report as having been audited, the financial statements and my auditor's report thereon. My opinion on the financial statements does not cover the other information and I do not express any form of assurance conclusion thereon. In connection with my audit of the financial statements, my responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial statements or my knowledge obtained in the audit or

otherwise appears to be materially misstated. If, based on the work I have performed, I conclude that there is a material misstatement of this other information, I am required to report that fact. I have nothing to report in this regard.

Opinion on other matters

In my opinion:

- the parts of the Accountability Report to be audited have been properly prepared in accordance with the Secretary of State directions made under the Science and Technology Act 1965;
- in the light of the knowledge and understanding of the Engineering and Physical Sciences Research Council and its environment obtained in the course of the audit, I have not identified any material misstatements in the Performance Report or the Accountability Report; and
- the information given in Performance Report and Accountability Report for the financial year for which the financial statements are prepared is consistent with the financial statements.

Matters on which I report by exception

I have nothing to report in respect of the following matters which I report to you if, in my opinion:

- adequate accounting records have not been kept or returns adequate for my audit have not been received from branches not visited by my staff; or
- the financial statements and the parts of the Accountability Report to be audited are not in agreement with the accounting records and returns; or
- I have not received all of the information and explanations I require for my audit; or
- the Governance Statement does not reflect compliance with HM Treasury's guidance.

Report

I have no observations to make on these financial statements.

Sir Amyas C E Morse
Comptroller and Auditor General
3 July 2018

National Audit Office
157-197 Buckingham Palace Road
Victoria
London SW1W 9SP

Statement of Comprehensive Net Expenditure

For the year ended 31 March 2018

Expenditure	Note	2017-18 £000	2016-17 £000
Total Operating Income	6	**(32,717)**	**(27,962)**
Staff Costs	3	15,552	13,244
Purchase of Goods and Services	5	14,487	9,738
Depreciation and Impairment Charges		5,687	9,806
Research and Development	4	1,053,595	932,755
Notional Service Charges		2,235	2,521
Other Operating Expenditure		-	(6)
Total Operating Expenditure		**1,091,556**	**968,058**
Net Operating Expenditure		**1,058,839**	**940,096**
Movement of Net (gain)/loss on revaluation of non-current assets		(194)	(589)
Total Comprehensive Expenditure for the Year		**1,058,645**	**939,507**

The notes on pages 80 to 94 form part of these accounts.

Statement of Financial Position

As at 31 March 2018

	Note	2017-18 £000	2016-17 £000
Non-Current Assets			
Property, Plant and Equipment	7	6,562	11,976
Intangible Assets		34	113
Trade and Other Receivables due later than one year	9	8,941	0
Total Non-Current Assets		**15,537**	**12,089**
Current Assets			
Trade and Other Receivables	9	23,494	21,030
Cash and Cash Equivalents	10	32,534	23,201
Total Current Assets		**56,028**	**44,231**
Total Assets		**71,565**	**56,320**
Current Liabilities			
Trade and Other Payables	11	(56,739)	(49,397)
Provisions		-	-
Total Current Liabilities		**(56,739)**	**(49,397)**
Total Assets less Current Liabilities		**14,826**	**6,923**
Taxpayers' Equity and Other Reserves			
General Fund		(12,624)	(4,598)
Revaluation Reserve		(2,202)	(2,325)
Total Taxpayers' Equity		**(14,826)**	**(6,923)**

The notes on pages 80 to 94 form part of these accounts.

Professor Philip Nelson, Accounting Officer
25 June 2018

Statement of Cash Flows

For the year ended 31 March 2018

	Note	2017-18 £000	2016-17 £000
Cash Flows from Operating Activities			
Net Operating Expenditure for the Year		(1,058,839)	(940,096)
Depreciation and Impairments		5,687	9,806
(Gains)/Loss from Asset Disposal		-	(6)
(Increase)/Decrease in Trade and Other Receivables	9	(11,405)	2,933
Increase/(Decrease) in Trade and Other Payables	11	7,342	10,225
Notional Service Charges		2,235	2,521
Net Cash Outflow from Operating Activities		**(1,054,980)**	**(914,617)**
Cash Flows from Investing Activities			
Purchase of Property, Plant and Equipment		-	(86)
Receipts from Disposal of Assets		-	12
Total Cash Flow from Investing Activities		**-**	**(74)**
Cash Flows from Financing Activities			
Grant in Aid received from BEIS		1,064,313	925,240
Net Financing		**1,064,313**	**925,240**
Net Increase/(Decrease) in Cash and Cash Equivalents in the period	10	9,333	10,549
Cash and Cash Equivalents at the beginning of the period	10	23,201	12,652
Cash and Cash Equivalents at the end of the period	10	32,534	23,201

The notes on pages 80 to 94 form part of these accounts.

Statement of Changes in Taxpayers' Equity

For the year ended 31 March 2017

	Note	General Reserve £000	Revaluation Reserve £000	Total Taxpayers' Equity £000
Balance at 1 April 2016		16,699	1,970	18,669
Grant in Aid received from BEIS		925,240	-	925,240
Net Expenditure for the Year		(940,096)	-	(940,096)
Notional Service Charge		2,521	-	2,521
Transfer between Reserves		234	(234)	-
Movement of Net (gain)/loss on revaluation of non-current assets		-	589	589
Balance at 1 April 2017		**4,598**	**2,325**	**6,923**

For the year ended 31 March 2018

	Note	General Reserve £000	Revaluation Reserve £000	Total Taxpayers' Equity £000
Balance at 1 April 2017		4,598	2,325	6,923
Grant in Aid received from BEIS		1,064,313		1,064,313
Net Expenditure for the Year		(1,058,839)		(1,058,839)
Notional Service Charge		2,235		2,235
Transfer between Reserves		317	(317)	-
Movement of Net (gain)/loss on revaluation of non-current assets			194	194
Balance at 1 April 2018		**12,624**	**2,202**	**14,826**

The notes on pages 80 to 94 form part of these accounts.

NOTES TO THE ACCOUNTS

1. Statement of Accounting Policies

a. Basis of Accounting and Accounting Convention

The Accounts have been prepared in accordance with a direction given by the Secretary of State with the approval of HM Treasury in pursuance of Section 2 (2) of the Science and Technology Act 1965.

These financial statements have been prepared in accordance with International Financial Reporting Standards (IFRS) and meet the accounting and disclosure requirements of the Companies Act 2006 and the accounting and financial reporting standards issued or adopted by the International Accounting Standards Board as interpreted for Government use by the Financial Reporting Manual (FReM) and in so far as these requirements are appropriate. Where the FReM permits a choice of accounting policy, the accounting policy which is judged to be most appropriate to the particular circumstances of the EPSRC for the purpose of giving a true and fair view has been selected. The particular policies adopted by the Council are described below.

They have been applied consistently in dealing with items that are considered material to the accounts. There was no material departure from IFRS or FReM in preparation of these statements.

As required by Section 393 (1) of the Companies Act 2006 the Accounting Officer has provided assurance that these statements give a true and fair view of the assets, liabilities, financial position and the comprehensive net expenditure of EPSRC.

These accounts have been prepared under the historical cost convention, modified to account for the revaluation of Non-Current Assets, where material.

The financial statements are presented in £ sterling and all values are rounded to the nearest thousand, except where indicated otherwise; this may result in small cumulative rounding differences between notes.

Research Councils and Innovate UK 2017-18 going-concern disclosure

The Higher Education and Research Bill received Royal Asset on 27 April 2017 confirming the creation of a single executive non-departmental public body, UK Research and Innovation (UKRI). Under the Higher Education and Research Act 2017, UKRI incorporated the assets, liabilities and functions of the seven Research Councils, Innovate UK and Government's funding of research in higher education from 1 April 2018.

Confirmation of UKRI's budget allocation for 2018-19 to 2020-21 was received from BEIS in March 2018, which shows continued funding for the functions exercised by EPSRC for this period.

As the functions previously provided by EPSRC will continue to be provided by UKRI with the same assets and liabilities, it remains appropriate for the financial statements of EPSRC for the financial year ended 31 March 2018 to be prepared on a going-concern basis in accordance with the Government Financial Reporting Manual issued by HM Treasury.

Adoption of Standards and Changes in Policy

There have been no FReM changes during 2017-18 that have impacted the accounts of EPSRC.

Effective for Future Financial Years

In accordance with FReM these accounts apply EU-adopted IFRS and interpretations in place on 1 January 2016. These accounts have not applied the new IFRS 9: Financial Instruments, IFRS 15: Revenue from Contracts with Customers or IFRS 16: Leases, Financial Reporting Standards that have been issued but are

not yet effective (IFRS 9 and IFRS 15 are anticipated to be adopted in the 2018-19 FReM, and the adoption date of IFRS 16 is anticipated to be 2019-20 but is not yet endorsed by EU). Decisions remain for HM Treasury on whether or how to interpret/adapt IFRS 16 for FReM bodies, and what allowances to make for transitional relief. EPSRC's assessment is that these new IFRS will not have a material impact on EPSRC, their adoption will be taken forward within UKRI.

b. Financing and Income

The FReM requires Non-Departmental Public Bodies to account for Grant-in-Aid as financing. In EPSRC's case this includes Grant-in-Aid from BEIS.

Monies from other Research Councils for co-financing of various grant programmes are recognised as income when goods or services are delivered and title has passed, and charged to the Statement of Comprehensive Net Expenditure in the accounting period in which the goods or services are rendered.

The Council receives funding for collaborative projects to support EPSRC's research. The majority of this funding is received from the UK Public Sector. Some of the funding may involve payment for the collaboration a number of years in advance of the accounting period to which it relates. Where there is a variance between work done in the accounting period and received funding, income will be deferred where the contract or agreement allows.

c. Non-Current Assets

Property, Plant and Equipment (PPE)

Capital expenditure in PPE includes the purchase of IT equipment, office equipment, fixtures and fittings, construction and service projects, equipment and land and buildings valued at £10,000 or more.

PPE are included at cost or valuation. The basis of valuation is Open Market Value for existing use where this can be established, otherwise Current Depreciated Replacement Cost. A full month's depreciation is charged in the month of acquisition and none in the month of disposal.

Depreciation is not charged on assets under construction until the asset is brought fully into use and transferred to the appropriate asset category. They are then depreciated at the same rate as the other assets in that category.

Freehold Land	Not depreciated
Freehold Buildings	62 years
Specialist Scientific Equipment	3-15 years
IT Equipment	3 years
ARCHER	5 years
Fixtures and Fittings	5 years
Transport	4 years

A change to the useful life of the ARCHER class of assets, from 4 to 5 years, occurred during the year 2017-18. This reduced the depreciation charge for the year by £1.2m.

Land and buildings, and major items of equipment are professionally revalued every five years at which time the remaining useful life of each revalued asset is also reassessed. The last valuation was in December 2015, conducted by GVA Grimley Ltd, using a fair value basis for the valuation. Appropriate indices are used between formal valuations.

Intangible Assets

Capital expenditure on intangible assets includes the purchase of software, software licences, data sets and website development valued at £10,000 or more.

Intangibles are included at cost or valuation. The basis of valuation is Open Market Value for existing use where this can be established, otherwise Current Amortised Replacement Cost. A full month's amortisation is charged in the month of acquisition and none in the month of disposal.

Amortisation of intangible assets is provided at rates calculated to write off the cost of each asset in equal instalments over its expected useful life as follows:

Software	3-5 years
Licences	Over length of licences
Websites	5 years

Amortisation is not charged on assets under construction until the asset is brought fully into use and transferred to the appropriate asset category. They are then amortised at the same rate as the other assets in that category.

Major intangibles are professionally revalued every five years at which time the remaining useful life of each revalued asset is also reassessed. Appropriate indices are used between formal valuations.

Equipment Located Elsewhere

EPSRC owns assets that are located elsewhere but are included in the Statement of Financial Position.

This figure includes the ARCHER supercomputing facility. Also a pool of scientific equipment is provided and updated by the Science and Technology Facilities Council (STFC) on behalf of EPSRC, specifically for loan to research organisations. Wherever located, this equipment remains the property of EPSRC and is therefore included in the Statement of Financial Position.

Impairment of Non-Current Assets

Impairment losses not resulting from a loss of economic value or service potential are taken to the Revaluation Reserve to the extent that there is a credit in that reserve for that asset or portfolio of assets. Impairment losses that arise from a clear consumption of economic benefit are charged to the Statement of Comprehensive Net Expenditure. Increases in value arising on revaluation are taken to the Revaluation Reserve except when they reverse an impairment for the same asset previously recognised in expenditure, in which case they are credited to the extent of the decrease previously charged there.

d. Joint operations

EPSRC is a 17% founder member in The Alan Turing Institute, a company limited by guarantee formed with: The Chancellor, Masters and Scholars of the University of Cambridge, the University Court of the University of Edinburgh, the Chancellor, Masters and Scholars of the University of Oxford, University College London

and The University of Warwick. The Institute works with a wide range of partners to help deliver its mission of using data science and artificial intelligence to change the world. The Institute's principal place of business is the UK.

Although The Alan Turing Institute is legally separated from its founder members, the EPSRC has classified it as an associate. This is because the EPSRC, as a Founder Member, has a deciding vote in the relevant activities of the Institute.

EPSRC does not have rights to the assets of the institute and has a £1 obligation for its liabilities in the case of its dissolution so no investment is recognised in the Statement of Financial Position. EPSRC makes grant contributions to the Alan Turing Institute (£9.1m in 2017-18) and recognises these as expenditure on an accruals basis in the period during which they are incurred.

e. Ownership of Equipment or Facilities Purchased with Council Grants

Equipment purchased by an organisation with research grant funds supplied by EPSRC belongs to the organisation and is not included in the EPSRC's PPE. Through the conditions of grant applied to funded organisations, EPSRC must be informed if, during the life of the research grant, the need for the equipment diminishes substantially or it is not used for the purpose for which it was funded. EPSRC reserves the right to determine the disposal of such equipment and to claim the proceeds of any sale.

f. Grants

Subject to the terms and conditions under which research grants are awarded, EPSRC makes payments for grants on the basis of pre-determined quarterly profiles. Profiles are arranged, in overall terms, to reflect the rate and incidence of expenditure at the grant-holding organisation. Payments are normally made in the period to which they relate, although EPSRC retains some latitude in timing. Grant expenditure is accounted for on an accruals basis to reflect the usage of grant funds on work carried out. Future commitments at the Statement of Financial Position date are disclosed in Note 12.

EPSRC's policy is to accrue for the costs of work undertaken at Higher Education Institutions which remain unpaid by EPSRC at the end of the reporting period. Prepayments are also recognised when they occur.

g. Financial Instruments

Due to the non-trading nature of its activities and the way in which EPSRC is financed, EPSRC is not exposed to the degree of financial risk faced by non-public sector entities. Moreover, financial instruments play a much more limited role in creating or changing risk that would be typical of listed companies. EPSRC has very limited powers to borrow or invest surplus funds. Financial assets and liabilities are generated by day-to-day operational activities and are not held to change the risks facing EPSRC in undertaking its activities.

Trade Receivables

Trade receivables are not interest bearing and are carried at original invoice amount. Provision for impairment is established when there is objective evidence that EPSRC will not be able to collect all amounts due according to the original terms of the receivable. The amount of provision is the difference between the carrying amount and recoverable amount and is recognised in the Statement of Comprehensive Net Expenditure.

Trade Payables

Trade and other payables are recognised in the period in which related money, goods or services are received or when a legally enforceable claim against EPSRC is established or when the corresponding assets or expenses are recognised.

h. Accounting Estimates and Judgements

The preparation of financial statements requires management to make estimates and assumptions. These affect the reported amounts of assets and liabilities, the disclosure of contingent assets and liabilities at the date of the financial statements, and the reported amounts of revenues and expenses during the reporting period.

On an ongoing basis, management evaluates its estimates and judgements. These estimates and judgements are based on historical experience and on various other factors that are believed to be reasonable under the circumstances, the results of which form the basis for making judgements about the carrying value of assets and liabilities that are not readily available from other sources. Actual results may differ from these estimates under different assumptions and conditions.

i. Value Added Tax (VAT)

As EPSRC is partially exempt for VAT purposes, irrecoverable VAT is charged to the relevant expenditure category or included in the capitalised purchase cost of PPE. Where output tax is charged or input tax is recoverable the amounts are stated net of VAT. EPSRC has charitable status for VAT purposes.

j. Pension Costs

Retirement benefits to employees of the Council are provided by the Research Councils' Pension Scheme (RCPS) and the Prudential and Scottish Widows Pension Scheme. The expected costs of providing pensions are charged to the Statement of Comprehensive Net Expenditure so as to spread the cost over the service lives of employees in the schemes operated, in such a way that the pension cost is a substantially level percentage of current and expected future pensionable payroll. More details on pensions can be found in the Remuneration and Staff Report.

k. Early Departure Costs

The costs of early retirement or severance are charged to the Statement of Comprehensive Net Expenditure when the early departures are agreed. These costs are net of the lump sums recoverable from the pension schemes when the individual reaches normal retirement age.

l. Notional Service Charge

Ownership of UK SBS transferred from the Research Councils to BEIS on 6 March 2013. The UK SBS monthly service charge to EPSRC is now deducted from EPSRC's funding from BEIS. In order to accurately reflect the cost of using UK SBS's services in the annual accounts the charge has been shown as a notional cost on the Statement of Comprehensive Net Expenditure and it has then been written back to the Income and Expenditure Reserve.

m. Cash and Cash Equivalents

Cash and cash equivalents in the Statement of Financial Position comprise cash at bank (Government Banking Service). No cash in hand is held, and surplus funds are not invested as detailed in paragraph 'g. Financial Instruments'.

n. Employee Benefits

When an employee has reduced service during an accounting period, the short-term employee benefits (e.g. salaries, annual leave) will be recognised in the period in which they are earned.

2. Statement of operating costs by operating segment

Segmental Analysis - This Financial Year	Research £000	Postgraduate £000	Other Programmes £000	Administration £000	2017-18 Total £000
Income	(28,687)	-	(2,235)	(1,795)	(32,717)
Staff Costs	-	-	5,711	9,841	15,552
Purchase of Goods and Services	-	-	4,463	10,024	14,487
Depreciation and Impairment Charges	-	-	5,410	277	5,687
Research and Development	819,717	231,619	2,259	-	1,053,595
Notional Service Charge	-	-	-	2,235	2,235
Other Operating Expenditure	-	-	-	-	-
Net Operating Expenditure	**791,030**	**231,619**	**15,608**	**20,582**	**1,058,839**

Segmental Analysis - Prior Financial Year	Research £000	Postgraduate £000	Other Programmes £000	Administration £000	2016-17 Total £000
Income	(21,686)	-	(4,335)	(1,941)	(27,962)
Staff Costs	-	-	5,448	7,796	13,244
Purchase of Goods and Services	-	-	2,970	6,768	9,738
Depreciation and Impairment Charges	-	-	9,528	278	9,806
Research and Development	704,728	225,901	2,126	-	932,755
Notional Service Charges	-	-	-	2,521	2,521
Other Operating expenditure	-	-	-	(6)	(6)
Net Operating Expenditure	**683,042**	**225,901**	**15,737**	**15,416**	**940,096**

3. Staff Costs

	2017-18 £000	2016-17 £000
Wages and Salaries	12,157	10,342
Social Security Costs	937	801
Other Pensions Costs	2,458	2,101
Total Staff Costs	**15,552**	**13,244**

The reported total for social security costs includes payments totalling £31k in respect of the Apprenticeship Levy Scheme.

For further information on staff costs and numbers, please see the Remuneration and Staff Report on page 59.

4a. Research

	2017-18 £000	2016-17 £000
Cavendish Institute	5,000	0
Digital Economy	18,273	16,877
Energy	99,579	104,254
Global Challenges Research Fund	15,937	9,900
Global Uncertainties	5,786	5,461
Healthcare	58,658	59,368
Impact Acceleration	22,566	21,553
Living With Environmental Change	3,548	5,567
Manufacturing	65,971	66,190
National Capability Engineering	67,347	70,671
National Capability ICT	68,213	68,316
National Capability Infrastructure	66,036	70,639
National Capability Mathematics	18,992	19,746
National Capability Physical Sciences	88,091	82,949
National Innovation Centre for Data	2,200	-
Newton	5,294	1,640
Industrial Strategy Challenge Fund	25,644	0
Quantum Technology	21,806	18,099
RCUK Research	1,470	1,341
RCUK-Newton Activity	-	65
Rosalind Franklin Insititute	4,210	-
Henry Royce Institute	57,653	21,010
The Alan Turing Institute	9,144	9,500
UK Collaboratorium for Research in Infrastructure and Cities (UKCRIC)	53,611	16,724
Urban Living Partnership	793	1,021
Warwick Advanced Steel Research Hub	3,935	9,000
Total Expenditure on Research	**789,757**	**679,891**

4b. Postgraduate Awards

	2017-18 £000	2016-17 £000
Collaborative Training Accounts	1,320	15,447
Doctoral Training Grants	68,861	66,342
Dorothy Hodgkin Postgraduate Awards	173	-
Centres for Doctoral Training	97,529	88,499
Other Awards	9,360	2,316
Total Expenditure on Postgraduate Awards	**177,243**	**172,604**

4c. Energy Technologies Institute LLP

	2017-18 £000	2016-17 £000
ETI Energy	10,493	7,078
Energy Technologies Institute LLP	**10,493**	**7,078**

4d. UK Research Facilities

	2017-18 £000	2016-17 £000
University of Edinburgh (ARCHER)	6,931	5,991
Science and Technology Facilities Council Facilities	1,953	2,498
Other Expenditure on Research Facilities	12,052	10,676
Total Expenditure on UK Research Facilities	**20,936**	**19,165**

4e. International Subscriptions

	2017-18 £000	2016-17 £000
International Subscriptions		
European Science Foundation (ESF)	115	94
International Fusion Research (ITER)	383	308
Institute des Hautes Etudes Scientifiques (IHES)	120	160
International Institute for Applied Systems Analysis (IIASA)	171	158
Total Expenditure on International Subscriptions	**789**	**720**

4f. Research Fellowships

	2017-18 £000	2016-17 £000
EPSRC Fellowships		
Early-Career Fellowships	28,007	25,888
Post-Doctoral Fellowships	4,362	3,485
Established Fellowships	19,904	19,192
Legacy Schemes		
Post-Doctoral	-	81
Career Acceleration Fellowships	512	2,343
Leadership Fellowships	544	1,682
Other Fellowships	1,048	626
Total Expenditure on Research Fellowships	**54,377**	**53,297**

Total Expenditure Research and Development	**1,053,595**	**932,755**

5. Operating Expenditure

Purchase of Goods and Services	2017-18 £000	2016-17 £000
Rental under operating leases - plant and machinery	58	48
Accommodation	2,621	1,411
Bank charges	7	4
Professional services	404	251
IT costs/ support costs	611	990
Training and other staff costs	400	513
UK travel & subsistence	1,262	907
Overseas travel & subsistence	607	160
Telecommunications cost	32	16
Advertising and publicity	1,456	876
Audit fees	68	68
Professional subscriptions	290	191
Postage and freight	2	10
Catering services	634	424
Miscellaneous other costs	1,505	1,117
Other audit costs	215	131
Outsourced programme management services	4,315	2,621
Total	**14,487**	**9,738**

2016-17 figures have been disaggregated onto separate lines for better comparision to 2017-18.

6. Income

	2017-18 £000	2016-17 £000
Fee Income	(72)	(151)
Current Grants from Central Government	(15,755)	(10,599)
Current Grants from Private Sector Companies	(2,448)	(3,069)
Income from other Governmental Departments	(14,442)	(14,138)
Miscellaneous Income	-	(5)
Total	**(32,717)**	**(27,962)**

7. Property, Plant and Equipment

	Land £000	Buildings £000	IT £000	Plant & Machinery £000	Furniture & Fittings £000	Total £000
Cost or Valuation at 1 April 2017	**1,562**	**4,535**	**34,309**	**3,172**	**230**	**43,808**
Additions	-	-	-	-	-	-
Reclassifications	-	-	-	-	-	
Disposals	-	-	-	-	-	-
Impairments	-	-	-	-	-	-
Revaluations	40	127	1,156	51	3	1,377
Transfers	-	-	-	-	-	-
At 31 March 2018	**1,602**	**4,662**	**35,465**	**3,223**	**233**	**45,185**
Depreciation at 1 April 2017	**-**	**1,036**	**28,032**	**2,660**	**104**	**31,832**
Charge in the year	-	147	5,109	306	45	5,607
Reclassifications	-	-	-	-	-	-
Disposals	-	-	-	-	-	-
Impairments	-	-	-	-	-	
Revaluations	-	33	1,104	46	1	1,184
At 31 March 2018	**-**	**1,216**	**34,245**	**3,012**	**150**	**38,623**
Net book value at 31 March 2018	**1,602**	**3,446**	**1,220**	**211**	**83**	**6,562**
Cost or Valuation at 1 April 2016	**1,544**	**4,486**	**32,607**	**6,125**	**1,339**	**46,101**
Additions	-	-	-	-	86	86
Reclassifications	-	-	14	-	-	14
Disposals	-	-	(57)	(3,013)	(1,197)	(4,267)
Impairments	-	-	-	-	-	-
Revaluations	18	49	1,745	60	2	1,874
Transfers	-	-	-	-	-	-
At 31 March 2017	**1,562**	**4,535**	**34,309**	**3,172**	**230**	**43,808**
Depreciation at 1 April 2016	**-**	**882**	**17,734**	**5,218**	**1,266**	**25,100**
Charge in the year	-	145	9,128	405	34	9,712
Reclassifications	-	-	-	-	-	-
Disposals	-	-	(57)	(3,013)	(1,197)	(4,267)
Impairments	-	-	-	-	-	-
Revaluations	-	9	1,227	50	1	1,287
At 31 March 2017	**-**	**1,036**	**28,032**	**2,660**	**104**	**31,832**
Net book value at 31 March 2017	**1,562**	**3,499**	**6,277**	**512**	**126**	**11,976**

8. Financial Instruments

Requirements of EPSRC are met through Grant-in-Aid provided by the Department for Business, Energy and Industrial Strategy. Financial Instruments play a more limited role in creating and managing risk than would apply to a non-public sector body. The majority of Financial Instruments relate to contracts to buy non-financial items in line with EPSRC's expected purchase and usage requirements and therefore EPSRC is exposed to little credit, liquidity or market risk.

9. Trade Receivables, Financial and Other Assets

Amounts falling due within one year	31 March 2018 £000	31 March 2017 £000
Trade Receivables	8,712	6,409
Prepayments and Accrued Income	14,756	14,597
Other Receivables	26	24
Total Receivables due within one year	**23,494**	**21,030**
Prepayments due later than one year	8,941	-
Total Receivables	**32,435**	**21,030**

10. Cash and Cash Equivalents

	31 March 2018 £000	31 March 2017 £000
Balance at 1 April 2017	23,201	12,652
Net change in cash and cash equivalents	9,333	10,549
Balance at 31 March 2018	**32,534**	**23,201**

The following balances at 31 March 2018 were held at:		
Government Banking Service (GBS)	32,534	23,199
Commercial banks and cash in hand	-	2
Total	**32,534**	**23,201**

11. Trade Payables and Other Current Liabilities

Amounts falling due within 1 year	31 March 2018 £000	31 March 2017 £000
VAT	(55)	(195)
Trade Payables	(6,298)	(657)
Other Payables	(292)	(244)
Accruals and Deferred Income	(50,094)	(48,301)
Total Payables	**(56,739)**	**(49,397)**

12. Other Financial Commitments

	31 March 2018 £000	31 March 2017 £000
Not later than one year	1,062,295	910,153
Later than one year and not later than five years	1,634,802	1,602,288
Later than five years	62,650	46,178
	2,759,747	**2,558,619**

EPSRC estimates that the future costs of research and training grants at 31 March 2018 are £2,760m. The payments to which EPSRC is committed, analysed by the period in which the commitment expires, are shown above.

13. Related Party Transactions

EPSRC is a Non-Departmental Public Body sponsored by BEIS. It complied with the International Accounting Standard on Related Party Transactions (IAS 24) as amended for Central Government use by HM Treasury.

For the purpose of IAS 24, BEIS and its partner organisations are regarded as related parties. During the year, EPSRC has had various material transactions with BEIS and with other entities for which BEIS is regarded as their parent department, as follows: Arts and Humanities Research Council; Biotechnology and Biological Sciences Research Council; Economic and Social Research Council; Innovate UK; Medical Research Council; Natural Environment Research Council; Science and Technology Research Council; UK Space Agency; UK AEA. In addition, EPSRC has had various material transactions with the UK Shared Business Services Limited (formerly Research Councils' Shared Services Centre).

These Accounts provide disclosure of all material financial transactions in relation to the following individuals/ groups:

- EPSRC senior executive staff
- EPSRC Council members
- EPSRC Audit and Risk Committee members.

Table A

This table shows where an individual has a direct interest in an award, the total award value has been disclosed.

Council members	Institution	Number of awards	Transactions during 2017-18 £000's	Total fund value of grants £000
Professor Muffy Calder OBE, FREng, FRSE	University of Glasgow	2	2,371	6,184
Professor Sir Richard Friend	University of Cambridge	3	3,553	15,253
Professor Sir Richard Jones FRS	Sheffield University	3	401	1,402
Professor Matthew Rosseinsky FRS	Liverpool University	3	1,851	8,712

Table B

This table outlines in-year financial transactions with organisations where Council or Audit Committee Members hold a position of influence.

Council Member	Institution	Aggregated Amount £000
Professor Muffy Calder OBE, FREng, FRSE	University of Glasgow	26,834
Professor Tim Jones	University of Birmingham	33,800
Mr Richard Dale	University of Newcastle	26,700
Professor Anthony Finkelstein CBE, FREng, MAE, FCGI	The Alan Turing Institute	9,357
Mr Stephen Hawker CB	University of Reading	2,526
Ms Jane Madeley MBA, ACA	University of Leeds	28,836
Dr Paul Golby CBE, FREng	Aston University	1,484
Professor Philip Nelson CBE, FREng, Accounting Officer	University of Southampton	54,951
Professor Sir Richard Jones FRS	University of Sheffield	49,753
Professor the Lord Ara Darzi of Denham OM, KBE, PC, FRS, FMedSci, FRCSI, FRCS, FRCSE, FRCPGlas, FACS, FRCP, FREng	Imperial College London	555
Professor Matthew Rosseinsky FRS	University of Liverpool	19,501
Professor Mark Smith MA, PhD, CPhys, FInstP	Lancaster University	9,299

14. Events after the Reporting Period

In accordance with the requirements of IAS 10 Events after the Reporting Period, events after the date of the Statement of Financial Position are considered up to the date on which the Accounts are authorised for issue. This is interpreted as the same date as the date of the Certificate and Report of the Comptroller and Auditor General.

As set out in Note 1 'Going concern', under the Higher Education and Research Act 2017, UKRI incorporated the assets, liabilities and functions of the seven Research Councils, Innovate UK and Government's funding of research in higher education from 1 April 2018.

Feedback

We welcome feedback on all our publications. Comments on this Annual Report should be sent to:

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ISBN 978-1-5286-0386-7

Produced by UKRI's internal service provider