

Annex A1: Template for institutional three-year GCRF strategies (AY 2018-19 onwards)

Please complete this form and the excel table in **Annex A2**. Text boxes may be expanded to the required length, and are expected to be in proportion to the level of formula Global Challenges Research Fund (GCRF) allocations received in 2017-18. Please do not attach other documents or annexes. Guidance for completing the forms is at Annex B.

The completed form and table should be emailed to dbeards@sfc.ac.uk by **noon on Monday 26 March 2018**.

Name of institution	Abertay University
Contact person for correspondence who is also responsible for ensuring that the head of institution has approved this strategy for submission to SFC.	
Name	David Reeves
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Note that we intend to contact this person in the event of queries regarding the institutional GCRF strategy. We will also contact this person annually as part of our GCRF monitoring process.	
Has this GCRF strategy been approved for submission to SFC by the head of institution?	
Yes	
Name: NIGEL A. SEATON	
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Signature: N. A. Seaton	

Section A: Official Development Assistance (ODA) and GCRF strategy

The strategy

1. Summarise the key aspects of your three year strategy for development-related and GCRF research activity, including:
 - a. Your institution's strategy and priority objectives for all development-related research activity funded through all sources for three years from 2018-19.
 - b. Summary of the key aspects of your three year strategic plan for formula GCRF in light of the criteria and objectives for the GCRF outlined in the guidance.
 - c. How activity funded through GCRF fits into your broader strategy and priorities for all development related research activity.
 - d. How activity funded through GCRF relates to the UK strategy for the GCRF.¹
 - e. How your development-related and GCRF strategies relate to your wider institutional strategy for using REG.
 - f. Likely key barriers and enablers to implementing your strategy.
 - g. The key activities by which you will realise your objectives, such as capacity and capability building; mono-disciplinary interdisciplinary and collaborative research; generating impact from research; meeting the full economic cost of GCRF activity funded through other sources; rapid response to emergencies with an urgent research need; and pump priming.
 - h. The main Development Assistance Committee (DAC) list developing countries you intend to collaborate with.

Our Strategic Plan

Our Strategic Plan starts with a statement of our Purpose - our own understanding of what we are about as a university; to offer transformational opportunities to everyone who has the ability to benefit from Abertay's approach to university education, to inspire and enable our students, staff and graduates to achieve their full potential and to use our knowledge and expertise to have a positive impact on the world around us.

Our Strategic Plan also identifies a set of Principles, consistent with the Purpose, that guides our work, including (of relevant to this document):

- Aligning our teaching, internationally recognised research (REF2014), innovation and knowledge exchange activity to local and national priorities.

¹ UK Strategy for the Global Challenges Research Fund,
<http://www.rcuk.ac.uk/funding/gcrf/challenges>

- Encouraging our staff to use their knowledge and expertise to solve real-world problems.

Our Research and Knowledge Exchange Strategy

Our Research and Knowledge Exchange strategy, called R-LINCS (Research-Led Innovation Nodes for Contemporary Society), bridges conventional boundaries between research disciplines and devises innovative approaches to address societal challenges.

R-LINCS integrates our research into a single Abertay-wide initiative designed to exploit the fact that Abertay is a compact and focused institution. Our size enables us to work effectively within and across departmental and discipline boundaries to create an innovative and sustainable environment for research, to drive development of new research areas, and to strengthen disciplines through cross-fertilisation.

Our ambitious plan to build capacity and drive interdisciplinary research and innovation is stimulated by significant investment. Strategic research activity is focused around themes to address key local, national and international priorities, and to build on our existing areas of expertise and our industry-facing heritage.

The strategy framework:

- Builds critical mass and facilitates research management through focussed themes, fostering excellence, identifying new research and knowledge exchange opportunities, and increasing funding by leveraging existing strength.
- Stimulates excellence in interdisciplinary research and knowledge exchange with societal and economic impact through the appointment of leading academics.
- Supports the development of researchers to be adaptable and flexible in an increasingly diverse and global research environment through the provision of mentoring, researcher training, and open-access publication support.
- Established a pan-University Graduate School (referred to above) offering an integrated training programme to research students and students on taught postgraduate programmes within a single centre, thereby serving to inculcate interdisciplinary working in our next generation of researchers.
- Provides targeted internal support for research students through doctoral scholarships to stimulate new intra- and inter-theme developments appropriate for a contemporary research landscape.
- Provides support for enterprise and innovation by way of proof of concept funding for smallscale research and knowledge exchange projects.
- Develops further strategic collaborations through national and international academic and industrial research and knowledge exchange alliances.
- Facilitates interaction with public engagement channels.

R-LINCS is built around four research themes:

Our Creative Industries theme builds on established relationships with some of the world's leading technology manufacturers, digital content creators and service providers to undertake research and development, knowledge exchange and collaborative content creation.

Our Environment theme combines research in environmental science and engineering, food science and innovation, environmental, sustainable technologies and systems biology to deliver the solutions needed to address contemporary global environmental challenges.

Our strategic approach to the Security challenges of the 21st Century is an interconnected and interdisciplinary platform based around cyber security, forensic psychology, forensic science, and law.

Society is the broad research area where we investigate the complex and rich interactions that people have with each other, between societies and groups, how concepts and ideologies affect each other and our world, what the impact of technology is and will be, and what both individual actions and public policies might result in. The field includes business and law, mental health and wellbeing, media and culture, psychology, sociology, and sport and leisure.

Comparative studies that we are conducting, such as the evolution of tool use, have forward looking implications. This of course is a common thread for all of our research in this theme.

Our Funding

Our plan is one of proactive engagement with the GCRF agenda and a spirit of continuous improvement and enhancement, and collaboration.

It should be noted that Abertay punches above its weight in terms of the GCRF / ODA agenda and flow of resources from the SFC. The Abertay share of the 2017-18 fund was a pro-rata £12,747. This compares to the University Innovation Fund model, whereby we receive a baseline platform grant of £250k per annum which we match fund in order to provide a stable, predictable core of funding for innovation support and knowledge exchange. In addition to this we received in 2016/17 a £45k per annum UIF outcome grant (which compared to an average sector UIF outcome grant of £0.4m and an average top quartile grant of £1.0m). As a result we chose to build upon our innovation strengths and given the funding framework, focus our engagement with some, rather than all of the outcomes.

How Our Strengths Align with the GCRF Strategy and Aims

Our Creative Industries research activity aligns with three broad and overlapping areas:

- **Games Research:** we focus on innovation in games development including inventive multiplayer virtual reality experiences, and theoretical and critical understanding of design and development practices. For example, we explore the interface between performance and play, quantify the player experience scientifically, and examine the novel application of play in other contexts, especially in digital security and healthcare.
- **Digital Cultures:** we investigate the application of interactive media in cultural contexts to inform and entertain, and we develop new curatorial, exhibition and archival practices. We also develop innovative ways to engage audiences with the cultural impact of digital technologies, with heritage and preservation research, and with practice-based creative research.
- **Digital Living:** this strand involves the consideration of the social and economic impact of the digital creative industries, including how new forms of creativity and approaches to product and service innovation have resulted in new social behaviours in online communities, and in new forms of collaborative working.

Our Environment research includes the development of model systems to explore how microbes affect bio-waste treatment and food production. This modelling also applies to new methods to incorporate sustainability assessment within the decision-making process for urban planning, and to new techniques for pollutant disintegration. Our food and drink research explores consumer experiences and preferences in the context of new product development and food processing technologies. Our cancer systems biology work integrates experimental data streams and complex systems modelling to unravel the complexities of anti-cancer drug action and drug resistance. The work we do on sustainable urban drainage systems and wastewater treatment continues to contribute to engineered solutions to urban pollution, where some of that pollutant can be converted back into useful energy.

The development and availability of new technologies is frequently accompanied by increasingly sophisticated criminal activity and organised crime. It is important to consider cyber security in the development of new technology so that secure features are embedded at the outset, as well as being able to continue to test the security of cyberspace as new technological advances are made. Forensic psychology plays an important role in all aspects of the legal system by drawing on many areas of psychological science. Our researchers focus on child forensic interviewing, eyewitness memory, effective police training and guidelines, legal issues surrounding vulnerable victims, multiplex video environments, CCTV, camouflage, and individual differences.

Our researchers are doing groundbreaking work on the benefits of high-intensity exercise. Others are conducting research into approaches to ethical treatment in our health systems, and one group has received much prominence for work concerning the circumstances surrounding missing children and adults. Much of our work in the Society theme is interdisciplinary, including the application of science to learning in school classrooms, in which we examine the outcomes of custodial versus community sentencing, and also where we investigate memory development and literacy acquisition in children.

Activities to Date

We have identified several key areas where our research and knowledge transfer expertise can contribute to addressing the needs of the poorest members of the communities in GCRF targeted nations. The areas we have focused on to date apply our expertise in water and wastewater management, food technology and business and supply chain management.

During the last two years we have:

- Submitted seven bids to the Newton Fund, total value £242k, for collaborations covering Brazil, Egypt, Kazakhstan, Thailand, Ukraine and Vietnam. So far £26k has been awarded to support researcher exchange with Vietnam; development of Ukrainian Universities' expertise in business management; and clean energy promotion and policy development in Kazakhstan. Bids to a total value of £196k are awaiting reply from the funder.
- Awarded £53k by the Scottish Government via the Centre for Urban Water Research (CREW) for a review of the methodology for research activities in Malawi to ensure it is resilient to scaling up (and therefore support delivery of the 2030 sustainable development goals). This funding will entail a review of projects that support water resource management.
- Submitted three bids, albeit unsuccessful, to first and second rounds of the RCUK GRFC, total value £18m, for collaborations with, respectively, Togo; Vietnam; and Bangladesh, Egypt and Rwanda.
- Submitted separate GCRF bids to NERC and MRC, total value £266k, for collaborations with Egypt and Rwanda.

Separately, we have agreed a Memorandum of Understanding to support collaboration on biotechnology with Mordovia State University.

Our projects have aligned closely with the needs of the ODA countries and bring together different strands of our research and knowledge exchange. For example, researcher exchanges with Vietnam have focused on reducing the environmental impact of the seafood industry, a vital contributor to the Vietnamese economy

(being the third largest seafood industry in the world) but also with a significant environmental impact on the Mekong Delta.

2. Provide details of the main intended outcomes and impacts of your strategy.

Covered in the text above.

Management of GCRF

3. How will your HEI monitor and evaluate its progress and compliance in ODA and GCRF activity, including assessing geographical distribution of activity, outputs, outcomes and economic and social impacts?

Please describe the policies, procedures and approach you have in place to measure progress, evaluate outcomes, identify lessons learned, and ensure ODA compliance.

We have a framework for the governance, management and operation of our Research and Knowledge Exchange (RKE) activities. Operationally, RKE matters relating to governance and infrastructure are reported to Senate through the Research and Knowledge Exchange Committee (RKEC). RKE matters relating to strategy, management and operation are reported to the University Executive through the Research Executive

RKEC reports to Senate on regulatory processes and compliance for RKE which includes the review and operation of regulations, policy and process for Research Degrees, supporting infrastructure development, concordat and data management. RKEC reviews and proposes enhancements to regulatory processes and policies for consideration at Senate. RKEC also monitors and provides summary reporting on research outputs, income and impact (on industry, policy or teaching).

The Research Executive makes recommendations to the University Executive on strategic, management and operational policies and practices. It decides on the deployment of RKE resources, including staff, funding, studentships and equipment, stays abreast of external developments, e.g. REF 2021, Universities Scotland RKEC. The Research Executive comprises the Deputy Vice-Chancellor (Academic) (Chair), the Head of Research and the Graduate School, the Professorial Advisor to the Research Executive and the Director of Finance and Research Funding. The Research Executive is informed by two Graduate School groups: the Theme Leaders Group and the Graduate School Forum.

The Theme Leaders Group manages and contributes to the development of research and researchers within the University through the R-LINCS research themes. The

Theme/ Academic Enterprise Leader role involves advising, facilitating, directing, networking, review, guiding, feedback, feed-up, coordination, identifying funding opportunities and supporting proposal development and Theme events. The group reviews all proposals for R-LINCS funding, including studentships, pump-priming, open access and makes recommendations to the Research Executive for funding allocation. The Theme Leaders Group comprises the Head of the Graduate School (Chair), the Professorial Advisor to the Research Executive and Theme/ Academic Enterprise Leaders.

We will not develop new governance processes for the GCRF, but we will, through our normal processes, specific to the GCRF, evaluate impact and ensure ODA compliance. We propose to do this bi-annually, through the Research Executive, integrated with our Operational Planning process.

We are aware of current interest in safeguarding in the context of overseas research and charity work. Our governance framework already contains relevant provisions on responsibilities and incident reporting, based on documents such as the UUK Research Integrity Concordat and the SFC Financial Memorandum.

Section B: Use of GCRF 2018-19 allocation and future formula GCRF priorities

Please complete the table in Annex A2 detailing the expected spending and activities for GCRF in the academic year 2018-19. This should show how all expected GCRF will be committed to ODA-compliant activities.

4. Please add here any explanatory notes on how you have completed the table in Annex A2 that will demonstrate ODA compliance.

We will build upon our existing programme of activity and use our GCRF allocation to enable pump-priming that will lay the ground for future ODA activity to promote the economic development and welfare of developing countries. Funding will facilitate:

- Networking meetings and other events to develop sustainable strategies and partnerships for future activities.
- Small pump-priming projects to generate preliminary data for future applications.
- ODA-compliant research activity.

Expected formula GCRF amounts for Abertay are:

2018-19	2019-20	2020-21
£32,656	£36,206	£36k tbc

We cannot give a definitive list of projects in countries right now, but we expect to be able to identify in autumn 2018. Based on the formula amounts, we anticipate an overspend in each year (funded by University reserves).

We are awaiting the outcome of a funding application to the Newton Masharafa fund regarding the “Fate and Eco-toxicity of polycyclic aromatic hydrocarbons in the Nile River”. The partner country lead institution is the National Centre of Radiation Research and Technology (NCRRT), Atomic Energy Authority Cairo, Egypt. The total value of the grant requested is £0.3m, over a 24 month duration.

Following the successful completion of our project “Antimicrobial and antioxidant edible films and coatings prepared from chitosan and bio-agents and their application in seafood preservation” with Nha Trang University in Vietnam, we are exploring options to maximise the benefit by i) applying for further grants, of longer duration such as Newton grant for International links, strengthening and expanding collaboration between Abertay and Nha Trang, ii) disseminating findings through publications in established journals in the field, such as the International Journal of Food Science and Technology iii) establishing a program of workshops/guest lectures from Abertay to Nha Trang on film development and characterisation and Nha Trang to Abertay on seafood processing.

We are working in collaboration with other Scottish HEIs. Completed last month was our “Independent Audit of the Scottish Government Climate Justice fund” project in Malawi. The Centre for Urban Water Research (CREW) are considering proposing an extension to the Scottish Government to continue monitoring activities. Ongoing is our enhancement of the "Integrated Water Resource Management - Southern Malawi" Project. The clients are the Scottish Government and Hydro Nation International. The purpose to identify a roadmap for Malawi to achieve SDG6 to enhance the effectiveness of Scottish Government support in Malawi.

In partnership with the James Hutton Institute we are conducting an Initial scoping with a Chinese water company seeking novel solutions to wastewater and sludge management in China and working with Indian partners on the use of innovative ecological treatment systems for river water quality improvement.

We also have, and expect more (e.g. two recent offers), PhD students funded in part by the Nigerian PTDF. This investment in human capital will lead to post study work in the ODA country.

5. What are your priorities for GCRF activity in 2019-20? Please describe how the profile of activity will adjust to increases or decreases to expected GCRF funding.

As above

6. What are your priorities for GCRF activity in 2020-21? Please describe how the profile of activity will adjust to increases or decreases to expected GCRF funding.

As above