

Institution: Robert Gordon University (RGU)**1. Context and mission**

Robert Gordon University (RGU) is a post 1992 institution with a mission to transform people and communities by providing demand-led teaching and research that contributes to economic, social and cultural development regionally, nationally and internationally. Based at our £135m Garthdee Campus, the University has eleven academic Schools: Pharmacy & Life Sciences; Health Sciences; Nursing, Midwifery & Paramedic Practice; Applied Social Studies; Computing; Engineering; Law; Creative & Cultural Business; Scott Sutherland School of Architecture & Built Environment; Gray's School of Art and Aberdeen Business School. Our student body numbers 11,000 undergraduate and 5,000 postgraduate students of which 305 PGRs are supported by our Graduate School. Our success in delivery of our teaching is evidenced in the generation of highly-skilled professionals and reflected in our sustained excellent NSS and employability scores, the Times Higher and Sunday Times award of Business School of the Year and Scottish University of the Year 2021-22, and our Gold rating in the Teaching Excellence Framework (TEF).

In line with our University strategy (revised 2018) we are playing increasingly important research roles at regional (our contribution to the Aberdeen City and Region Deal), national (creation of the National Subsea Centre) and international levels (joint partnerships and funding successes). In this REF period we have maintained long-standing partnerships with NHS Grampian, have created RGU Orkney and increased our industrial and international research collaborations with Scotland's Medical Device Manufacturing Centre, Scotland's Research Pools and Innovation Centres. This is further evidenced through competitively won research funding (UKRI, H2020, INTERREG Programmes, CSO, NIHR), industrial contracts, Innovation Vouchers, Knowledge Transfer Partnerships, and developing international partnerships in Mexico, Brazil, Sri Lanka and China. These activities are complemented by RGU's significant contributions to the national skills agenda with Graduate Apprenticeships and upskilling courses. During this REF period, RGU has remained independent of any mission groupings but will align with the MillionPlus grouping during the next assessment period.

This REF period has been one of significant transition for RGU and the region. In response to the REF2014 results, the University underwent a significant change in approach to research. In 2016, Faculties, their Graduate Schools and Research Institutes were disbanded, to encourage increased internal interdisciplinary engagement. Our Outcome Agreement (2018-21) indicates that we are in the process of growing our research activity, income, impact and demand-driven knowledge exchange. In 2018 the Board of Governors approved an investment of £27m focusing on our strategic research areas while other areas continue to be supported.

2. Strategy

RGU's revised institutional structure has embedded ownership of the research strategy and responsibility for its delivery within the core activities of Schools, each supported by a Research Lead. The strategy, established in 2018, aims to grow the University's globally recognised impactful research, ensuring its vitality and sustainability by:

- Building critical mass around established research leadership (Sustainable Transport, Built Environment Visualisation, Industrial Biotechnology, Smart Data and Artificial Intelligence)
- Developing strategic collaborations through academic, private and public research partnerships
- Fostering excellence in interdisciplinary research and knowledge exchange
- Supporting early career researchers

This strategy was paralleled with a revised approach to knowledge exchange focusing on harnessing the teaching and research base to stimulate economic development, deliver impact, and support organisations to be more successful. The Vice Principal (Research) provides leadership for the University's research strategy and is supported by a Research Strategy & Policy (RS&P) team, a single Graduate School and the University's Research Committee which has members from every School.

Building Critical Mass and Developing Strategic Collaborations

The establishment in 2018 of **RGU Orkney** (a research hub in Stromness, Orkney) is a strong example of our approach to developing strategic collaborations. Discussions in 2016 with Orkney Islands Council and Highlands & Islands Enterprise indicated that a range of stakeholders in Orkney would be interested in working with RGU to address local challenges. Our goal has been to contribute to the economic, health, social and cultural development of Orkney, with and for the people of Orkney. RGU Orkney is supported by a dedicated Development Manager based at the Orkney Research and Innovation Campus (ORIC) whose role is to promote RGU locally, liaise with stakeholders and match RGU academic expertise with local challenges to identify innovative solutions. This role was initially jointly funded by RGU and Orkney Islands Council.

Health and social science research has developed since REF2014 with 20 of the 29 researchers being submitted to REF for the first time. Targeted emphasis on inter-disciplinarity, and applied research capabilities, has focused around three thematic areas: communities; long-term conditions - prevention and management; and new pharmaceuticals/nutraceuticals & novel target discovery. Key to this has been collaborations including two jointly funded clinical Professorial appointments with NHS Grampian and evidenced by large-scale collaborative EU grants. Moreover, health and social sciences researchers have responded to the COVID-19 pandemic through the creation of multidisciplinary research groups providing a platform for future research collaborations.

RGU was one of only four European institutions chosen by the Mexican Government to work in collaboration with Mexican universities to address the future needs of the country's energy sector. The University signed a Memorandum of Understanding with SENER (Mexico's Secretary of Energy) in 2017 and has since worked with the UK and Mexican governments to recommend the skills and capabilities required to develop an international hydrocarbon sector.

This REF period has been one of transition for Oil and Gas, the predominant industry of the Aberdeen region and historically a major focus for research and teaching at RGU. Industry downturns compounded by the COVID-19 pandemic, have hampered industry investment in research during this REF period. In collaboration with Opportunity North East, the University of Strathclyde, and partners including the Oil and Gas Technology Centre (OGTC), RGU has developed the **National Subsea Centre (NSC)** to tackle the Energy Transition and Net Zero agenda, through the acceleration of subsea technology development and deployment. It will be supported with institutional investment in research leadership (two Professors appointed in 2020), postdoctoral and postgraduate researchers and dedicated high performance computing functionality, building on RGU expertise and capability, to become a global centre for subsea R&D. The centre will leverage existing skills and develop new ones in areas such as subsea technology, sensing, data science & analytics, automation, robotics, human factors and visualisation. Although the NSC will be part of RGU, it will also be part of a wider network of subsea capabilities across the UK through a hub and spoke model.

Fostering Excellence in Interdisciplinary Research and Knowledge Exchange

Our approach to supporting interdisciplinary research has been transformed in the last five years and is showing significant success. In 2018/19 **RGU Orkney** ran a series of interdisciplinary sandpits about Active Ageing, Smart Tourism and the Circular Economy; co-created with Orkney Islands Council and Highlands & Islands Enterprise to reflect local priorities and maximise potential societal and economic impact. As a direct result we have seen an increase in engagement with Orkney from RGU staff which has helped to embed RGU in the local HEI and community framework. Successful funding applications submitted with local partners following these events include: [Storytagging](#) (Interreg NPA), [Augmented Fashion](#), (AHRC), and [My Orkney Story](#) (Royal Society of Edinburgh).

We have renewed our efforts in securing KTPs in Computing and Engineering and are extending across the spectrum of KTP-eligible disciplines. We hold 13 KTPs ranking 4th in Scotland (total = 86). Institutional support to SMEs, and engagement with Interface have resulted in a four-fold

growth in securing Innovation Vouchers in the last two years. RGU now leads Scotland in innovation support for SMEs through Innovation voucher provision. The University has grown its collaboration with Innovation Centres, working most closely with the Oil and Gas Innovation Centre (OGIC), Datalab, and Construction Scotland Innovation Centre (CSIC): aligning portfolios and regional priorities. In 2017/18, the University submitted 21 Innovation Centre proposals worth over £1.5million. Ten of these projects, worth £0.8million were awarded.

RGU is a member of the Scottish Official Development Assistance (ODA) Network, with the RS&P team allocating the GCRF grant from SFC (2020/21 grant - £74,339). Our projects have developed collaborations with academic colleagues in countries including the Republic of North Macedonia, India, Mexico and Sri Lanka. The University published research-focused safeguarding and due diligence policies in 2020 evidencing our support for overseas research.

An Entrepreneurship and Innovation Group was established in September 2018 to encourage entrepreneurial activity. Their Accelerator programme supports teams of students, staff and recent alumni through an intensive mentor-led accelerator process, to develop their value proposition, leading to the establishment of new businesses to diversify the regional economy. In 2018/19, 165 teams applied and 28 were selected covering a range of industries, including creative industries, food and drink, healthcare, digital, education, and technology.

Open Research

RGU Research Week takes place annually and allows staff to share their research and raise awareness of professional support available (e.g. open access, impact, integrity). The Research publication, created annually by RS&P since 2018, showcases RGU research and its impact with external stakeholders including SFC, local authorities and enterprise agencies.

RGU received an open access block grant from UKRI (£11,637) in 2020/21. This was the first year that RGU had been eligible for this funding and demonstrates growing success with UKRI through increased ambition of our researchers. This funding allowed us to provide targeted support for open access publications for the first time in this REF period.

In 2020, the University published a Research Data Management policy which implements the principles in the Concordat on Open Research Data and the UKRI Common Principles on Data policy. RGU advocates an open access approach to research data, supported by our Institutional Repository (OpenAir) which was established in 2006 and currently holds 4483 outputs and 22 datasets representing research from every School. The Research Support Librarian provides research related support including for publications, open access queries, our subscriptions to SciVal and RDF Planner and the repository.

All research students complete a PGCert (Researcher Development) which is linked to the Vitae RDF Planner and provides an excellent foundation in generic and specialist skills. Since March 2020, it has been delivered online and feedback in November 2020 provided a rating of 95% Excellent. Since 2018, PGRs have participated in the national '3 Minute Thesis' competition. Research supervisors undergo mandatory supervisory training, with refresher training every three years. Performance of the complete supervisory team is assessed via the University's Research Degrees Committee.

The University signed the Concordat to support Research Integrity in 2016 and the revised Concordat in 2020. The University has implemented the Impact module on Worktribe and will be expanding our provision for impact in the post REF2021 period – supporting an active approach to driving impact from our research.

3. People

Overall Staffing Context

RGU operates with contractual terms derived from the HE 2000 Contract such that all staff are on a Teaching and Research contract, but some have a minor, or even no responsibility for undertaking research. The distribution of effort is determined by Schools through an annual review

that allows individuals flexibility to move between research and teaching, enriching the academic environment, encouraging knowledge exchange, entrepreneurial activities and professional practice.

During the REF2021 assessment period, the University has undergone a series of staffing changes (including voluntary severance of 5% of academic staff), some a result of significant budgetary pressures thus our submission to REF2021 is smaller. RGU has an exception from submission to UoA 18 due to the small number of staff that have remained research active during the assessment period.

The University has experienced several key changes to senior management over the course of this REF period. In August 2018 the Principal stepped down and his replacement remained until his retirement in August 2020. The Vice Principal (Research) left RGU in January 2015. His replacement joined in December 2016 whereupon the department that supported research activity was re-organised as Research Strategy & Policy (RS&P), providing a more robust internal review of draft grant applications, funding call alerts and workshops and support for impact narratives.

Graduate School and PGR Community

The Graduate School leads on the training and support activities for postgraduate students supported by the annual Research Postgraduate grant (£352k in 2020/21) from SFC. Our PGR population has grown from 230 to 305 in this REF period. The University supports a range of professional doctorates including DBA, Doctor of Information Science (DInfSc), Doctor of Physiotherapy (DPT, the first of its kind in the UK) allowing students to combine professional practice with a research degree. PGR students have access to generic skills training and state of the art discipline-specific training opportunities. The impact of this can be seen in our recent internal PRES (November 2020) overall student satisfaction rating of 89% (this compares to 71% overall satisfaction in our 2015 PRES). Despite the very positive PRES, the time taken for PGR students to complete PhDs has often exceeded the maximum registration period of four years full-time or six years part time. In 2019/20, completions within registration period have improved from <40% overall to just about 70% - a very positive sign of progress.

Early Career Researcher and Staff Development Support

Staff who identify as being early career can join our **early career researcher** (ECR) network. Our Research Training Coordinator (appointed in 2019) delivers an informal support network (during the COVID-19 pandemic via Zoom) and a series of training events. The vibrant Researcher Development Programme (launched September 2020), has offered over fifty masterclasses, workshops and informal sessions designed to broaden knowledge and skills, foster interdisciplinary dialogue and strengthen research culture. Some examples include: Quick Colloquiums where PGR students present their research to peers for feedback; How to Write Research Funding Applications; as well as weekly Coffee & Bletcher, and Shut Up & Write sessions. Currently there are approximately 100 staff and PGR students in the ECR network from all our academic Schools although sessions are open to all RGU staff. The Research Training Coordinator role will enable us to demonstrate our activities in line with the Concordat to Support the Career Development of Researchers.

A notable development in supporting research excellence and **staff development** is the introduction of research sabbaticals. This programme started in January 2017 to allow staff a period of six months sabbatical leave, fostering the creation of networks and cross-disciplinary collaborations (both internal and with other HEIs), and the subsequent development of high-quality outputs and increase in external funding. To date, this programme has supported seven academics across a range of academic disciplines (three male, four female). Their activities during this time have included publication of books, contributions to major research initiatives and generation of research income totalling nearly £2.8 million.

A number of successful internal networks exist that bring together colleagues from across Schools: for example, the qualitative researchers network which has 110 members whose purpose is to

inspire colleagues about methodological practices as well as contribute to a vibrant research community.

Equality, Diversity and Inclusion

The University submitted an AthenaSWAN bronze application in November 2017, which was unsuccessful. We have since established an Equality & Diversity Committee and will recruit our first Equality & Diversity Advisor in August 2021. The action plan from the November 2017 application will be reviewed but a substantial revision of policies has already been undertaken to ensure compliance with current legislation, with most extending our provision beyond legal minimum requirements. These include family friendly policies relating to maternity, paternity and adoption. RGU staff are key enablers of our institutional strategy, highlighting the importance of a culture of staff engagement, empowerment and community; treating individuals equitably, fairly and with respect; providing opportunities for development and progression; and promoting employee wellbeing.

The University continues to support its female staff through the Aurora Advance HE Women in Leadership programme which was introduced to address the reducing numbers of women in senior posts in HE. In this REF period, 47 academic staff have participated in this Programme which includes themed workshops, action learning set sessions, and support from an institutional mentor. RGU benefits from an active Leadership & Development Team who offer programmes to support career development for both research and professional support staff, delivered through a combination of workshops, tutorials, directed study, self-reflection and formal ILM-accredited assessments. These include: Discoverer (First Line Managers), Voyager (Middle Managers) and Pioneer (Future Leaders) and modules cover a range of topics, such as Change Management, Leading Teams, and Institutional Strategy.

As of June 2020, RGU comprises 1586 staff of which 642 are academic staff, from Grade 6 to the Professoriate. 354 of the academic staff are female and 288 male. We are a diverse institution, 82% of these identify as white (n=529), 18% as BAME, well in excess of local or Scottish proportions of these groupings. 38% are over the age of 50 (n=242). The number of Professorial appointments has contributed to the overarching E&D strategy in research, where 12 female staff have been appointed Professors, compared to five male staff in this REF period. RGU's commitment to gender balance is further evidenced in the representation of key strategic groups such as the University's Executive Board and Research Committee, both with a 50/50 ratio of female and male staff. Our gender pay gap continues to close, now below 10% having been over 13% two years ago and we are in the process of enhancing our flexible working offer which will be of benefit to all eligible staff, in particular working parents.

4. Income, infrastructure and facilities

Income

RGU's research income strategy is driven by the University's commitment to addressing research challenges across disciplines, through collaboration with internal and external stakeholders. Strategy development is steered and approved by the Executive Committee with Vice Principal for Research (VPR) managing the work, engaging with the University's Research Committee and Heads of Schools to generate and refine ideas. The Research Excellence Grant (£1.2m in 2020/21) is allocated to Schools to strategically support research.

In 2017, the Board of Governors approved the phased release of £27m for investment in research over a ten-year period. This will support key strategic research areas by harnessing expertise and recruiting research leaders with complementary skills to build larger and more capable interdisciplinary teams to deliver novel solutions to the challenges facing society. The funding is also aimed at leveraging additional grant support, with, for example, funding being released for ECR posts if external funding is secured. Such investment is expected to yield significant tangible and non-tangible benefits, including positive impact on the research culture, and an increase in volume of externally funded research. To date, funding has been invested to support two NSC professorial staff, further investment has been on hold since the start of the COVID-19 pandemic and the change in senior management at RGU.

The portfolio of research undertaken at RGU is largely funded by Innovation Centre and UKRI (EPSRC, AHRC, BBSRC, ESRC) grants, as well as a variety of charities. The largest grants in this REF period have been funded by OGIC, H2020 and BBSRC. There has been an increase in larger grants, as evidenced during this period - average award value has increased from £31k (2015/16) to £39k (2018/19).

A pump priming scheme was created to support interdisciplinary projects designed to secure preliminary data to support major research grant applications as well as projects with relevance to industry. This scheme has supported 20 projects with a total of £157k granted to projects supporting RGU Orkney, long-term health conditions and smart cities with partners including Historic Environment Scotland, NFU Scotland, NHS boards and various industrial partners. These projects have led to further larger applications for external funding.

Digital Infrastructure

Since REF2014 the University has provided significant financial investment (approximately £500k) to support research. This has included investment in a new Research Information System (Worktribe) to manage our research assets and meet external requirements for good data management and open access practices, and provide robust management information about externally funded research activity. The new system has enabled accurate costing of research proposals, management of post-award and contract functions, while also supporting secure and effective management and curation of open access outputs through a repository tool. The researcher profile functionality of Worktribe has contributed to increased visibility of our researchers both internally and externally to encourage networking and new external collaborations while the interface with Tableau has improved our management reporting. Investment in IT Services has ensured Windows upgrades at pace with releases, with Windows 10 being the standard at RGU. The Office 365 suite has been rolled out across the University, with research teams using Microsoft Teams and OneDrive for internal and external collaboration, which has been vital for the continuity of services at a high standard during the extended periods of lockdown due to COVID-19.

Physical Infrastructure and Specialist Resources

The University is home to world-class research and training facilities, including:

- The Drilling and Rig Training (DART) facility (established with support from SFC) with a DrillsIM-6000 simulator and now complemented by the DrillsIM-5000 simulator, the world's first simulator designed for well decommissioning training.
- A state-of-the-art full metal laser sintering machine which completes the comprehensive suite of modern rapid-prototyping technologies.
- 3D printers for prototyping, composites and materials synthesis and testing suite
- Human Performance Laboratory: two 3D optical motion capture systems, isokinetic dynamometry, and physiological testing equipment, ensuring state-of-the-art equipment for research on human movement and athletic performance (through a £200k investment).
- A platform of HPLCs (£75K); a water purification system (£148K); GCMS (£66K); FLOW Cytometer (£39K); rheometer (£75K); and a Victor Nivo Multiplate Reader to support the natural product screening programmes (£28K)
- CyanoSol Lab: state-of-the-art facilities for algal/cyanobacterial production, down-stream processing and supporting analytics for water and wastewater treatment research.
- Process Integration and Membrane Technology laboratory: equipped with gas chromatography mass spectrometry (GC-MS) systems and Quantachrome nitrogen adsorption analyser (BET), low and high temperature multi-gasses reactors to study gas and liquid mixture separations and for catalytic processes.
- Offshore Energy / Hydrodynamic Multi-Phase Flow laboratory: a customised large-scale multi-phase flow loop, remote operated vehicle (ROV) Pool: a 3-metre-deep test tank for underwater robotics and subsea projects, 1Hz Wave Tank and Plint TE 44 subsonic model Wind Tunnel.

Research Hubs and Centres

In April 2018, RGU established its RGU Orkney research hub in Stromness, Orkney and in October 2019 moved into the new Orkney Research and Innovation Campus (ORIC), where other tenants include Heriot Watt University, EMEC, Aquaterra and Solo Energy. The Hub acts as a central management point for RGU's activity in the islands, coordinating academic and student visits, supporting the project management of locally based research projects, and ongoing networking and liaison with internal and external collaborators. The facilities at ORIC, including shared meeting rooms, exhibition area and hot-desking space, foster an exciting environment where RGU can deliver on our ambitions of engaged, relevant and innovative research.

The National Subsea Centre (NSC) represents a significant investment (in this REF period funding recruitment of two Professors with another to be recruited in 2021) to deliver cost-effective, faster, smarter and cleaner technology to the industry. Drawing on the University's academic talent, tailored research and expert facilitation, the development of the NSC aims to build capacity and capability in subsea research and anchor that in the north-east of Scotland.

REF2021 and the future

Reflecting on the REF2021 period it has been one of significant structural, leadership and management change for the University but one which has created a platform for the strong and sustainable development of research in the future. The establishment of a single Graduate School has become the focus for a growing PGR community; the creation of a research strategy and policy team (RS&P) means there are enhanced levels of support for academic staff around grant preparation; and strategic initiatives like NSC and RGU Orkney are creating new opportunities for interdisciplinary research. The next REF period, led by a new VPR, will see continued investment in innovative, interdisciplinary and impactful research along with a strong focus on building an inclusive research culture meeting the highest standards of ethics and integrity to deliver high quality research and knowledge exchange.