

<b>Institution: Staffordshire University</b>
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<b>1. Context and mission</b>
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Staffordshire University's vision as a civic university is to make a substantial economic and social contribution to our region. Although the Staffordshire region sits between the Northern Powerhouse and the heart of the Midlands Engine, it faces significant challenges including:

- GVA per head is 26% below the UK average, putting the Stoke-on-Trent and Staffordshire Local Enterprise Partnership (LEP) 32<sup>nd</sup> out of 38 English LEPs;
- Stoke-on-Trent and Staffordshire LEP earnings are 7% below the national average; Stoke-on-Trent's are 16% below;
- Stoke-on-Trent is in the bottom 10% for social mobility in England.

Since the appointment of a new Vice-Chancellor in 2016, and a new Executive thereafter, the University has achieved a large improvement in league table position. It entered the research-focused THE World University rankings, rose 55 places between 2014 and 2020 to 37<sup>th</sup> in the Guardian table, and reached 58<sup>th</sup> in the Complete University Guide (2020).

The University is a major economic force in Staffordshire. It has a GVA contribution of £130m, supporting approximately 2750 jobs directly and indirectly. Based in Stoke-on-Trent, it has campuses throughout Staffordshire and Shropshire and a Digital Institute in London. The University educates approximately 25,000 students overall and is a member of MillionPlus. A high proportion of on-campus students are non-traditional, disadvantaged, or local. Approximately 50% come from POLAR4 quintiles 1 and 2, 45% are mature on entry, and 60% of full-time students commute.

The University is deeply involved in meeting local workforce, industry, and sector challenges. The regional context has shaped the University's research specialisms and emphasis on applied research. Research into advanced materials engineering and design, and the cultural and creative industries, important parts of the regional economy, have remained a constant since RAE2008. In REF2021, these areas are returned as submissions in Engineering (**UOA12**), Art and Design (**UOA32**), and Communication, Cultural and Media Studies, Library and Information Management (**UOA34**). Similarly, the University has returned health and cognate disciplines in each cycle, this time within Allied Health (**UOA3**). New research expertise in social sciences and its intersection with forensics, criminology, and education has enabled the University's first submission to Social Work and Social Policy (**UOA20**). Archaeology (**UOA15**) supplies another new submission. The University's investment in Business and Management (**UOA17**) has seen a 25% growth to 9.1 FTE during the assessment period and the inauguration of a Research England-funded University Enterprise Zone, awarded in 2019.

The University's research culture encourages interdisciplinary collaboration on research and impact activities. Throughout the organisation, we emphasise working with our strong local partnerships in research co-creation, as our Impact Case Studies demonstrate (see Section 2). This approach led to a HEFCE commendation (2017) of our HEIF strategy for its commitment to addressing Staffordshire and Stoke-on-Trent's productivity gap.

Having been among the fastest local economies to rebound from the last recession before COVID-19, Stoke-on-Trent and Staffordshire were undergoing the most significant transformation in their economic fortunes for over 30 years. To support this transformation, Staffordshire University will continue to undertake applied interdisciplinary research, increasingly intertwined with enterprise, innovation, and impact, as our 'intellectual contribution to the local and regional creative, digital and foundational economies' (see [2030 Academic Strategy](#)).

## 2. Strategy

In 2014, Staffordshire's approach to research was informed by its 2012-17 University Plan vision of being a 'teaching led' university, with research 'underpinning the curriculum...within the broader context of the solution of real-life challenges for the delivery of economic...or social benefit'.

This view has evolved under the direction of the new Executive and the 2018 launch of a Research, Innovation and Impact strategy. This strategy placed research excellence itself 'at the heart of Staffordshire University'. The strategy committed to 'work in a collaborative, inter-disciplinary manner to provide imaginative and sustainable solutions to real-world issues', enhancing institutional expectations of research and research impact. The Executive has supported progress with a deliberate reduction in the number of Units of Assessment from eight in REF2014 to seven in REF2021, using targeted recruitment and interdisciplinary research centres to expand our research capacity in these seven areas. As a result, our REF2021 submission draws on an expanding interdisciplinary research base with a thriving research community.

The University has implemented this strategy through three underpinning principles: 1) building capacity and capability; 2) enhancing collaboration; and 3) enabling and facilitating impact.

### ***Building research capacity and capability***

During the period significant achievements include:

- 26% increase in FTEs submitted to REF2021 (81 in REF2014, 102 in REF2021);
- 74% increase in proportion of internationally co-authored articles from 2013 to 2020, to 50% (SciVal);
- 29% increase in outputs in top 25% of journals, from 43% in 2013 to 55% in 2020 (SciVal);
- 80% increase in PhD completions (including distance-learning completions reported in the HESA Offshore Aggregate Return), from 108 in REF2014 to 193 in REF2021;
- 46% increase in registered PhD students from 249 in 2013-14 to 364 in 2019-20.

In 2016-17 institutional restructures created five multidisciplinary Schools which afforded opportunities for new research-active staff recruitment. Over 70% of researchers in this submission are returned here for the first time and 18% of submitted FTEs are ECRs.

In 2019 the University recruited Associate Deans for Research and Enterprise (ADREs) to provide senior research leadership in Schools. The ADREs develop the collaborative institutional research environment, embed research into School Management Teams, and contribute to individual research targets.

In 2019-20 we introduced two parallel academic pathways to support academic staff career development. Teaching, Research and Innovation (TRI) supports research-focused staff, and Teaching, Advanced Scholarship and Knowledge Exchange (TASKE) benefits staff with a teaching and scholarship focus. In line with the Code of Practice, TRI staff submitted to the REF have received a minimum 20% research time. This pathway has mainstreamed previous teaching relief schemes, delivering a long-term commitment to enhancing the University's research capacity.

The University's [2030 Academic Strategy](#) codifies our research ambitions. Key targets include doubling the FTEs submitted to the next REF and, based on REF2021 data, achieving the median income and PhD completions per FTE in our UOAs.

### ***Enhancing research collaboration***

Collaborative interdisciplinary working has been a deliberate focus of our strategy, supported by the creation of interdisciplinary Research Centres. These are a focus for the development of shared research objectives with internal and external collaborators. They provide a research environment which includes seminars, public lectures, and support from professional services.

Our academic staff have built diverse networks with research users, enhancing opportunities for research impact (section 3). A vibrant community of 180 Visiting Titleholders and 43 Emeriti further enrich our research collaborations. To develop international collaborative research partnerships and impact activities our institutional QR-GCRF (2017-18-present) has been allocated by internal competition. The success in supporting high quality collaborations is seen in the 76% growth in the percentage of internationally co-authored publications and 44% drop in the percentage of single authored outputs between 2013-2020 (SciVal). Staff submitted to the REF have collaborated on publications with at least 548 institutions from 70 countries during the period. This total includes collaborations with 445 academic institutions, 47 medical institutions, 28 government bodies, and 14 charities and NGOs.

### ***Enabling and facilitating impact***

Impact is at the core of the institution's research strategy. In 2017 we recruited a full-time Impact Manager and commenced impact training for all researchers and PGRs. The University has invested a further £161k in impact (£1570 per FTE in this submission), including an organisation-wide license for an impact evidence repository, and providing impact acceleration funding.

Our civic university agenda is underpinned by the co-creation and co-delivery of research with research stakeholders and end-users, which facilitates sustainable impact. Research is central to our stakeholder engagement with civic, community, and business partners to support our Civic Agreement development and to set out shared objectives with our partners. Staffordshire University places the needs of affected communities at the heart of the research process and ensures that research outcomes meet the needs of the communities that will benefit most directly. This is guiding our research impact strategy from 2021, informing the University's alignment with specific UN Sustainable Development Goals.

This strategic approach is seen in our Impact Case Studies, including:

- Colls (UOA15), whose Shakespeare heritage project involved 275 community researchers and 29,000 hours of donated time;
- Dobson (UOA32) co-produced research into sexual and relationship problems affecting cancer patients;
- McSherry's (UOA3) practice-led research led to improved practice and training for healthcare workers.

Our research media strategy provides interview training and training in writing for lay audiences. This strategy helps our researchers to disseminate their work to end-users beyond existing networks. Successful outcomes include 120 articles published by 66 authors with a global readership of >3m in *The Conversation* outlet; and the dissemination of research findings from Sturdy Colls (UOA15) in three documentaries viewed by 8.5m people (see UOA15 'Holocaust' REF3 study).

## Institutional level environment template (REF5a)

### Research Governance

The University's Research and Innovation Committee (RIC) (created 2017, chaired by the Deputy Vice-Chancellor) oversees all research policies and strategies. RIC reports to Academic Board. The Research, Innovation and Impact Services (RIIS) directorate conducts day-to-day management of research governance.

The University is a member of the UK Research Integrity Office (UKRIO). Our [Code of Practice for Research](#) embodies our commitment to the Concordat to Support Research Integrity (2012, 2019). Research integrity and ethics is a standing item on the RIC agenda, with ethics governed by the Research Ethics Committee which reports to RIC. RIC reviews the annual statement on Research Integrity and ensures policies are regularly updated in line with best practice from UKRIO and relevant networks. The annual statements on Research Integrity are then subject to approval from our Board of Governors.

Research ethics awareness training, which includes awareness of the Code of Practice, is compulsory for all academic staff. Annual audits ensure that ethics practice in the Schools is in line with our ethics policy. Annual institutional publication audits ensure our research outputs have undergone appropriate ethical review.

### Open Research

The University has required researchers to make outputs Open Access (OA) since 2014, ahead of Research England's policy. Our [OA mandate](#) formalised this rule in 2018, and the Library and Learning Services (LLS) manages compliance. LLS provides support and training for researchers, ensures continued awareness internally, and manages our [repository](#).

The University is working towards full compliance with the Concordat on Open Research Data and has endorsed RCUK's Common Principles on Data Policy in its Code of Practice for Research (section 11). In 2020, it certified a [Statement on the Responsible Use of Metrics](#).

## 3. People

### Staffing strategy and staff development

Through the REF period, the University has sought to increase staff research **capacity**. It developed initiatives that provide relief from teaching to undertake research, culminating in the introduction of the TRI pathway and the accompanying Academic Staff Roles and Career specifications that clarify role expectations. The University further enhanced capacity through strategic job design and recruitment, including the introduction of the ADRE role.

The University supports staff development for increasing **capability** with an annual performance development review (PDR), during which staff and managers agree research objectives and career development plans. The PDR process is shaped by the University's Academic Development Framework, which draws on our EU HR Excellence in Research Award (2018) and the Concordat to Support the Career Development of Researchers.

The Framework supplies a centralised researcher training programme of peer-led sessions for staff and PGRs on over 20 topics including grant writing, civic engagement and research impact, and academic networking. Supplementary OA training includes an OA online guide, support on using our OA Discovery Service, and tailored information on funding for OA publications.

## Institutional level environment template (REF5a)

Human Resources and Organisational Development (HROD) provides core development training (management, leadership, induction). All staff have access to LinkedIn Learning and Microsoft-certified training to support digital skills acquisition. The Professoriate work with HROD to support mentoring. Similarly, our ADREs co-ordinate bespoke support for grant writing and lead internal peer review for grants.

Promotion to Professor/Associate Professor is managed through an annual call. The Professorial Conferment Committee, chaired by the Vice-Chancellor, superintends this call. Promotion is unconstrained by budget, is based upon clear criteria, and is subject to external peer review. Application is open to all, and applicants are assisted through workshops and mentoring from Professoriate members. Of the 109 staff submitted to REF2021, 31 have been promoted to Associate or Full Professor in the assessment period. 14 of those promoted (45%) are female. Since 2013-14, the overall success rate for promotion has been 52% for women (compared to 38% for men) and 60% female success rate for promotion to full Professor.

**Enhancing research collaboration** is underpinned by activities including:

- An annual University Research Conference with presentations that stimulate interdisciplinary research. The event includes breakout sessions on research and impact practice. Since 2019, we merged the conference with our PGR conference to integrate our PGR and research communities;
- Research Centre seminars, open to all staff and PGRs;
- A 'Women in Research Support' network (lead Forsyth, UOA3) provides female researchers peer-to-peer support;
- Public engagement through monthly lectures, professorial inaugurals, and other events;
- The Professoriate is a thinktank that contributes to, shapes, and enables the University's research and impact policy, strategy, and practice. It comprises 68 Professors and Associate Professors and operates in five working groups to support collaboration and peer networking.

## Institutional policies

Our policies, which are promoted through the intranet, support staff with equality-related circumstances and include:

- study leave;
- flexible working (location, hours and/or times of employment);
- blended working (up to 40% of time may be remote);
- clear recruitment and progression procedures to ensure fairness;
- family leave and special leave policies.

The University prioritises staff health and wellbeing. It provides free access to an external, confidential helpline for all health and wellbeing matters. In addition to the helpline, HR offers follow-on support for staff who have declared circumstances in line with the REF COP.

## Support for ECRs

RIIS provides central training sessions for ECRs. Session topics include grants, building an academic profile, and PhD supervision protocols. Discipline-specific support for ECRs is provided through the interdisciplinary Research Centres, and through School-based structures.

The strength of our ECR community is evidenced by 18% of our submitted FTE being ECRs. The modest but growing size of the University's research community means it can offer ECRs significant opportunities. ECRs are encouraged to join PGR supervision teams and supported to become principal supervisors after completing mandatory supervisory training, and there is an ECR representative on the RIC. ECR promotion is solely on achievement e.g., Benkhelifa (UOA12) was an ECR in REF2014, and is now Professor and Head of the Professoriate.

## Support for Research students

In 2015, the University radically enhanced support for PGRs by creating the Graduate School (GS), led by a senior academic on three-year part-time secondment. This post was made permanent in 2019 and a GS Manager appointed to lead and develop the professional services support. The benefit of this development is seen in the ca. 46% increase in PhDs enrolled (365) compared to 2013-14.

The GS administers PGRs from recruitment to graduation and supports their engagement with the University research environment and culture. PGRs access staff development support and in-house GS training, which provides 20 sessions p/a. To supplement our part-time/off-campus PGRs' development the University subscribes to ESRC-funded University East Anglia [online PGR training](#).

A dedicated PGR collision and office space in the Library supports cross-disciplinary networking (investment of £40k for 172m<sup>2</sup>). The University provides a joint GS/Students' Union social programme to support further networking and enhance the PGR experience.

To support a wider cohort of PGRs, and contribute more broadly to PhD education, Staffordshire validates PhDs at Bucks New University (BNU), which does not have research degree awarding powers. Six new PhD entrants in 2019-20 brought the total number of PhD candidates validated by Staffordshire at BNU to 18.

In 2020, University policy codified that PGR teaching opportunities are in line with UKRI guidelines. We encourage PGRs to register for a PG Certificate in HE and become Associate Members of the HEA. Since 2019, 15 PGRs have been employed to support impact development through the University's Impact Acceleration Fund.

The Research and Innovation Committee, the University Research Ethics Committee, and the Graduate School Committee, have reserved place(s) for PGRs. These key governance bodies safeguard PGR interests and provide the PGR representatives with further development opportunities.

Postgraduate Research Experience Survey (PRES) results have consistently indicated satisfaction levels over 80% in the assessment period. The externally-led 2019 Periodic Review of PGR Provision commended our:

- supervision teams' 'commitment and dedication to their students';
- reinvigoration of the research community;
- work undertaken to improve MPhil/PhD management;
- comprehensive research degrees training;
- progress on equality and diversity.

All students have a principal supervisor and at least one other supervisor with methodological and/or disciplinary expertise. The ADREs and School PGR Leads provide further support.

## Institutional level environment template (REF5a)

### Equality, diversity, and inclusion (EDI)

In 2017 we accelerated our progress towards being more equal, diverse, and inclusive by recruiting a Head of Equality and Diversity, who reports directly to the Chief Operating Officer. All staff take mandatory EDI training, as in place throughout this REF.

As explained in the REF COP, the University's overall EDI framework incorporates an Inclusion Statement and Values, Strategic EDI Objectives, and a Strategic EDI Action Plan. Associated work programmes ensure that the University adopts 'best practice' in EDI through related accreditations:

- HR Research in Excellence Award (2018);
- Participated in Stonewall Workplace Index since 2018 (2019-2020 = 397 out of 503) – the University subsequently implemented a Transgender Action policy (2018) and an Allies Programme (2019);
- 'Disability Confident' Committed level (2019);
- Working towards Athena SWAN and Race Equality Charters, with a specific action plan in place for the REC.

An internal audit after REF2014 identified a significant gender inequality (33% submitted female, against a 46% female academic body). The audit identified the 'development of female academics and how their research is encouraged' as a priority (COP section 10). Consequently, the University has purposefully supported leadership development for female staff e.g., Boehm and Gratton (UOA34), Advance HE alumnae) and an internal women's research network, led by Forsyth (UOA3). In 2019, we successfully closed the median Gender Pay Gap in the University to 0%. Since 2016, the University has explicitly encouraged female applicants for promotion through specific invitations, female-led support sessions, and consideration of personal circumstances including family leave. Staffordshire expects proportionate Professoriate gender balance by 2025. This achievement will build on our achievements in this REF cycle:

- 55% increase in female Professors since 2014 to 33%, almost 1/3 higher than 24.5% sector figure (Advance HE 2019 Equality report);
- 50% of Associate Professors now female;
- 49% of promotions via the Professorial Call in the REF period have been to females;
- 43% of those submitted to REF2021 are female.

BAME representation is sustained in REF2021: 16% of staff submitted are BAME, and 16% category A are BAME, which is 68% above our academic staff profile of 9% FTE (2019-20 HESA data). The percentage of staff submitted who declared one or more disabilities was 6%, which is the same percentage as for our academic staff (2019-20 HESA data).

Positive action on committee membership means that the Professorial Conferment Committee is now more representative, with 47% female and 17% BAME in 2020, and the Research and Innovation Committee is 57% female (2019-20 academic year). All members receive unconscious bias training. The Professorial Conferment Committee seats at least two external members to guard against internal bias.

#### 4. Income, infrastructure, and facilities

##### Strategies and activities to generate research income

Average annual research income has increased by 38% since the REF2014 submission. This income has been generated by an evolving portfolio of funding sources for our Research Centres and ca. £10m p/a consultancy to facilitate knowledge exchange.

This increase has been supported by the 2018 Research, Innovation and Impact (RII) Strategy, and actions including:

- The introduction of University KPIs for research income – leading to devolved income forecasting and reporting for schools, and targets based on sector benchmarks. School senior management monitors progress with monthly reporting.
- Bidding support has prioritised key funding sources identified in the RII strategy (Innovate UK, NIHR, and Newton) for relationship development and training and development activity. Successes with key funders, including projects led by Gidlow (£399K NIHR 2017, UOA3); Sadat-Shafai (£274K Newton 2018, UOA12); Naemi (£56K Innovate UK 2018, UOA12), have increased our international reach, fulfilled the needs of regional industry, and stimulated research in our traditionally practitioner-led health disciplines.
- To build academic networks, we have hosted cross-HEI events from organisations including the Leverhulme Trust, Innovate UK, and UUKI.
- Attraction of new talent has delivered flagship grant funded projects e.g., £780K S Jones UOA3 (Health Foundation), Pierscionek UOA3 (H2020), £88K M Jones UOA17 (ESRC)
- Success in European Commission Framework Programme 7 and Horizon 2020 has enhanced research capacity through researcher exchange e.g., £590K from projects led by Sturdy-Colls (UOA15), Chockalingam and Naemi (UOA12) (H2020, FP7).
- Institutional investment in research support software (ca. £50K p/a) for all staff and PGRs, including Research Professional for funding identification; Vertigo Impact Tracker; and SciVal for research benchmarking, partnership development, and research analysis.
- An enhanced focus on impact and stakeholder collaboration, which has driven investment from local authorities in the Centre for Health and Development (e.g., £875K Gidlow UOA3) and national recognition through UKRI Enhancing Place-Based Partnerships funding (£37K Gratton, UOA34).
- Research Centres developed long-term income strategies to ensure vitality and sustainability.
- The introduction of formal peer review for grant proposals (2017). This has improved submission quality and encouraged interdisciplinary collaboration and peer support.
- Equality monitoring to evaluate EDI impacts.

In 2014, just 33% of our QR funding was used to stimulate research. Schools now administer all mainstream QR funding for investment in research capacity and sustainability.

Specific QR funding streams such as QR GCRF and QR SPF are managed centrally, to ensure the funding delivers institutional strategic aims linked to core partnerships. Research impact activities are similarly supported by centralised HEIF funding.

##### Infrastructure and facilities supporting research and enabling impact

In 2017, the University centralised the research infrastructure by consolidating previously fragmented Faculty-based support under the newly-created Research, Innovation and Impact Services (RIIS) to provide all researchers with high-quality, consistent support.

The centralised service is an investment of almost £1.2M p.a. It comprises ca. 25 staff across pre and post award support for research and enterprise projects, impact and civic engagement, and



## Institutional level environment template (REF5a)

research policy, governance, and ethics. As well as offering University-wide research support, RIIS facilitates cross-institutional and interdisciplinary working. In 2017, the GS was incorporated into this service to then ensure the PGR community is at the heart of our research environment.

In 2017, a similar centralisation of technical staff saw Faculty-based technicians moving to a unified Technical Services department. Technical Services comprises 74 staff working across the following themes to manage research infrastructure:

- Smart Technology
- Material and Make
- Sciences
- Media and Communications
- Health and Clinical Skills

The University became a signatory to the '[Technician Commitment](#)' pledge in 2020. Technical staff are supported with funding to complete vocational and professional certifications and, where appropriate, higher degrees including PhDs.

This restructure has increased researcher and PGR awareness and access to now centralised research facilities and equipment. Many facilities now have 24/7 access for enhanced researcher access.

Our Library and Learning Services provide research resources and support for researchers across our campuses. They provide physical and digital resources and administer a range of special collections relating to Staffordshire and Stoke-on-Trent's industrial, social, and political histories.

Two full-time librarians support research, including OA skills. In keeping with the University's digital ethos, the Library has a 'digital first' approach to purchasing research resources. The Library further supplies researchers with free document delivery via the British Library's EHESS (and Rapid ILL giving access to digital resources in the USA from the first national lockdown).

The University's digital transformation programme has made Staffordshire a flagship establishment for digital innovation. All academic staff are given a Microsoft Surface Pro. Staffordshire's partnership with Microsoft allows staff to access a range of software, including specialist research programmes. Research staff benefit from Staffordshire being the first European university to migrate fully to the cloud-based Microsoft Azure. Benefits include close to 100% system reliability, and accessibility from anywhere, and from any internet-enabled device.

## Physical infrastructure and supporting strategies

Flagship research facilities and equipment during the REF period include:

- £1.3m Smart Zone – Advanced Virtual Reality (VR), augmented reality, laser scanning, photogrammetry, and 3D printing equipment (UOA12, UOA15, UOA32, and UOA34);
- £30m Science Centre with specialist laboratories for archaeology and ballistics/firearms analysis (UOA15 and UOA20);
- A dedicated Crime Scene House (UOA20);
- Broadcast studios (Film/TV) for UOA34 and to broaden public engagement and provide impact pathways across all UOAs.

Alongside these facilities, our researchers have identified opportunities to collaborate with external research facilities. Collaborations include work at the SPring-8 (synchrotron radiation facility in Japan) and the Alderley Park Biohub and industry sponsorship of new on-campus facilities (including the Epic Games Centre).

## Institutional level environment template (REF5a)

Since, REF2014, we have used internal capital investment and external funding to enhance our research facilities. Campus master planning has focused on our organisational aims as a civic university, prioritising investment in digital infrastructure and facilities. The updated physical environment facilitates research, and innovation and enterprise to support the Staffordshire region's socio-economic development. All new facilities are subject to an Equality Impact Assessment at project initiation to ensure inclusivity is considered in their design, procurement, and use.

Since 2017, we have secured investment for strategic projects totalling £6m, attracting funding from the European Regional Development Fund, Research England and Stoke-on-Trent and Staffordshire Local Enterprise Partnership. This investment is supplying new facilities to support research in:

- engineering, advanced materials, and electronics (UOA12);
- archaeology (UOA15);
- ceramics (UOA32);
- healthcare research (UOA3);
- enterprise (UOA17);
- digital media (UOA34).

As HEFCE praised in a Commendation for our HEIF Strategy (2017), Staffordshire University has a firm 'commitment to local and regional economic development in an under-performing subregion'. Research England's recognition of this commitment helped us to achieve University Enterprise Zone (UEZ) status (2019), one of only 20 awards nationwide. This portfolio of research and innovation facilities forms part of the Staffordshire University Innovation Enterprise Zone (IEZ), together with support for CPD, recruitment, conferencing and office space in Stoke-on-Trent.

The opening of the University's 'Catalyst' building in late 2021 will significantly enhance our environment for business, innovation, and enterprise. This building represents a further investment of £43m, including an £8m funding award secured from HEFCE in 2017. An additional £6m investment in a Centre of Health Innovation will also be completed in 2021. This growing portfolio of facilities will encourage informal interactions and collaboration via 'collision zones' in their flexible and digital research spaces and drive our future research, innovation, and enterprise activities.