

<b>Institution:</b> University of Hull
<b>1. Context and mission</b>

**1.1. Roots and mission**

Founded in 1927, the University of Hull is England’s 14<sup>th</sup> oldest university. The importance of research with impact is enshrined in its Royal Charter, which describes its purpose and mission to:

*‘advance education, scholarship, knowledge and understanding by teaching and research for the benefit of individuals and society at large’.*

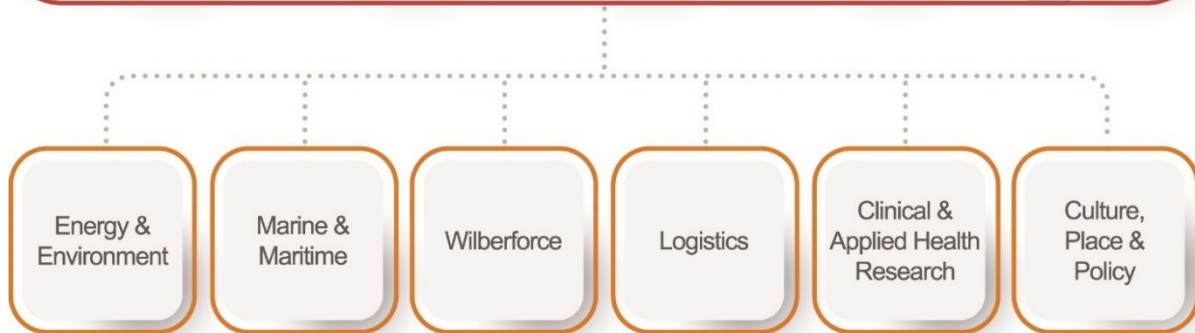
Our aim is to ensure all our research activities make a distinctive impact. We conduct discovery and challenge-led research which tackles global challenges and addresses regional needs. We have prioritised research themes focused on key societal issues including health inequalities, living with water, accelerating a net zero future, promoting social justice and fairness, and preserving our heritage and advancing our creative industries. This targeted research underpins an active culture of scholarship, teaching and learning across our University community. We are committed to being an inclusive organisation with whom world-leading researchers want to work, partners want to engage and research students want to study.

**1.2 Size and structure**

**Faculties**



**Key Challenges**



**Institutes**

**Figure 1.** University Faculties, Institutes and Key Challenges

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In 2016 the University reorganised into four faculties, 23 schools and departments and university-level research institutes to drive research excellence through a culture of cross-faculty interdisciplinary collaboration (Figure 1). At the same time, we invested significantly in research support structures, including an expanded and re-energized Research and Innovation Team, a new Doctoral College and a bespoke research infrastructure. The research conducted in the faculties and institutes is described in Section 2.

This strategic drive for research excellence in focussed areas of greatest potential was implemented despite increased pressures on student recruitment. It succeeded in increasing our annual research income by 13% over the REF period and significantly improved our income per researcher to £33.7k (18% increase). In the same period, we have increased our independent researchers (R only) by 31 and increased our membership of CDTs (or equivalent) from one to four, whilst leading the Aura EPSRC/NERC CDT. The size of the University is described in Table 1.

**Table 1** University size data

<b>Students</b>	2019-20	<b>Staff</b>	2019-20	<b>Income</b>	2019-20
UG and PGT	12615	T&R REF	324	Research Income	£12.00m
PGR	526	Independent Researchers	32	Income per Researcher	£33.8k

### 1.3 Place, partnerships and international reach

We are an actively engaged civic university, collaborating extensively to connect our research with businesses, the NHS, communities, the third sector and government. Our region has historically suffered from industrial decline and has a low ranking for private and public R&D spending in the UK ([The Missing 4 Billion, NESTA](#)). It includes some of the most deprived wards in the UK ([Index of Multiple Deprivations report 2019](#)) and, as an estuarial region, has significant challenges relating to climate change being home to the most flood-vulnerable communities in the UK. However, through the new opportunities of low-carbon energy and the new challenges of world trade, the region is positioned for an industrial renaissance through the expansion of offshore wind energy and some of the country's busiest port facilities. This has motivated us to work extensively with key partners to help drive innovation and develop skills to take advantage of these emerging opportunities.

The Humber, as the UK's Energy Estuary, is central to the Government's quest for Net Zero Carbon by 2050. It is home to the world's largest offshore wind farms and delivers 25% of the UK's energy needs. Yet it is also the nation's biggest emitter of CO<sub>2</sub>, with a high density of energy-intensive industries. The huge transition required provides a compelling opportunity for collaborative research and innovation; one that has seen the University's Energy & Environment Institute expand rapidly to more than 90 researchers since its creation in 2017. This distinctive opportunity also prompted the University to create Aura, a vehicle for multi-disciplinary research opportunities and for collaboration with manufacturers, developers, operators, skills providers, universities, government and others to drive innovation in low carbon sectors. Aura has been recognised in the [Offshore Wind Sector Deal](#) as an exemplar place-based collaborative innovation cluster driving distinctive regional development. It also led to the creation of the Aura CDT and building the off-campus £12m Aura Innovation Centre.

To support the eradication of health inequalities in the region, the University deepened its long-held relationship with local NHS trusts, inspiring their renaming to Hull University Teaching Hospitals NHS

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Trust. This partnership fosters collaborative research and established world-class facilities including the state-of-the-art Allam Medical Building on campus. Our research collaborations with global businesses Smith & Nephew and RB have created one of the world's largest wound care research clusters and tackle a suite of healthcare challenges.

To support the translation of our research and innovation into impact, economic growth, place-based environmental resilience and increased skill levels in the region, the University secured over £40million of regional development funding to enhance research and innovation driven growth of SMEs across low carbon and clean growth, flood resilience and the bio-economy (Figure 2).



**Figure 2.** Research and Innovation ecosystem supported by the University

The University was a principal partner of the Hull 2017 UK City of Culture, with our research activities supporting the delivery of a year-long programme and the evaluation of the outcomes. In 2018 the University hosted the British Science Festival (BSF) to showcase the University's research alongside other examples of UK excellence in a national celebration of science. During Hull 2017, the university had more than 88,000 visitors. The BSF attracted more than 15,000 visitors and 430,000 website views during the week of events in 2018.

In 2019 the University secured an exclusive partnership with Team GB, based on our joint belief that there is a spark of 'extraordinary' in everyone, whether it's a gold medal winning performance viewed by millions or the first to talk in a room full of strangers. This partnership is inspiring staff and students

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through interactions with elite athletes and performance coaches to help build our research culture, strive for higher performance and deliver personal bests. For example, a Team GB cluster of PGR students starts in 2021 to follow the Olympic cycle between Tokyo and Paris, mirroring the athlete performance cycle whilst completing their research.

Through our international partnerships, we ensure that our research has a global impact. Our work on modern slavery has led to the development of the Global Slavery Index which is used by governments, researchers, NGOs and charities around the world to support the liberation of slaves and their reintegration into society. Partnerships with researchers in Kenya have led to the development of a lab-on-a-chip device to rapidly detect maternal infections which are dominant cause of stillbirths, neonatal sepsis and mortality in Kenya. This work has recently been awarded a Newton Prize.

## 2. Strategy

### 2.1 Vision and Strategic Aims

Motivated by society's challenges and inspired by the power of our global community, our University vision is to shape a fairer, brighter and carbon neutral future. With a research-led mission, we strive for excellence in all our research activities and ensure that our research makes a distinctive impact. The University research community uphold the principles of integrity, diversity, and inclusivity in all of our activities. We empower our researchers to be at the forefront of current and future blue skies and challenge-led research, whilst encouraging collaborative working, an interdisciplinary approach, and developing talent.

Our strategic aims outlined in the University Strategic Plan (2016-2020), confirmed in the University Research Strategy (2019-2024), are:

- Sharpening our focus
- Delivering high quality and impactful research
- Nurturing excellent researchers
- Engaging externally and building partnerships
- Enhancing research infrastructure

Implementation of the strategy is led by the PVC for Research & Enterprise and is delivered through the central, faculty and institute delivery plans. Delivery is monitored through the University Research Committee which provides assurance to Senate regarding oversight and governance. Membership includes elected faculty representatives, early career researchers, a research student and research leaders and managers. The Doctoral College ensures oversight of PGR programmes (section 3.1).

### 2.2 Strategic Delivery

To support the research delivery plans the QR income (~£8million, 2019) is allocated to the faculties and institutes based on REF 2014 performance and HEIF funding is allocated through annual competitions to support the translation of research into impact, proof of concept and collaborations and partnerships, complemented by an Impact Acceleration Fund. Further support is provided through an annual investment (£3million) in PhD studentships to create thematic clusters, and encourage researchers from all disciplines to collaborate on the thematic research priorities.

This focussed investment has enabled significant progress in our priority areas. Advancements in health inequities include the work of the Wolfson Palliative Care Research Centre, which has established novel treatment and care protocols for cancer sufferers as part of palliative care; development of the Hull [Molecular Imaging Research Centre](#); the creation of the Institute for Clinical and Applied Health Research, which brings together clinical researchers from across the Faculties and has led to novel research outputs notably in the areas of alcohol withdrawal, sleep anxiety, depression and cervical screening.

Decarbonisation, environmental and flood resilience research have been connected and advanced through the creation of Aura and the Energy and Environment Institute which have achieved an ERC Award, two UKRI Fellowships, two Leverhulme Fellowships, and a COP26 fellow in the past three years along with platform funding from BEIS, and is leading a NERC Large Grant and an EPSRC-NERC CDT. The University is also a principal partner with the universities of Durham and Sheffield,

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Siemens Gamesa Renewable Energy and Ørsted in an EPSRC funded Prosperity Partnerships programme, “A New Partnership in Offshore Wind,” and Hull is leading research to establish advanced modelling, design and manufacturing techniques for the development and evaluation of novel blade and foundation structures and embedded sensing systems.

At the core of the University’s mission is our determination to promote social justice. Our Wilberforce Institute, which focusses its research on Slavery and Emancipation, helped to shape the introduction of the Modern Slavery Act 2015. It has secured £1,455,776 since 2014, including £582,955 (AHRC) for an Antislavery Knowledge Network in sub-Saharan Africa, and over £350,000 (EU Horizon 2020) for research into the legacies of European colonialism. In 2015 the Institute set up a slavery risk assessment service for business supply chains including Aldi and Waitrose. In 2019 this record of achievement led to the Wilberforce Institute being included in the £10million UK Modern Slavery Policy and Evidence Centre (UKRI/AHRC). In 2015, the Wilberforce Institute was awarded the prestigious Queen’s Anniversary Prize for its outstanding contribution to uncovering the real extent of slavery around the globe, and highlighting how learning lessons from the past can improve our future.

Our researchers played a pivotal role in Hull securing UK City of Culture in 2017 by informing the winning bid, creating and producing events. The Culture, Place and Policy Institute evaluated the socio-economic impact on the city of the year-long cultural programme, and informed and influenced associated local heritage projects such as Hull’s successful ‘Maritime City’ bid (National Lottery). This work contributed to the emergence of the creative industries theme as a research priority.

The strategy has also enabled new areas of research and a dynamic group of research centres, including the GW Gray Centre for Advanced Materials, the Hoggart Centre for Comparative Cultural Studies, the Centre for Human Factors and the EA Milne Centre for Astrophysics. These centres have been successful in focusing research priorities with the latter securing £700k STFC funding.

Overall, the new university-level institutes have secured £11.2million in externally funded income and our investment in PhD clusters has funded over 170 scholarships in 50 clusters, supporting strategic priorities in diverse research areas. We have additionally match-funded 53 scholarships to externally funded projects successfully building new partnerships and collaborations as a result.

### 2.3 Research and Innovation Support

The creation of a central research and innovation team (R&I) to foster, grow and support research and innovation development, governance and impact has been pivotal in delivering the research strategy. The R&I team supports researchers throughout the research lifecycle, supporting proposal development, project costing and advice on planning and delivery of impact. Impact and commercialisation of our research are further supported through the Knowledge Exchange team and faculty specific resources. This transformation enabled a focus on longer, larger grants with multidisciplinary collaboration, wide engagement and impact. This is exemplified by The Plastics Collaboratory, a £1.2million EPSRC Plastics Research Innovation Fund project based on a collaboration of 45 academics from 14 departments/schools to collectively address the issue of plastic waste and pollution.

The University embraces the principles of the Concordat for Supporting Research Integrity through robust systems of research governance and our framework of regulations, principles and standards of good practice. This ensures all research is of high quality and is undertaken with integrity. The University’s ethics review system is managed through Faculty Ethics Committees with University

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Ethics Committee oversight. Ethics and integrity training are mandatory for all staff and postgraduate students undertaking research.

Our Open Access Policy commits the University to provide systems and support for 'green' open access and outputs are made available through our [institutional repository](#). Support for 'gold' open access is provided through the UKRI Block Grant and Library Collections budget to allow participation in national read-and-publish deals, publisher-specific prepayment accounts and publication of individual outputs. The principles of the University [statement on responsible metrics](#) are being embedded in our activities and policies.

The University Library supports internal systems and contracts with external suppliers to meet research data storage and preservation needs through the Research Data Management and Sharing Policy. This includes providing research data storage facilities and expert advice on data management plans. Researchers utilise the University's digital repositories for data preservation and are guided towards discipline-specific external services.

Researchers are supported by the Marketing and Communications team across multiple platforms, including online, social media, PR and media, printed collateral and event support. Our research successes are celebrated and showcased through news updates, events, newsletters, social media, internal communications and case studies. Effective marketing support is provided for funding applications, post-award promotion and dissemination of research outcomes.

### 2.4 Future Strategy

Over the REF period the University has made rapid progress in enhancing its research status and reputation in a number of distinctive areas (Figure 1). Our aim is to build on these successes, whilst enabling all our researchers to carry out excellent research that competes at an international level and delivers significant impact. We are well placed to address the challenges and opportunities of a rapidly changing world. A *global* approach coupled with a focus on our thematic research areas and a need to build and maintain robust partnerships and collaborations will continue to be a central part of our onward strategy. We are committed to nurturing our researchers through a focus on development of early career academics, career enhancement, and by continuing to improve the diversity of our research community. We will continue to target investments in capability, capacity and infrastructure to support managed sustainable growth with a focus on high quality interdisciplinary thematic research.

### 3. People

#### 3.1 Supporting Researchers

The University's research strategy prioritises the nurturing of excellent researchers. It commits to attracting, developing and empowering a diverse community of talented researchers and research students; enabling them to deliver world-leading research and innovation and to fostering a research environment that is inspiring, intellectually challenging, inclusive, collegiate and collaborative.

The Academic Careers Framework (ACF) was introduced in 2018 to support the alignment of personal and professional development with the University's strategic objectives. The framework is designed to support a vibrant community of academics delivering excellence in their primary domain, whether research, education or knowledge exchange. The application of the framework enables academic staff to be recognised, developed, valued and rewarded for their work with parity in support, promotion opportunities and personal and professional development - whichever domain they are in. The ACF provides for staff transitioning between domains or to return after time in University leadership roles with supported development plans.

The University is a member of Vitae and actively supports the Concordat to Support the Career Development of Researchers, as recognised through holding the HR Excellence in Research Award since 2012 and alignment with the principles of the European Charter for Researchers and Code of Conduct for Recruitment.

As a result of survey feedback (e.g. CROS and PiRLS), we have improved Appraisal and Development reviews to accurately reflect the career development needs of ECAs, including specific reference to research integrity training and a prompt for career-focussed conversations. The portfolio of research-related training opportunities has been enhanced and includes activities relating to impact, publication, governance and public engagement. Our training support for researchers covers all elements of the Vitae Researcher Development Framework (RDF). Support for those seeking promotion has been improved with a tailored online course, briefings and drop-in sessions for prospective applicants.

The support given to our research community and a more robust promotion process has resulted in increased diversity in our promotions. Over the REF 2021 period, 133 of our staff have been promoted to Senior Lecturer, 51 to Reader and 39 to Professor. Our promotions data demonstrate an increase both in the proportion of applications from female colleagues and a corresponding increase in promotions.

We have developed the Graduate School into a Doctoral College to integrate postgraduate activity across the University and to ensure a vibrant research experience for all postgraduate research students. A cornerstone of this is an accredited Postgraduate Researcher Training Scheme for all postgraduate researchers, regardless of funding or sponsorship. The scheme is aligned with VITAE's RDF and mandates a range of generic research training, including research integrity and ethics. The Doctoral College provides support through writing retreats, research seminars, public engagement opportunities, funding for conferences and events and focus groups. Support for the University's CDTs and DTPs (section 4) is coordinated through the Doctoral College.

#### 3.2 Ensuring Equality of Opportunity and a Diverse and Inclusive Research Community



Inclusivity is a core value of the University. We are committed to ensuring all staff feel welcome, supported and respected. Through inclusivity networks, values-based communications and proactive development events and activities based around key characteristics and calendar dates (such as Black History Month, LGBTQ+ History Month, Disability History Month), we work to create cultural change through positive reinforcement of behaviours which uphold our goals of diversity, respect and inclusion. This work is led by our Inclusion & Campus Community Team. We hold institutional and departmental Bronze Athena Swan Charter accreditations (Silver in the Hull York Medical School) and we remain committed to progressing these accreditations through detailed institutional and individual faculty plans.

As outlined in our Code of Practice, all staff with an Academic Employment Function of Teaching and Research were submitted to REF 2021. Our submitted population was 15.6% BAME (9.9% in REF 2014), 2.7% LGBT (1.1% in REF 2014), 32% were female (33.3% in REF 2014) and 7.4% had a declared disability (7.5% in REF 2014).

The University has taken successful steps towards improving the historical underrepresentation of female research staff through proactively encouraging staff to participate in initiatives such as the Minerva Network for Academic Women, the Women in Higher Education Network and Aurora programme (AdvanceHE). As a consequence, the proportion of promotion applications by female staff has increased significantly (35% to 43%) – and the success rate of these applications even more so (51% to 73%). We are embedding policy and support for transgender colleagues with assistance from Gendered Intelligence for Training and Stonewall, as a member of their Diversity Champion Programme. We have made significant commitments over the past 12 months in direct response to the Equality & Human Rights Commission report on Tackling Racial Harassment and the #blacklivesmatter movement to advance our agenda for racial inclusion.

Over the REF period, the number of female PGR students has increased from 45% to 49% of the population. 29% of our PGR students in 2019/20 were BAME and 15% had a declared disability. To ensure that diversity is not a factor in recruitment, our AURA CDT has pioneered innovative recruitment and selection processes that have equality, diversity and inclusion at their core, including a double-blind process, monitoring from advertisement to interview and bias training that has been highlighted by UKRI and EPSRC as best practice in the sector. We are in the process of rolling this approach out across the University.

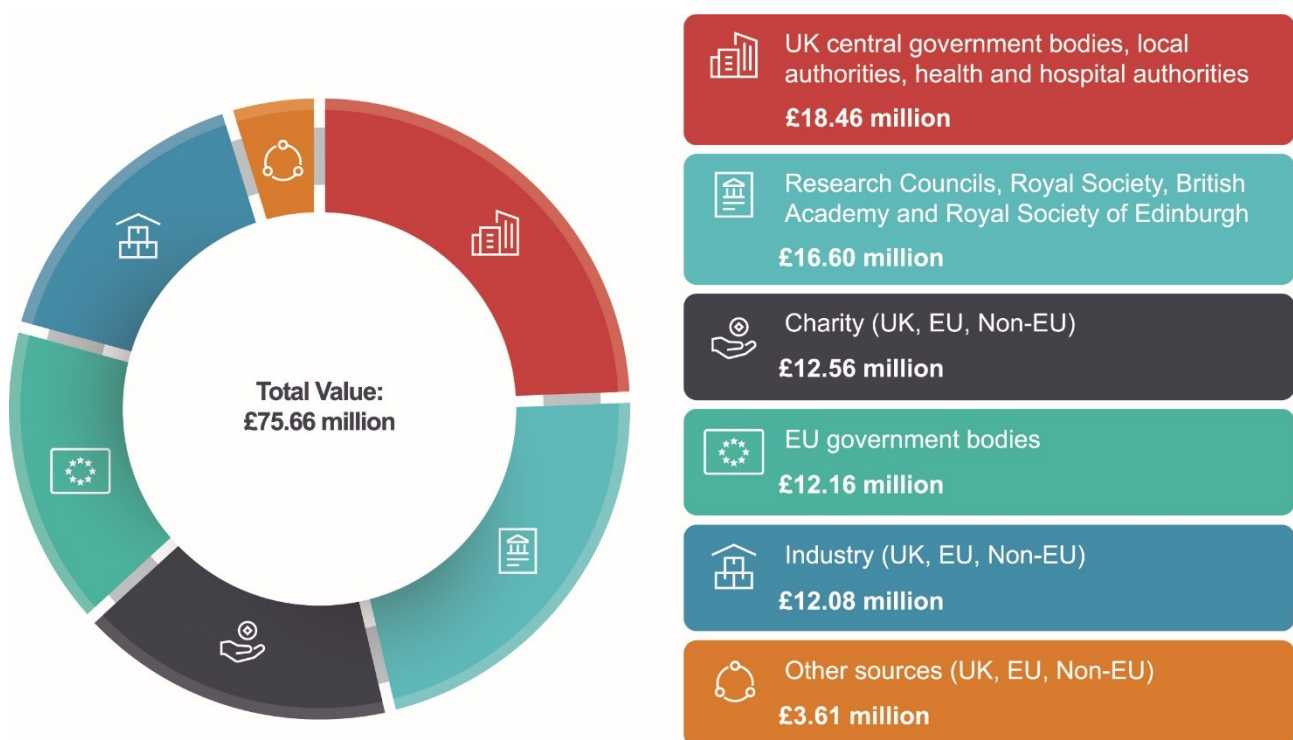
We recognise that although we have made progress we still have much to do and we are committed to further improvement and achieving our goals of diversity, respect and inclusion.

**4. Income, infrastructure and facilities**

The University has invested in systems, facilities and people to support research and impact throughout this REF period. The investments have resulted in a substantially increased value of awards, an enhanced physical environment for the research community and more effective research processes and procedures.

**4.1 Income and awards**

The University has secured over £150million external investment in its research and innovation activities, including £75.6million from research grants and contracts (Figure 3). The University has a successful history of engaging in the EU’s framework programmes and has been awarded 25 projects valued at €11.8 million from the current Horizon 2020 programme, collaborating with 215 different organisations from 24 countries.



**Figure 3.** Research income by major source in REF 2021.

The following demonstrates the diversity of our funded research projects:

- Morphodynamic Stickiness: the influence of physical and biological cohesion in sedimentary systems (ERC Consolidator, 2017, €2,581,155);
- TRANSFORM: Reducing Inequalities in Cancer Outcomes in Yorkshire (Yorkshire Cancer Research, 2017, £4,945,546), collaborating with the Hull University Teaching Hospital NHS Trust and University of York;
- ‘Antislavery Usable Past’ aimed to create a series of ground-breaking databases to understand cultures of anti-slavery activism (AHRC, 2014, £1.5million);
- ‘Liverpool-Humber Optimisation of Freight Transport’ aims to establish a freight transport corridor between Liverpool and the Humber, reducing UK land freight transport through collaborative multi-modal transport planning, lowering congestion and CO<sub>2</sub> emissions (Innovate UK, 2017, £1,489,613);

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- Project X aims to deepen academic and policy makers' understanding major government project and programme delivery in collaboration with the Cabinet office and universities including Sussex, Oxford and Manchester (ESRC, 2018, £1,001,783);
- 'A low carbon heating system for existing public buildings employing the innovative mixed indoor/outdoor air source heat pump and multiple-throughout-flowing micro-channel solar panels array' (BEIS, 2018, £1,982,251.20).

In addition to HESA-reportable research grants and contracts the University has also been successful in securing additional research funding. This includes:

- Yorkshire Cancer Research endowment funding (£5million)
- I3 (£400k) from Research England to increase the scale and impact of our research on palliative and chronic care through international collaboration with the University Technology Sydney.
- Thyme (£1.25m) a Connecting Capabilities Fund project to boost the bioeconomy across Yorkshire, the Humber region and the Tees Valley

The University is part of four CDTs or equivalent, expanding provision for doctoral research students. These are the EPSRC-NERC Aura CDT, the NERC Panorama DTP, the ESRC White Rose Social Sciences DTP and the AHRC Heritage Consortium. The University also fully funds 50-60 PhD Scholarships annually (Section 2).

Our research funding is complemented by approximately £40million innovation funding from ESIF (Figure 2). This enables our researchers to collaborate with external partners and provides opportunities to drive impact from our research. These investments include:

- Aura Innovation Centre (£12million)
- Flood Innovation Centre (£3.4million)
- Sparkfund (£ 17.8 million), an innovation support and grants programme

### 4.2 Infrastructure and Facilities

University of Hull is primarily campus-based but has strategically aligned satellite research sites at Castle Hill Hospital, The Deep Conservation Aquarium, Hull History Centre, Aura Innovation Centre and historic city centre locations for the Marine and Maritime Institute (Blaydes House) and the Wilberforce Institute (Oriel Chambers) to ensure appropriate access and proximity to important place-based partners.

In 2016 the University's main performance auditorium (Middleton Hall) and associated recording studios were refurbished (£9.6million) to the standard of leading-edge facilities with Solid State Logic consoles, including a 3D Ambisonics studio and concert hall with an innovative automated flexible acoustic. The hall was central to the City of Culture celebrations including a live broadcast of A Clockwork Orange on BBC Radio 3 performed by the BBC Philharmonic.

To support health-related research, we have invested in a health campus including ICAHR, the Hull Health Trials Unit and a new £28million Medical School Building. Linked to the Health Campus is a £12million investment in The Molecular Imaging Research Centre at Castle Hill Hospital and investments with pioneering healthcare businesses.

The University's High-Performance Computer (VIPER), a £2.86 million investment in one of the most powerful academic HPC resources in the UK, ran its first job in 2016. The cluster has approximately 5,500 Intel Broadwell CPU cores and includes high memory nodes with 1TB RAM, dedicated GPU

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nodes and visualisation nodes. VIPER is supported by a team of HPC system specialists. To date, more than 3.2 million jobs have run VIPER, consuming 120 million core hours and used by 470 staff and students. Work undertaken on VIPER has contributed to at least 69 research outputs to date.

A £2.2m investment in a new Energy and Environment Building, provided dedicated collaboration space to focus on research concerning environmental resilience and sustainability. During the REF period there have been further investments in flume equipment, ICPMS, specialist and field equipment and the University has maintained its investment in the state-of-the-art Total Environment Simulator. The University has partnered with Humberside Fire and Rescue Service to design and propose a research-led National Centre for Flood Resilience (Ark). Through Aura, academics are linked to other universities, specialist centres and industry. The £12m Aura Innovation Centre (AIC) provides space with specialist support and infrastructure to enable collaborative research and innovation (see section 2) focused on low carbon sectors.

The University's Brynmor Jones Library houses research collections and is open 24/7. Fully refurbished in 2015 at a cost of £28million, the Library houses more than a million books (including more than 4000 rare books), has separate research study areas, a PGR-only facility and collaborative working zones. Extensive archive collections are available through Hull History Centre, a purpose-built city-centre location managed in partnership between the University and Hull City Council.

In addition to specialist facilities the University has invested in research equipment to improve and replace redundant equipment and to support new areas of research. This includes a technology innovation hub, new sports centre, the Bloomberg Suite (an industry standard facility giving real-time access to global financial data) and redevelopment of dedicated PGR workspaces in the faculties.

Research management was enhanced by a new research information system (Worktribe). The system enables researchers to develop project ideas, apply for funding approvals, track spend against active projects and record all outputs. This provides automatic updates to staff website profiles and easy management of Open Access compliance. The University also provides access to Grantfinder, enabling researchers and research managers to search for relevant funding sources and identify potential new funders.

Our targeted investments into research support teams, research systems, high performance computing, equipment, buildings, and vehicles for impact (ESIF programmes) have had a positive impact on our capabilities and capacity to produce internationally excellence research. We will continue to make targeted investments in our infrastructure to support managed sustainable growth and greater research outcomes.