

Institution: Loughborough University**1. Context and mission**

Since 2014, Loughborough's unprecedented growth includes a new campus at Queen Elizabeth Olympic Park, National Centres for 'Sport and Exercise Medicine' and 'Combustion and Aerothermal Technologies', and £59M investment in state-of-the-art STEM facilities. Institutional progression is evidenced by top 10 rankings in every UK league table simultaneously for the last four years, *Times Higher* "Entrepreneurial University of the Year" 2019 and *Times & Sunday Times* "University of the Year" 2019.

1.1 Size

We employ c.3400 staff, including 893 academic and over 300 research staff, and support c.18500 students, including 1500 doctoral students (35% international). Since 2013/14, our strategic investments increased eligible staff by 26% (+183FTE).

We now operate from two campuses, one in Loughborough and, as our primary strategic growth initiative, one on **Queen Elizabeth Olympic Park (QEOP) London**, with 59 faculty and 1000 postgraduates (taught and research).

Loughborough campus hosts a 2500-strong business community (80+ organisations) on **Science and Enterprise Park (LUSEP)**, one of the UK's largest science parks. As our second major strategic growth initiative, supporting impact, LUSEP has grown by 60% since 2014, after opening the Advanced Technology Innovation Centre (2015, c.40 start-ups) and building the Access Group headquarters (2020, 500 staff).

1.2 Structures

The University is led by the Vice-Chancellor, supported by an **executive team** comprising the Deputy Vice-Chancellor (DVC), three Pro Vice-Chancellors (PVCs for Teaching, Research, Enterprise), Chief Operating Officer, and Director of Finance.

Council formally approves the University strategy, while **Senate** has responsibility for all academic matters. Each routinely considers research and impact performance, including Key Performance Indicators.

All nine **Schools** are research-intensive:

1. Architecture, Building and Civil Engineering
2. Aeronautical, Automotive, Chemical and Materials Engineering
3. Business and Economics
4. Design and Creative Arts
5. Loughborough University London
6. Mechanical, Electrical and Manufacturing Engineering
7. Science
8. Social Sciences and Humanities
9. Sport, Exercise and Health Sciences

Deans lead each School, supported by Associate Deans (AD) for Teaching, Research and Enterprise. The ADs connect School Senior Management Teams to PVC-chaired institution-wide committees. This ensures that academic delivery in Schools and collective institutional ambition influence decisions wherever they are taken. This is reinforced by the Academic Leadership Team, comprising the executive team and School Deans.

Research and impact strategy and its delivery are governed via two bodies. **Research Committee** (sub-committee of Senate) acts on all matters related to research and impact, including the CALIBRE research framework. It is chaired by the **PVC (Research)** with membership including the **Associate Deans (Research)**, **Associate PVC (Doctoral College)** and the research section heads from Professional Services. **Enterprise Committee** (sub-committee of Senate and Council) co-leads on research impact and is chaired by the **PVC (Enterprise)** with membership including the **Associate Deans (Enterprise)** and the enterprise section heads from Professional Services. The PVCs are supported by a unified **Research and Enterprise Office (REO)**, restructured under new Directorship in 2019, and by an **Associate PVC (REF)**.

CALIBRE, which promotes excellence and **interdisciplinary** collaboration, formally identifies five **Beacons** and four **Global Challenges**. They facilitate community-building internally and enhance standing externally. With an appointed Academic Lead and developmental deputies (often EDI-driven), they are prioritised for operational support and strategic investment.

Strategic **enhancements to our School structure** have delivered transformational benefits to our research and impact environment, with first-time submissions (A2, C19) evidencing vitality. Examples touch all our Units:

- 2015: Opened Loughborough University London (LUL) with disciplinary diversity as a prized attribute. Its seven Institutes have close relationships to regional businesses. Staff return to seven UoAs including C19.
- 2016: Schools merged to recognise increasing integration between mechanical and electrical systems, creating the Wolfson School of Mechanical, Electrical and Manufacturing Engineering.
- 2018: Introduced Architecture within a new School of Architecture, Building and Civil Engineering.
- 2019: Restructured to create i) the School of Social Sciences and Humanities, raising the profile of those disciplines, including Politics (C19), and ii) the School of Design and Creative Arts, to consolidate synergies between those disciplines after returning them together in REF2014.

1.3 Mission

The **University 'Building Excellence' Strategy**, launched 2014, articulates our mission as:

1. To further knowledge and understanding through internationally recognised research.
2. To provide a high quality, comprehensive educational experience that prepares our graduates for their future lives and the global workplace.
3. To influence the economic and social development of individuals, businesses, the professions, and communities.
4. To shape national and international policy and practice.

We are committed to **integration of Research with Teaching and Enterprise**, which applies both to individual staff and our collective endeavour. It is evident in the top 10 Research Intensity ranking (England) in REF2014 and our seven prestigious Queen's Anniversary Prizes.

Commitment to **engagement with innovation communities and businesses**, large and small, recognising the **special power of local collaboration**, is a principle shared by both campuses. On LUSEP, we have strategically nurtured our own community (start-ups, National Governing Bodies like *Sport England*, multinationals like *Rolls-Royce*). On QEOP, we were the first-movers in the **Here East Innovation Cluster** which now hosts Europe's largest Innovation Centre (Plexal), BT Sport and Ford's Smart Mobility Initiative.

Loughborough is unaffiliated. Under our strategy commitment to collaboration for regional ('Place') benefit, we are a founder (2015) of **Midlands Innovation** (the partnership of the Midlands' eight research-intensive universities). Major collaborations include:

1. Energy Research Accelerator (**ERA**): £60M InnovateUK, state-of-the-art experimental facilities.
2. **MICRA** (MI Commercialisation of Research Accelerator): £5M, HEFCE Connecting Capability Fund, 2018-21, investor access to partners' collective intellectual property.
3. **TALENT**: £5M, RED Fund, advancing the status of technical staff.

2. Strategy and Achievements

2.1 Strategy for Research and Enabling Impact

Two of the four Themes in 'Building Excellence' apply here:

1. Raising Standards and Aspirations
(through CALIBRE's **Beacon, Ambition and Adventure Programmes**)
2. Growing Capacity and Influence
(through CALIBRE's **Global Challenges, Thought Leadership and Here to Stay Programmes**)

The **CALIBRE Framework** (**C**ollective **A**mbition at **L**oughborough for **B**uilding **R**esearch **E**xcellence) (Senate approved 2015, building on REF2014 evaluation) implements the Strategy for research and impact across eight Programmes (two covered in Section 3), each mapped to a Theme. CALIBRE celebrates three decades of research advancement while driving even greater **Ambition**, with overt reinforcement of **Excellence**.



Figure 1: The CALIBRE framework

CALIBRE sharpened focus on priority research areas in each School and made a first-ever formal declaration of institution-wide priorities. These incentivised a **Collective** approach to research and impact challenges, with corresponding support structures created in the REO. Development of **research collaborations, networks and partnerships** is fundamental within CALIBRE and exemplified in achievements below.

2.2 Achievements

CALIBRE's step-change achievements include £168M new research awards from 16/17 (11% ahead of Council's KPI) and outputs in top 10% most cited up by 50% in the last five years. Headlines are provided below and elaborated on in REF5bs.

Beacons are broad, enduring and internationally recognised strengths. Selected achievements:

- **Built Environment** (Primary UoAs C13/D32): Founder-member of UK Collaboratorium for Research on Infrastructure and Cities (UKCRIC, 13 HE partners, 2015), leading on postdoc development ('C-DICE', RED Fund, £3.9M, 2020) and National Facility for Infrastructure Construction (2020). Second renewal of London (UCL)-Loughborough EPSRC Centre for Doctoral Training in Energy Demand/Resilience.
- **Communication and Culture** (Primary UoAs C19/C20/D27/D32/D34): Maintained top 50 QS World University Ranking (Communication and Media) since 2016. Joined Midlands Graduate School ESRC DTP 2017.
- **High Value Manufacturing** (Primary UoAs B11/B12/D32): Founder and Main Board member of Manufacturing Technology Centre (MTC, 700 staff, £90M turnover), part of the High Value Manufacture Catapult. Successful submission to lead £4.3m EPSRC Interdisciplinary Centre for Circular Chemical Economy.
- **Sport and Exercise** (Primary UoAs A2/B12/C24): Long-term strategic investment culminated in establishment of the National Centre for Sport and Exercise Medicine (NCSEM, 2015, £17M external funds plus £6.5M internal) as an Olympic legacy project, receiving IOC-accreditation (renewed 2019) as Centre for the Prevention of Injury and Protection of Athlete Health. #1 QS World University Ranking, four consecutive years (2017-20).
- **Transport Technologies** (Primary UoAs B11/B12/C13/D32): Digital Engineering 'spoke' within UK Automotive Council's Advanced Propulsion Centre network (BEIS, £6.4M, 2015); opened National Centre for Combustion and Aerothermal Technologies (£14M from ATI and Rolls-Royce, 2019); joined Smart Mobility Living Lab (SMLL, £13.4m, trialling future mobility technology within public environments).

Centres of Excellence also have formal recognition and prioritised support. For example, Centre for Research in Social Policy (UoAC20) leads the national 'living wage' agenda and has expanded internationally (EU, Japan, Singapore, South Africa), Mathematics Education Centre (UoAC23) secured Research England E3 funding (£6.6M) to transform mathematical cognition.

The **Ambition Programme** supports activity in areas where we have identified opportunities to achieve at a higher level. For example:

- Arts and Humanities (Primary UoAs D27/D32): Partner on UKRI Business of Fashion, Textiles and Technology Creative Industries Clusters Programme, led by University of the Arts (£5.6M, 2018-23).
- Collaborations between London and Loughborough Schools (Primary UoAs C24/D32/D34): 'Para Sport Against Stigma' (£1.9M, 2018-23, with the International Paralympic Committee).

The **Adventure Programme** supports blue-skies activity, often inspiring interdisciplinary collaborations. In open competition, we invested over £5M internal funds (plus £1.2M EPSRC DTP), providing cohort experiences to 101 students in 22 unique **mini-Centres for Doctoral**

Training, across diverse topics: 'Brain-on-a-chip (B8)', 'Geometry in Robotics (B10/B12)', 'Gender identity in sport (C24/D34)', 'Feminism, Sexual Politics, and Visual Culture (C19/D27/D32/D34)'.

Together, vitality in the Ambition and Adventure Programmes balances the stability of the Beacons.

Global Challenges combine strengths across disciplines to address the biggest societal challenges of the day, in developed and developing worlds. Selected achievements:

- **Energy** (Primary UoAs B8/B9/B12/C13/C14/D32): leading major FCDO programmes in the Global South (Modern Energy Cooking Services, £38M, accessibility to clean cooking technologies and sustainable energy, awarded 2018, expanded 2019; Climate Compatible Growth, £38M, holistic approach to development, infrastructure and systems, awarded 2020).
- **Changing Environments and Infrastructure** (Primary UoAs C13/C14/D27/D32): Installed world's highest weather station (8430m on Mount Everest) and award-winning 'SLOPEAlarms' landslide early-warning systems monitoring critical infrastructure and protecting vulnerable communities worldwide.
- **Health and Wellbeing** (Primary UoAs A2/B8/B12/C13/C20/C24/D32/D34): supporting the COVID-19 response in the Midlands (mental health toolkit for businesses to manage return to work) and globally (UK lead in study of impact of government advice on behaviour, 20 countries).
- **Secure and Resilient Societies** (Primary UoAs B8/B12/C13/C17/D32): Toxi-Triage (H2020, €12M, 17 partners) reformed emergency services response to chemical, biological, radioactive, or nuclear incidents, with full-scale field trials (Athens 2018, Finland 2019).

The **Thought Leadership** programme makes engaging the public core to our research and impact strategy. Our General Election 2019 microsite had 37k page views from 91 countries; the 'COVID-19, exercise and immunity' online lecture series in June/July 2020 attracted almost 2000 participants, while the reach of the 'future of transport' PR campaign is evidenced by 449 news appearances.

The **Institute of Advanced Studies** (IAS), flagship of the **Here to Stay** Programme, invites world-leading researchers to participate in themed programmes. Since launch (2017), the step-change in our positioning as an international collaborator is evidenced by our hosting of 214 Fellows from 35 countries including **Nobel Laureates** Ramakrishnan (Chemistry), Kosterlitz (Physics), and **Fields Medallist** Birkar. **International House** (opened 2019) is the focal point for visitors, with workshop and informal spaces.

2.3 Implementing Strategy

Schools operationalise the strategy through **Research Action Plans** (RAP, led by Associate Deans and steered by PVC). RAPs set ambitions for research quality (outputs, responsible bibliometrics, open research, collaboration, funding), PGR matters (recruitment, funding, submission times, experience), and impact. A dedicated sub-committee of Research Committee scrutinises RAPs annually and supports delivery. For AY18/19 (i.e., pre-pandemic), PGR intake and new awards both reached record levels. **CALIBRE Awards** celebrate achievement, with themes (e.g., open research, equality and diversity, international collaboration) raising visibility of strategic dimensions.

2.4 Enabling and Facilitating Impact

The Times Higher **Entrepreneurial University of the Year Award 2019** praised our embedded approach to impact, with ADEs in every School, inclusion in all academic contracts, and regional

engagements. Impact sits in both research and enterprise strategies and each School's progress is reviewed annually by a joint sub-committee of Research and Enterprise Committees.

Formal objectives, from the Higher Education Innovation Fund (HEIF) strategy, map to the Strategy Themes:

1. *Raising Standards and Aspirations*: To accelerate the creation of social, cultural and economic impact through research-informed knowledge exchange.
2. *Growing Capacity and Influence*: To be a partner of choice across the business, public and voluntary sectors with local, national and international organisations.

Specialist Research and Enterprise Office support is comprehensive (Section 4). **Funding from HEIF and EPSRC Impact Acceleration Account** (c.£1.25M/year) has been competitively awarded to 170 projects from proof-of-concept to market research, across all disciplines. **Enterprise Awards** celebrate our achievements jointly with external partners.

We are a proactive, business-friendly hub driving **knowledge exchange within our regional communities**, supporting start-up businesses (LUSEP and Plexal Innovation Centres) and regional SMEs (using KTP and ERDF funding), while also engaging with national and multinational organisations. We leverage off one of the UK's largest student placement schemes (c.1300 organisations each year) and find our best partners engage broadly across research, teaching and enterprise. As planned, LUL has opened up many new opportunities, such as relationship-renewal (Ford), participation in public investments (SMLL led by TRL with Transport for London) and private investments (Sport Technology Accelerator, supported 18 SMEs to secure c.£3m investment).

Our **wider contributions to the economy and society** are significant. In Loughborough, we have strong relationships with Borough and County Councils, Leicester and Leicestershire Enterprise Partnership (Vice-Chancellor is Board member) and neighbouring LEPs. We are a founder-member of new East Midlands Development Corporation (EMDC) Board, described as "a once-in-a-generation opportunity" by Sir John Peace, Midlands Engine Chairman. Paul Brickell, Executive Director of London Legacy Development Corporation, describes our "sustained commitment to QEOP" as "pivotal to the regeneration of this part of London, directly influencing Ford's decision to locate at Here East and the development of Plexal".

2.5 Future Strategic Goals

Development of the new University Strategy began in September 2020 (aligned to original REF timetable), for Council approval in November 2021. Research and Enterprise Committees are fundamental in the strategy development and the cascade to School RAPs.

Our mission as a research-intensive university creating social, cultural, and economic impacts is enduring. We will retain CALIBRE's fundamental commitments to research quality and visibility, with increased emphasis on Open Research, EDI, and international collaboration, including institutional PGR partnerships and launch of competitive IAS Residential Fellowships. Schools will lead on their disciplinary and mission-led priorities. REF5bs set out their goals including major projects recently secured, some of which are on a scale that will drive our institutional reputation for a decade. Research Committee has committed to retention of institutional priority themes, building on current Beacon and Global Challenge Programmes with emphasis on societal and economic recovery post-pandemic.

Increasing the influence of our research will be core to the new Strategy. Partnerships will also be critical, supported by expansion of LUSEP (outline planning permission and Enterprise Zone status gained) and community growth at QEOP (e.g., BBC, Sadler's Wells, and the V&A). Engagement with the Midlands Engine Economic Observatory and our leadership of the Automotive Council's "Advancing Digitalisation" Mission (one of just three alongside 'Transition

to Zero' and 'Mobility') exemplify commitments to post-pandemic recovery at regional and national levels. We will open two new Centres; the Industrial Policy Research Centre (with MTC, launched September 2020) and a Policy and Governance Unit at LUL (AY21/22).

We hope to see fruition of exciting developments currently in preparation including a **UK National Centre for Zero Emissions** (£600M, 10-year programme) based at the former Ratcliffe Power Station, just north of Loughborough, a £250M investment in **MI Energy Research Accelerator Phase 2**, and growth in our rehabilitation work, from military trauma to ageing population, following relocation to just outside Loughborough of the **Defence and National Rehabilitation Centre**, whose Academic Partnership we lead.

2.6 Open Research

Loughborough is a pioneer of Open Research, supporting Repositories for text-based outputs (since 2005) and data (since 2015). For the proportion of outputs available **on Open Access we rank globally 9th (CWTS Leiden Ranking 2020) and 4th by green Open Access (Open Knowledge Project, Curtin University, 2020)**. We released one of the UK's first 'Responsible Use of Bibliometric Indicators' Statements (2016), to some international acclaim, and our landmark Open Research Position Statement (2019) committed to depositing the full-text of 100% of our primary research outputs in our new (2019) Research Repository from 2020. We see Open Research as a strategic opportunity to enhance research quality and visibility.

2.7 Culture of Research Integrity

Our **Code of Practice for Research** is underpinned by UUK's Concordat to Support Research Integrity. We support the goals of the UK Research Integrity Office (UKRIO) and make public an annual research integrity statement. The CoP and associated policies (misconduct, whistleblowing) are integral to the **Ethical Policy Framework**, which guides Ethics Committee (EC) via explicit 'Ethical Principles'. EC membership includes a lay chair, senior officers (DVC, PVCR, Dean), and researchers. EC is responsible for all ethical matters arising in the conduct of University business, including experiments with human participants and philanthropic gifts. The Framework guarantees the clear backing of the institution to leaders of approved projects exploring difficult ethical issues.

3. People

The two 'people' Themes in 'Building Excellence' apply here:

1. Investing in Our Staff (through CALIBRE's **Research Leaders Programme**)
2. Educating for Success (through CALIBRE's **Doctoral College**)

Careers in Research Online Survey (CROS), Principal Investigators and Research Leaders Survey (PIRLS), Postgraduate Research Experience Survey (PRES) and the University's Staff Survey inform our implementation.

3.1 Staff Recruitment

We have radically changed our academic recruitment strategy. The shift to biannual institutional campaigns was initiated by '**Excellence100**' (2017-19), our campaign to recruit an additional 100 of the world's best academics (all career stages). Targeted advertising used positive role models and promoted family friendly policies, delivering excellent EDI outcomes (40% BAME applicants, 40% female hires). Five-year Vice-Chancellor's Research Fellowships (2-5 years since PhD) and 2-year Doctoral Prize Fellowships (0-2 years since PhD) were special innovations targeting ECRs. With excellence as the primary criterion, the campaigns support **succession planning** more effectively than piecemeal hires.

3.2 Staff Development

Organisational Development leads a comprehensive **research leadership** framework from PhD level onward.

For **post-doctoral researchers**, our HR Excellence in Research Award (continuously renewed since 2010) recognises our implementation of the principles of the *Concordat to Support the Career Development of Researchers*. Vitae membership emphasises our commitment; for example, 897 researchers gained 'Essential Teaching Skills', 43 become Associate Fellows and 13 Fellows of the Higher Education Academy (since 2016). In 2014, we introduced promotion routes for independent researchers to Fellow / Senior Fellow / Professor. Prestigious postdoctoral Fellowships were a notable success: externally funded ECR Research Fellows in post (census date) quadrupled under CALIBRE. In addition, we offer Doctoral Prize Fellowships per year in any discipline.

Our PVCN-led **New Lecturers' Programme (NLP)** offers three years' comprehensive training. Protected teaching workload (33%, 50%, 67% in consecutive years) allows colleagues to establish their full academic profile (research, teaching, enterprise), guided by a trained advisor. The NLP covers publication, funding, collaboration, public engagement and partnerships, guarantees a PhD studentship and leads to FHEA status. Adjustments are tailored for part-time staff and those taking family leave.

Enhanced provision at the **mid- and senior career** stages includes a dedicated Development Manager whose support for externally funded Fellowships has doubled awards held at this career stage. Developmental CALIBRE-lead roles have accelerated career progression; for example, the deputy lead (Communication and Culture Beacon) was promoted to Professor and subsequently became first female Beacon lead.

Research and impact leave provides 6-12 months of dedicated time to pursue agreed programmes e.g., Inglis (UoAC23) developed our successful E3 submission while on Fellowship. Diversity amongst applicants is encouraged, with excellent success rates: 44% to women, 26% to BAME staff (eligible populations: 33% female, 16% BAME).

Technicians are integral to our research and impact activity. Loughborough is a founding signatory of the Technician's Commitment (2017) which addresses low status and lack of development opportunity. This is now progressed collaboratively as the Midlands Innovation **TALENT** programme.

3.3 Review, Reward and Promotion

In the new (2017) **Performance and Development Review (PDR)** scheme, trained reviewers facilitate developmental discussions that ensure alignment of staff activity with School strategies. Reaching 100% (outside specific cases), participation is transformed, especially for technicians and research staff, while performance ratings make consideration for **reward** significantly more objective than previously.

Substantial strategy-driven revisions to **academic promotion** criteria (Reader/Professor 2015, SL 2016) are articulated as 'Excellence and International Reputation' and 'Academic Leadership and Influence', rather than traditional metrics based on quantity. Cases present achievements across research, teaching and enterprise (including impact) in any combination to encourage balanced portfolios. Part-time working and other personal circumstances are formally accommodated in cases. In 2015, 20% of professors were female. Since then, 41% of professorial promotions have been female. Equality Impact Assessments (EIAs) scrutinise PDR and promotion, with outcomes reported to Human Resources Committee.

3.4 Postgraduate Research (PGR) Students

The **Doctoral College** (DC, launched 2016, replacing 'Graduate School') has Associate Pro Vice-Chancellor (APVC) leadership. DC champions the doctoral community and is active across recruitment, funding, progression, appeals, examination, student experience and skills development, winning a *Times Higher Education* Award 2019. The DC assures quality, working with Schools' Directors of Doctoral Programmes (DDP), who form the Doctoral College Sub-Committee (DCSC). Each School has elected student representatives, led by a 'President' who also sits on DCSC and Research Committee.

We **invest £9M in scholarships** annually, supporting c.1000 individual students since 2014. Research Committee approves DC's allocations which accommodate disciplinary difference to achieve population targets (benchmarked from HESA data), while meeting match-funding and NLP commitments. Allocation 15 months before first intake enhances recruitment outcomes.

In a typical intake, 160-180 students are **externally funded** by, roughly equally, UKRI, charity and business, and self-funders.

The 17 **UKRI Centres** competitively awarded since 2014 represent a step-change from a pre-2014 over-dependence on EPSRC to diverse successes with AHRC, ESRC and NERC:

1. Central England NERC Training Alliance (2014-19, 2019-24).
2. ESRC Midlands Graduate School (2017-22).
3. AHRC Doctoral Training Centres: Design Star (2014-19) and technē2 (2019-24).

The DC also seeks strategic partnerships on scale e.g., China Scholarships Council (20 places, 2020) and British Council South African Doctoral Training Partnership.

We **recruit** via our online channels and external sites ('jobs', 'FindaPhD'). Applicants from all backgrounds are encouraged and invited to identify any special support requirements. Prospective students must have a good first degree in a relevant discipline, often a Masters, and demonstrate aptitude for independent research. Selection processes are institutional, well established and School-led. There are four intake points per year.

All students have a **supervisory team** comprising (minimum) two supervisors and the DDP. Supervisory meetings take place at least monthly, with records maintained on our Co-Tutor system. A rigorous **progression** review is held at the end of each registration year, requiring significant written work and an interview with an Independent Assessor. Processes have been strengthened to increase submissions within the funded period.

A 2016 survey was a turning point for PGR **Wellbeing**, attracting a VC's Excellence Award and sector-wide interest. DC now operates a DCSC-approved Action Plan with an annual 'Wellbeing Week' of events. PGRs can access School Wellbeing Advisers and the University's Employee Assistance Programme with 24/7 confidential helpline. Wellbeing featured prominently in lockdown communications, including a 'Call Campaign' offering one-to-one conversations.

From 'Graduate House' (opened 2016), the DC offers over 200 **skills development** events annually, from inductions to transferable skills and employability training, complemented by dedicated Support Centres for Mathematics and English Language, the Careers Network and extensive provision in Schools. DC runs the Annual Conference, Summer Showcase, Three Minute Thesis competition and 'Diversity in Research' workshops. The Culture Fund has competitively awarded £288k to >250 researchers over five years, establishing initiatives such as the PhD Support and Social Network.

PRES 2019 showed multiple outstanding areas of **research student experience**:

- Satisfaction with training: Research skills (83% vs. 76% nationally), transferable skills (63% vs. 45% nationally).
- Opportunities to teach and associated training: 18% and 13% above national averages, respectively.
- External conference participation, with funding: 83% attend vs. 72% nationally, 73% present vs. 60% nationally.

3.5 Equality and Diversity in Research Careers

Loughborough holds an **Institutional Athena Swan Award** (since 2009, PVCRC leads). We are a Level 2 **Disability Confident Employer** (renewed 2019), a **Race Equality Charter** signatory (one of the first ten, 2018) and a **Stonewall Diversity Champion** (2019). We actively support Staff Groups for: Age; Black and Minority Ethnic; Disability; Part-time; Religion or Belief; LGBT+; Women; International Staff; and Working Parents.

Our 'Building Excellence' strategy declared fundamental values of diversity, respect and inclusion, and initiated a culture change steered by an ambitious EDI action plan; e.g., since 2014/15, female academics have increased by 40%. Our BAME proportions for research (29%) and academic (19%) staff are both c.5% higher than sector figures. Further culture change evidence includes:

- Half the DVC/PVC team is female, including the first female PVC (Enterprise)
- ADs/APVCs associated with research and impact are 30% female (context: 23% professors are female), doubled from 3/22 in 2014.
- 3/18 ADs associated with research and impact are BAME (from 1/22 in 2014).
- 5/11 CALIBRE leadership roles are now held by women, from zero initially (2015).

Respecting Diversity and Unconscious Bias training is mandatory for all staff, with extended training for SMTs. Interviewers undertake mandatory EDI training and single gender panels are not permitted. The DVC discusses equality data with Deans in annual monitoring and PVCRC provides equality data on funding and PhDs for discussion between School research and equality leads.

Comprehensive policies, covering **flexible working**, family and special leave, and phased return, are well established and openly available. Part-time work is actively supported e.g., the PVCRC appointed female job-share Leads for Health and Wellbeing Challenge to support part-time working. Remote working has become the norm during the pandemic with special attention on **staff with caring responsibilities**. We offer **wellbeing support** to staff, including comprehensive mental health support, through counselling, the Employee Assistance Programme and Occupational Health.

3.6 Equality, Diversity and Inclusion (EDI) in the REF Submission

Research Committee created the **REF Code of Practice Working Group** (CoP WG) with a diverse and inclusive membership. In an extensive consultation, all academic and research staff were contacted individually and via Staff Groups. Deans contacted staff on leave directly. Our CoP was ratified with no corrections requested. As part of a step-change commitment to EDI, all 153 submission team members attended comprehensive REF-specific EDI training and an additional 197 output reviewers attended unconscious bias training.

Chaired by the (female) APVC(REF) in the implementation phase, CoP WG held responsibility for the processes around research independence and individual staff circumstances (ISCs), and for EIAs. In September 2019, PVCRC wrote to every researcher; 32 were classified as **independent researchers** and no decisions were challenged. 133 **ISC declarations** were submitted; staff received individual feedback and support, and 33 contributed to REF6 requests across five Units.

Under our Responsible Metrics Policy, our embedded process for self- and peer-assessments of output quality underpinned REF **output selection**. UoA Teams selected the most original, significant and rigorous outputs, irrespective of distribution across individuals or groups. The CoP makes clear that REF aspects (e.g., number of selected outputs associated with an individual) will never be used to assess individual performance.

For output and ICS selection, our **EIA programme** analysed by gender, maternity leave, ethnicity and ECR status. No indicators of bias were found. EIAs also considered Group memberships, prompting addition of an ECR to the CoP WG. While simple attribution of selected outputs neglects the complexities of co-authorship and career stage, those attributions are 29% female, 22% BAME, 3% staff declaring disability, comparing well against corresponding population figures of 33%, 21% and 3%.

4. Income, infrastructure and facilities

4.1 Institutional Strategies for Generating Research Income

External funding is critical to and evidence of the successful delivery of our research and impact strategy across all disciplines. CALIBRE advocates a managed, team-based and supported approach to grant capture. Performance is monitored and benchmarked as income/FTE within HESA cost centres to accommodate disciplinary difference. On this basis, eight of nine Schools are top quartile performers and the ninth received new awards in 18/19 that were more than double the average of the previous three years. Diversification across research councils, overcoming dependence on EPSRC, has been an important goal.

4.2 People Supporting the Strategy

The REO provides comprehensive support (63.5FTE) across six teams, complemented by peer-support from the academic community.

1. **Research Development** comprises the expanded development function with pre- and post-award support. The Research Development Manager (RDM) role (introduced 2014) adds a senior resource aligned with Schools and CALIBRE Programmes.
2. **Researcher Development** supports CALIBRE's Research Leaders, Doctoral College, and IAS programmes. Extraordinary achievement includes 38 externally-funded Fellowships secured in four years from a baseline of six in 2016 when the programme commenced. This includes two UKRI Future Leaders Fellowships.
3. **Partnership Development** supports academics building end-user networks, stimulating knowledge exchange via Knowledge Transfer Partnerships (KTP), projects funded by HEIF and EPSRC IAA, and consultancy through Loughborough University Enterprises Ltd.
4. **Commercialisation** covers IP, patenting, market assessments, licensing, investment and spin-out. The Team leads MICRA and "LU Inc", our incubator for spin-outs and graduate start-ups.
5. **Quality and Visibility** guides researchers on Open Research, ethical review, impact tracking and research integrity.
6. **Legal Services** provide transactional and contractual advice; significant developments include a new Head of Contracts (2017) and Contracts Approval Policy (2018).

4.3 Physical Infrastructure and Facilities Supporting the Strategy

Leaving elaboration and further examples to REF5bs, examples of major **infrastructure investments** are:

- **National Centre for Sport and Exercise Medicine** (2015, £23.5M), leading the UK exercise as medicine agenda, through research, training and clinical services.
- **Elite Athlete Centre** (2018, £7M): state-of-the-art hypobaric training facilities.

Institutional level environment template (REF5a)

- **West Park redevelopment** (2019, £59M): within 20,000m² redevelopment, 2,000m² of new STEM research laboratories for existing research and new areas of bioscience and bioengineering.
- **National Centre for Combustion and Aerothermal Technology** (2020, £15M): UK's primary R&D hub for low-emission gas turbine combustion technologies, with Rolls-Royce as lead partner.

In February 2020, Operations Committee endorsed a capital framework with **future investments** totalling **£183M for 2019-25**, including specific developments for Design and Creative Arts, LUL and LUSEP. The financial consequences of the pandemic have delayed these plans in a way that cannot yet be specified, but our intent remains.