

The University of Manchester

Public benefit statement and impact

The University of Manchester has exempt charity status derived from the Charities Act 2011 and is responsible to the Office for Students, its principal regulator, which, amongst other regulatory powers, is charged with monitoring compliance with charity law obligations. The University, through its governing body, the Board of Governors, is aware of its responsibilities as a charity to act for the public benefit across all its activities and has had due regard to the latest version of the Charity Commission's public benefit guidance (issued September 2013, updated September 2014).

The objects of the University, as set out in the Royal Charter awarded in 2004, are "to advance education, knowledge and wisdom by research, scholarship, learning and teaching, for the benefit of individuals and society at large." This overview includes references to the impact of our investments in these areas. These statements form our public benefit statement.

1. WORLD CLASS RESEARCH

Research impact

In 2021, The University of Manchester was named the world's number one university in the Times Higher Education (THE) Social Impact Rankings. The University topped the table of more than 1,200 universities from around the world on action taken towards the United Nations Sustainable Development Goals (see further detail below in section on Social Responsibility). The University was also placed 35th (up from 36th) in 2021 Academic Ranking of World Universities.

The University of Manchester's five research beacons, comprising Advanced Materials, Biotechnology, Cancer, Energy and Global Inequalities – see www.manchester.ac.uk/beacons - illustrate how our pioneering discoveries, interdisciplinary collaboration and cross-sector partnerships are tackling some of the biggest questions facing the planet.

We have almost 900 research partnerships with public, private and third-sector organisations.

The University excels in discovery and application and is at the forefront of tackling global inequalities – from poverty to social justice, to living conditions, to inequalities in education, health and social care, and the workplace – with more than 300 of our staff working in this area. We are improving understanding of the world and changing it for the better. We seek to guide governments and policymakers towards new approaches to tackling poverty in countries such as Zimbabwe, Bangladesh and Tanzania and the University has been part of the response effort in significant global humanitarian crises in the Philippines, Gaza and Sierra Leone. We are currently helping to address the enormous challenges of dealing with COVID-19 in informal settlements where there is inadequate access to safe water and sanitation, poor quality of housing and over-crowding. In 2020 the University led on a project to define and mitigate the socio-cultural impediments that prevent widespread use of face masks in informal settlements in Kenya and evaluate its impact on the incidence of new infections and hospitalisation. Over 220,000 shanty dwellers have been engaged through an extensive bespoke health promotion campaign and 50,000 face masks were distributed during the peak of the pandemic when the need was maximal. Our Global Development Institute (GDI) is the largest dedicated research and teaching institute of its kind in Europe. Our Humanitarian and Conflict Response Institute is one of the most significant institutions for humanitarian teaching and research in the UK, and worldwide. Last year it was re-designated as a WHO Collaborating Centre for Conflict Analysis and Programming. The GDI is the lead partner for the £32m African Cities Research Consortium (ACRC), funded by the Foreign, Commonwealth and Development Office. The ACRC will approach urban areas as complex systems,

undertaking engaged political analysis, in order to address large scale development challenges. Through the work of the Global Inequalities Beacon, we address inequalities wherever we may find them, tackling problems at local, regional, and global scales.

Manchester is a world-leader in developing new and existing materials for extreme environments and wider applications, including environmental sustainability. We also lead the world in the characterisation of materials – measuring and exploring materials that will help us fully understand their properties and potential. Manchester is at the forefront of biomedical materials, as well as new materials designed to serve the nuclear energy sector. We also host the £64m BP International Centre for Advanced Materials which has established the University as a leading hub for advanced materials expertise, to further the understanding and use of materials in the energy sector. The University is recognised as the leading global knowledge base in graphene and 2D materials, with more than 200 dedicated researchers. Manchester's world-class status as the birthplace of graphene and centre of its international commercialisation, has been reinforced by more than £120m of capital funding to establish the National Graphene Institute and the Graphene Engineering Innovation Centre. These centres of excellence and the Manchester-based Henry Royce Institute hub will contribute to the exciting vision of Graphene City – a community of leading 2D materials scientists and engineers that will become a worldwide beacon, attracting investment and innovators from around the globe. Our advanced materials research continues to move forward and set the research agenda for the future in emerging areas such as materials for quantum technologies.

In cancer research we are making a leading contribution to the fight against the disease. Our approach to cancer research spans the full spectrum of combating the disease. Manchester's medical

research ranges from understanding the molecular and cellular basis of cancer to the development and testing of novel drugs and other therapeutic approaches. Through nursing, psychology and policy work, solutions to the physical, emotional and economic impacts of cancer are being researched and put into practice. We are contributing to improving the evidence base for the treatment and detection of cancer in the UK and forging global partnerships in Africa and other countries as part of our 'precision cancer medicine for all' approach. Our trials led to anastrozole replacing tamoxifen as the major endocrine therapy for breast cancer, a development that has benefited 1.5 million women globally. Our partnerships with companies such as AstraZeneca and GlaxoSmithKline bring new drugs to the market. We are also partners in the Manchester Cancer Research Centre (MCRC) with The Christie NHS Foundation Trust and Cancer Research UK. The Centre's new building will house 150 researchers and world-class facilities for imaging and sample analysis.

The University of Manchester is leading the way, both nationally and across Europe, towards a bio-industrial revolution. We are at the forefront of a European industrial renaissance, creating next-generation chemicals for industrial and health care needs. Using biological resources such as plants, algae, fungi, marine life and micro-organisms, biotechnology, combined with the emerging science of synthetic biology, is changing how we manufacture chemicals and materials, and provides a source of renewable energy. In the Manchester Institute of Biotechnology (MIB), the University has one of Europe's leading industry-interfaced institutes, with world-leading capabilities in chemicals synthesis and manufacture. In 2020, MIB's pioneering expertise in biotechnology was recognised when it was named the winner of the Queen's Anniversary Prize for Higher and Further Education. Supported by a grant portfolio of more than £100m, we partner with some of the world's leading companies from across the chemistry, biotechnology and biopharmaceutical sectors – including GlaxoSmithKline, Shell, Unilever and Pfizer – to drive the creation of new, bio-based chemicals. In 2019, the University was awarded £10m to launch the Future Biomanufacturing Research Hub which will develop new biotechnologies that will speed up bio-based manufacturing in three key sectors – pharmaceuticals, chemicals and engineering materials. This programme of work entails extensive collaborations among STEM and social science colleagues in the field of innovation

management, to understand better the interplay of social, behavioural, and technical factors in the development of sustainable practices and business models that will safeguard the world's future.

The University is also pioneering the energy systems of the future. In doing so we'll be tackling some big questions. Are our energy sources sustainable? Do we transport energy efficiently and how might we further improve such efficiency? How can we simultaneously meet demand while minimising the deleterious effects on our environment? How can we make homes and cities smarter in how they use energy? How might we address the social inequalities that underpin energy use? We have more than 600 staff researching energy solutions for the future. We work closely with our local region on projects such as the UK's largest ever trial of heat pumps. We are discovering more about how today's urban society uses energy, blending expertise from engineering and the social sciences to learn more about demand and how it can be met.

Our Dalton Nuclear Institute is the UK's most advanced academic centre for nuclear research and development and high-level skills development. Our Manchester Environmental Research Institute, the Sustainable Consumption Institute, Manchester Urban Institute, Manchester Institute of Innovation Research and our Tyndall Centre for Climate Change Research continue to make significant contributions to the challenges of what society must do to progress towards the carbon NetZero targets set by many governments and other organisations. This year the University launched its Sustainable Futures Platform, recognising that realising sustainable futures requires new and integrative solutions to address the interacting global environmental challenges. This new Platform brings together the unique depth and breadth of internationally leading research at the University of Manchester to produce integrated and truly sustainable solutions to urgent environmental challenges. Following the award of funding from EPSRC in 2019, we continue to tackle the challenge of plastics pollution through an integrated approach that explicitly couples Manchester's strength in sociotechnological understanding to influence our industry-guided solutions across chemistry, safety, materials, engineering and the social sciences.

Our research makes major contributions to our local communities and Greater

Manchester. The Greater Manchester conurbation has some of the poorest areas in the country, with persistent inequalities of treatment, opportunities and experiences of outcomes between different ethnic, demographic and social groups. It also has a dynamic and ambitious industrial strategy and plan to 'build back better' from the shock of COVID-19. We are making a range of significant contributions to help secure this ambition. Our £26m Biomedical Research Centre working through Health Innovation Manchester in collaboration with the NHS, social care providers and industry, is accelerating the discovery, development and delivery of innovative solutions to help improve the health of the almost three million people in Greater Manchester, and beyond. Our Tyndall Centre is working with the mayor and the Greater Manchester Combined Authority to secure progress towards ambitious carbon reduction targets. We have a vibrant programme of research which address different aspects of inequalities, including the work of our Centre on the Dynamics of Ethnicity (CODE) and the Work Equalities Institute (WEI). In 2020 the University was awarded £32m to establish the Productivity Institute (funded by the Economic and Social Research Council) which aims to better understand, measure, and enable improvements in productivity across the whole of the UK, with the aim to improve living standards and well-being. Our policy@manchester platform provides a vital bridge for engagement and dialogue between our researchers and policy makers in Greater Manchester as well as nationally and internationally.

Research exploitation

The 2020/2021 academic year was the first iteration of the Knowledge Exchange (KE) Framework which measure our performance across a range of KE metrics including 'IP Commercialisation', 'Working with Business' and 'Research Partnerships'. The University of Manchester performed consistently well across the board demonstrating a breadth of strength and activity for exploitation and engagement.

Enterprise and innovation are a critical part of our culture, and the commercialisation and exploitation of our intellectual property (IP) is a fundamental part of our research impact. New companies and jobs have been created, and valuable new products and services have been developed which have been commercialised nationally and internationally.

The University has had a good year in business engagement which has

included large new investments secured, award value totalled £32.9m for the 20/21 academic year and new strategic partnerships finalised with Infineum and the National Physical Laboratory (NPL). Several strategic framework agreements were renewed including AstraZeneca, EDF and Varian, and a variety of new projects and collaborations have been established including BAE Systems, GSK and UKAEA.

The University is currently top of Innovate UK's Knowledge Transfer Partnership (KTP) ranking, holding the largest portfolio of KTPs in the UK. The University currently holds 39 active KTPs, with a total value of £9.9m. 67% of these are with SMEs and 74% of KTPs are with North West based partners, demonstrating the support for economic wealth creation within the region and beyond.

The University of Manchester Innovation Factory Ltd is a wholly owned subsidiary, responsible for identifying and leading the commercialisation of intellectual property (IP) developed and owned by the University. The Innovation Factory's mission is to use this IP to create positive social and economic impact. It achieves this by licensing University IP to 3rd parties and creating new high-value spinout companies. The organisation also carries out a wide range of other activities to help create impact from University research, such as the provision of support for grant applications and engagement with a wide range of stake holders including the alumni network and government.

The Innovation Factory aims to provide a world class service to academics, industry, entrepreneurs, licensees, venture capital and angel investors, corporate venturing partners and others. The Innovation Factory team works closely with academic and student inventors, from all three University Faculties, to identify research that has the potential to create value and provides support to them to translate these into a form where they can be used to benefit society as a whole.

The financial year 2020/21 again saw the Innovation Factory break its previous record for the number of University spinouts created. 13 companies were launched, and the Innovation Factory's Business Development and Investment team have begun to secure investment for these businesses. During the financial year the Innovation Factory secured £3.4m of first-time investment in new University spinouts and also saw an additional £41m of further investments in existing University spinouts. A new record of £7.4m for licensing income generated from

University of Manchester owned IP was also achieved. Income generated from IP licensing and share sales is reinvested in University activities that support research, innovation and commercialisation. Together, these results put The University of Manchester in the leading group of UK Universities for IP commercialisation.

Another significant achievement for the Innovation Factory and The University of Manchester in 2020/21 was the creation of the investment business Northern Gritstone Ltd. The new investment company aims to deploy significant funds into spinout businesses built on IP created by the Universities of Manchester, Sheffield and Leeds. Northern Gritstone plans to raise up to £500m from strategic corporate partners, institutional investors, and qualifying individuals. If successful, the financing will make Northern Gritstone one of the largest dedicated investors into the commercialisation of university science and technology related Intellectual Property in the UK.

The Innovation Factory continues to make an important contribution to the economy. Since 2004 the commercialisation of University IP has contributed £962m. This is comprised of £451m of gross value added (GVA) being an independent measure of the sales and jobs created by IP licensing and spin-out activities and £511m of third-party investment capital injected into the University's spin-out companies. In the 6 years to 31st July 2021, £397m has been generated. This takes the University to achieving 96% of its stated target of generating £1billion of economic impact from IP commercialisation by 2025.

The Innovation Factory now has a truly global reach and, with the scale and quality of research taking place at the University of Manchester, it has the ambition to be one of the world's most effective technology transfer organisations.

2. TEACHING AND LEARNING

Teaching impact

The entire 2020/21 academic year was dominated by the circumstances brought about by COVID-19. Academic and PS staff across the University have worked exceptionally hard to plan, in partnership with our students, for the essentially unplannable, with both on-campus, in-person and online options needing to be available should restrictions increase or reduce. The North West was the epicentre of the second wave of the pandemic in the UK, leading to the suspension of almost all on-campus teaching very shortly after it

had begun in September 2020, and after many students had travelled to be with us. Government restrictions meant that we were then not able to offer on-campus teaching to most of our students, outside clinical and then some specific practical subjects, until May 2021.

Clearly students have been greatly impacted by the pandemic, but most have continued to be understanding and appreciative of the efforts of staff. Our Unit Evaluation Questionnaires for 2020/21 focused specifically on blended and online learning, and showed strong results on quality and improvement. There is less positive news from the National Student Survey (NSS), where the University's overall student satisfaction decreased to 71% (63% response rate) from 81% (60% response rate). This was mirrored by a drop in the sector average satisfaction from 83% to 75%. Analysis of free text comments did highlight appreciation for the hard work of staff in teaching and supporting students. However, the data showed that assessment and feedback remains an area requiring improvement. This has already been identified by the University as a priority theme, alongside improving our response to student voice, and fostering a sense of belonging and positive academic communities. There are excellent examples of high satisfaction across academic Schools and we are working with our student community to ensure that we make the right choices to improve their experience with us; and the rollout of the Student Experience Programme next year will see improvements to processes across all aspects of the student journey from application to graduation.

In 2020/21, students encountered many additional COVID-related costs, mental health and wellbeing issues, and requirements for equipment to allow them to access their studies online. The University spent an additional £2.6m on student support in 2020/21 – taking the total to over £7m. In doing so we introduced innovations such as a 24-hour mental health line and partnered with our Students' Union to establish a student buddying scheme. In addition, our community rallied round, with 3,224 donors, from 80 countries, raising over £1.4m for our Emergency Hardship Fund. Over summer 2021, we have invested over £500k on equipping our teaching spaces for dual delivery classes and meetings, so students who cannot travel to Manchester can be included in classes delivered on campus.

Students joining us in 2020 had also had a highly disrupted experience of school and college, so for the first time, the University's Welcome was extended from one to two weeks and such was its success that this two week format was repeated for September 2021. Last year's programme built on existing good practice within the University but was made even more inclusive to ensure that it encompassed returning students as well as those who are new to Manchester, and postgraduate as well as undergraduate students. The circumstances of last year meant that there was limited opportunity, and take up, for on-campus events so Welcome 2020 was largely online. Some particular changes were made to cater for this change in mode of delivery. For example, Welcome has for a number of years included an on-campus Ethical Grand Challenge event, the Sustainability Challenge, which is timetabled for all new undergraduates. We could not run this on campus last year and did not have the necessary time to move it online; therefore we delivered another Ethical Grand Challenge (Social Justice Challenge) which was already available in a high quality online format and opened this to all undergraduates and postgraduate taught students. Student feedback across the Welcome programme was good and a number of innovations will become embedded into the future programme. One example of this is the 'Welcome Back' programme which we offered for the first time in February to students returning to Semester 2.

We are also seeking to improve our teaching quality through the Institute of Teaching and Learning, which has been in operation from October 2019. Representing additional spend (over existing baseline staffing costs) of c£300k pa, the Institute has embarked on a programme of teaching support and enhancement, including the University's flagship teaching accreditation programme, the 'Leadership in Education' Awards programme which has now awarded over 1000 AdvanceHE Fellowships to Academics, PS staff, and students at all levels from Associate Fellow to Principal Fellow. The Institute leads on Support for internal and external awards programmes with three colleagues gaining National Teaching Fellowship in 2020 and many individuals and teams being submitted and shortlisted for national awards such as HE Innovate and Times Higher.

Recognising the huge efforts of staff during the pandemic, we focused on personal recognition and targeted support. During the rapid pivot to online teaching,

staff had access to resources through our toolkits, alongside new communications and engagement platforms such as the Teaching and Learning Online Network (TALON) running on Yammer and now with over 450 active members, and the Institute's TEA (teach, explore, apply) break blog. We now have an annual cohort of Institute Fellows with 10 completing their projects in 2019-20 and a further 11 recruited. The Fellows come from across the University and have played a vital role in supporting the University's teaching development during the Covid-19 Pandemic. All our Fellows work with one or more paid student partners, supporting students with meaningful employment that fits around their studies but also ensuring that students are represented in the projects. The Institute is also building capacity for teaching excellence through an annual cohort of 'Leaders in Teaching', a facilitated development programme focused on leading change with impact.

The Institute also works in close partnership with the Directorate of Equality, Diversity and Inclusion, and has developed and coordinated a large workshop series engaging staff and students in an emerging Inclusive Education Framework, as well as coordinating reviews on Accessibility for Students with Disabilities, and Stellify; conducting sector reviews; and participating in global benchmarking.

Through our work to support access, student success, progression and employability, the University proactively seeks to address the specific challenges which students from widening participation backgrounds often face in making the transition to university study and subsequent employment. Our Access and Participation plan with the Office for Students provides detailed information on the University's responsibility to all students, regardless of background or financial considerations.

Parts of Greater Manchester have some of the lowest progression rates into higher education in the UK and we are committed to addressing this through the delivery of longer term outreach work and targeted pre-16 activities with the most able, disadvantaged students. During 2020/21 our outreach work continued to be affected by COVID-19 and school/college closures which reduced the number of engagements with young people over the course of this academic year. Our Gateways programme for secondary schools was adapted to a virtual delivery model, designed after consultation with schools. The virtual delivery model

provided all enrolled schools with access to live 2 hour sessions for each year group, featuring a mix of presentations, workshops and activities delivered via meeting or seminar software. 72 sessions were delivered to 865 pupils in 27 schools. To complement the virtual sessions a new website was launched which also includes support for teachers and parents/carers (<https://sites.manchester.ac.uk/gatewaysresources>).

611 primary students and 508 secondary students were supported through the IntoUniversity Manchester North Centre this academic year. During the Autumn and Summer terms, the majority of delivery took place face to face, with adaptations made to ensure delivery was Covid-safe. During school closures in the spring term, the team delivered their programmes virtually. This included providing online after-school academic support sessions via Microsoft Teams to 91 students.

The University is part of Greater Manchester Higher (GMH), a collaborative network of higher education institutions which delivers a programme of activities to target learners, including specific target groups such as care-experienced and disabled students. During 2020/21, the partnership worked with 166 secondary schools and colleges across Greater Manchester engaging over 24,711 learners. Our commitment in this area is further emphasised by the strategic partnerships we have with a number of leading education charities including The Brilliant Club, ReachOut and the Tutor Trust, the latter supported during 2020/21 through the recruitment of tutors to support the National Tutoring Programme, part of the government's Covid recovery package for schools.

Our post-16 work enables prospective higher education students to find out about studying at The University of Manchester and other research-intensive institutions. Access Manchester is a framework and website for our range of widening access programmes, which students and their key influencers can easily understand.

Our flagship initiative, the Manchester Access Programme (MAP), supports outstanding Year 12/13 students from under-represented groups in Greater Manchester and with no immediate family history of participation in higher education to progress successfully into The University of Manchester and other research-intensive universities. As a result of the pandemic we moved the programme online in March 2020. In 2020/21 535 students completed

MAP and from 2005 to 2020, 2,348 MAP students have been successful in gaining a place at The University of Manchester. In addition, many MAP students have also progressed to courses at other highly-selective, research-intensive universities. We have continued to expand our online Manchester Distance Access Scheme (MDAS), a national widening access programme for students who have been made an offer from the University. Students complete an academic piece of work related to the subject they plan to study at degree level and in 2020/21, 264 students successfully completed MDAS.

The University provides admissions decision-makers with supplementary data to allow them to put the achievements of each individual applicant into context and from 2019 have been making lower contextual offers to students on the basis of this data. Indeed, as a University we perform towards the top of the English Russell Group for the proportion of entrants from disadvantaged backgrounds. The latest HESA Performance Indicator Data for 2019/20 shows 8.9% of our entrants (434 students) were from Low Participation Neighbourhoods (LPNs, POLAR4, quintile 1) above our benchmark of 8.1%. From 2020/21 we have set new, challenging targets through our Access and Participation Plan (APP) with the Office for Students, which includes reducing the gap between the proportion of students entering the University from the most and least disadvantaged backgrounds. Internal data for 2020/21 shows that the University has achieved its APP milestone for this year. This is a slight increase in the ratio compared with the previous year (4.5:1) and whilst we saw a significantly larger intake of Q1 students, this coincided with a larger intake in Q5 students.

Non-continuation at the University is low and the most recent HESA data shows that only 3.6% of 2018/19 entrants are no longer in HE by 2019/20 – better than our benchmark of 3.7%. There is no statistically significant difference in continuation rates between WP and non-WP students. Our internal data for 2020/21 indicates that 27% of students are from lower socio-economic groups (NS-SEC 4-7) which has increased from 24% in 2016/17. The University is committed to ensuring that financial issues do not present an obstacle for learners to access the full student experience. Approximately a third of all our students will receive bursaries of up to £2,000 per year – and around 250 Widening Participation students will receive the University's targeted Undergraduate Access Scholarship in each year which

has now been extended to include estranged students in addition to students from care-experienced backgrounds and students who have completed our Manchester Access Programme. During the pandemic we have had a particular focus on addressing digital poverty, with our HelpMeGetOnline@manchester scheme providing tailored support for students, including provision of laptops and Wi-Fi dongles supporting around 400 students with the necessary equipment to complete their studies remotely. Several elements of the Emergency Hardship Fund were earmarked for projects dedicated to supporting WP students, from a laptop loan scheme to our Manchester Masters Bursaries. For 2020 entry we were able to increase the number of Manchester Master's bursaries allocated from 75 to 100, providing students with £4,000 of non-repayable financial support.

In terms of employability, the Graduate Outcome Survey results for the 2018/19 graduating cohort have now been published as experimental statistics, as yet with no standardised performance metrics. The results for all graduates show the impact of the pandemic on graduate activities compared to 2017/18 across the University, the Russell Group and sector, with lower proportions of graduates in employment and higher proportions in further study or being unemployed. For first degree graduates from the United Kingdom, the University was 6th in the Russell Group for the proportion in employment or further study and improved its position for the proportion unemployed (from 21st to 10th), suggesting that graduates from Manchester were relatively less affected by pandemic impacts than those from other institutions. Initial analysis also suggests that differential outcomes between student groups are lower than those across the wider sector, and this is an important issue that will be further tested with the data.

3. SOCIAL RESPONSIBILITY

Our strategic priority given to social responsibility makes us unique among British universities and reflects the commitment we have in making a positive difference to society and the environment – locally, nationally and internationally. Our strong performance on this agenda is reflected in coming top in the world, from more than 1,200 universities in 98 countries, in the 2021 THE Impact Ranking, based on the 17 United Nations Sustainable Development Goals (SDGs). This was also the third consecutive year

Manchester has been the top placed institution in the UK.

Our Social Responsibility Plan is focused around four new priorities: social inclusion, environmental sustainability, better health and cultural engagement.

On social inclusion we received a prestigious THE Outstanding Contribution to the Local Community Award for £19m of social value created via the MECD project; a total of 221,898 young people engaged with our Great Science Share for Schools initiative; we delivered major widening participation programmes such as our Manchester Access Programme wholly online (see more detail above in Teaching Impact section); and over 300 University of Manchester students supported educational catch-up, resulting from the pandemic, across local schools as part of our Tutor Trust partnership.

On better health we supported hundreds of students and staff to volunteer as part of the NHS vaccination programme; we engaged local communities on vaccine misinformation and vaccine hesitancy; as noted in the Research section above, a major project training over 220,000 people in the use of face masks in Kenya was delivered; we produced and disseminated a fortnightly 'Manchester Briefing on COVID-19' to over 50,000 people globally; and a pioneering #BeeWell programme was launched to develop a wellbeing measurement and improvement framework for secondary schools in Greater Manchester.

On environmental sustainability we agreed funding to tender for the production of a major Zero Carbon Masterplan; as noted in the Research Impact section, a new Sustainable Futures research platform was launched; a dramatic reduction in university business travel showed what is possible moving forwards; a 6R approach (refine, reduce, reuse, refill, replace, recycle) to plastic reduction was developed; and a decision tool was developed by our Tyndall Centre, Manchester. The pandemic indicated the scale of the University's carbon challenge since emissions only reduced by 11% given that we have estimated that we need to be at 13% per annum reductions in a post-pandemic 'normal' to approach our 2038 zero carbon targets.

On cultural engagement, and in direct response to social distancing restrictions during the pandemic, a range of innovative digital engagement opportunities were developed through each of our cultural institutions. Manchester Museum has

been progressing its capital programme whilst overseeing its first ever Golden Mummies touring exhibition across the USA and China; the Whitworth launched an international Office of Useful Art platform; network in Whitworth; plans for a new British Pop Archive have been developed at the John Rylands Library; and we have developed a range of strategic cultural partnerships through our Creative Manchester platform, including with Manchester International Festival, Manchester Literature Festival and Manchester City of Literature.

Finally, progress was made in advancing a range of civic engagement goals, notably through a 1,000 resident survey-poll across Greater Manchester to inform the successful development of a Civic University Agreement with the region's other universities and our public and community engagement performance was ranked in the highest 'top-10%' category in England's 2021 Knowledge Exchange Framework (KEF).

