Royal Academy of Engineering

Annual Report and Accounts

2022| 2023

Who are we?

A charity
We deliver public benefit from engineering excellence and technology innovation.

A National Academy
We provide progressive leadership for engineering and technology, and independent expert advice to government, in the UK and beyond.

A Fellowship
We bring together an unrivalled community of leading business people, entrepreneurs, innovators and academics from every part of engineering and technology.

Our **vision** is engineering in the service of society.

Our charitable **mission** is to deliver public benefit through engineering excellence and technology innovation.

We have outstanding convening power nationally and internationally.

We understand how to make systems and innovations make a positive difference to society.

We are trusted for our independence and professional excellence.

Values

In everything we do, we are guided by our five values:

- **Progressive leadership** – embodying the courage, commitment and ambition to drive positive change for engineering and society.
- **Diversity and inclusion** – creating cultures in which everyone can thrive and diverse perspectives enrich our collective performance.
- **Excellence everywhere** – bringing evidence, expertise, integrity and a passion for continuous improvement to everything we do.
- **Collaboration first** – prioritising collaboration and building partnerships to improve outcomes.
- **Creativity and innovation** – solving problems and generating opportunities through creative thinking and innovation.

Royal Academy of Engineering
Incorporated by Royal Charter

Key contacts
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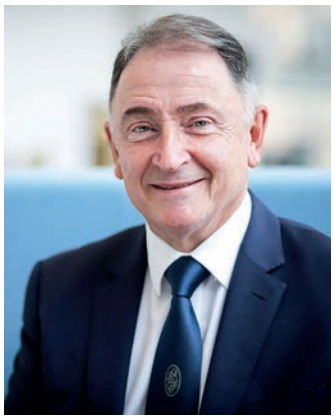
Awardee Excellence Community: awardees@raeng.org.uk

Contents

Foreword



The year covered by this review encompassed an extraordinary number of events of historic significance. Everyone connected to the Academy was, of course, deeply saddened to learn of the passing of Queen Elizabeth II, who maintained a keen interest in engineering and technology throughout her life, giving her name to the Queen Elizabeth Prize for Engineering and awarding the inaugural Prize to the inventors of the internet and the World Wide Web.

From the change in monarch for the first time in 70 years, to the ongoing Russian invasion of Ukraine, which has had significant impacts on supply chains, the economy and energy security as well as a devastating human cost, and the political turmoil in Westminster that saw the UK led by three Prime Ministers in 12 months, these events will be remembered for many years. In the midst of all of this change, the tireless commitment and contributions of our Fellows, staff, partners and wider community have been invaluable constants, which enabled us to make significant progress despite the disruption.

In 2022/23, we also reached the halfway point in our current strategy period. Our overarching goal is to harness the power of engineering to build a sustainable society and inclusive economy that works for everyone. We continued to deliver on this in three ways: by influencing policy and public perceptions; fostering talent and diversity; and promoting innovation. While the Academy's activities have a broad span, all of our work reflects these three priorities.

You can read in this review how, for example, our policy work to put engineering and systems thinking at the heart of decision-making continues to bear fruit. One research study from the National Engineering Policy Centre found that infection control measures could save up to £23 billion during future pandemics. This led the government's then Chief Scientific Adviser, Sir Patrick Vallance HonFREng FRS, to thank the Academy for providing evidence that could help shape future pandemic preparedness activities. A separate report examined the role of hydrogen in net zero energy systems and called on the UK government to act swiftly to avoid falling behind international competitors. Our complementary activity to shape public perceptions of engineering saw 2022's National Engineering Day deliver its biggest impact to date, with extensive media coverage and videos featuring engineers from the *Great British Bake Off*, and almost 75 million potential Twitter impressions.

Our public engagement efforts work hand in hand with our talent and diversity programmes to try to address the profession's significant skills and diversity shortfall, including by inspiring the next generation of engineers. In the last year, we celebrated 10 years of Connecting STEM Teachers (CST), which helps teachers to engage more students with science, technology, engineering and maths (STEM). Over the past decade, CST has sought to engage potential future engineers and change how these subjects are taught and perceived.

Our innovation activities also reached some important milestones this year. We carried out a mid-term review of our flagship Chairs in Emerging Technologies programme, which found that our investment has helped researchers raise significant additional funding and develop collaborations that span the globe. Activities also began to mark the Enterprise Hub's 10th anniversary, which has now supported over 350 of the brightest engineering and technology entrepreneurs.

Recognising and supporting the different ways in which engineering innovation contributes to local economies is an important part of how the Academy advances an inclusive economy. Our strategy set out a specific ambition to increase our regional engagement and we are especially proud of our progress in this area. We launched a new Enterprise Hub in Wales and laid the foundations to establish another in Scotland. We embarked on a new Northern Ireland Engineering Education Programme, and the latest round of our Regional Talent Engines programme helped engineers seeking to bring original concepts to market in Northern England and Northern Ireland.

Further afield, our international collaborations included a new multi-stakeholder partnership, launched together with the United Nations High Level Climate Champions,

to end the open burning of waste in Africa by 2040. International networks are vital to our ability to have impact on complex global challenges, and we have been proactive in extending these to our UK awardees. For the first time this year 10 Academy deep-tech innovators travelled to the US as part of our EXPLORE programme, to foster connections with global leaders and investors in their sectors.

Throughout this wide-ranging and ambitious work, one vital theme remained consistent: the involvement, expertise and guidance of the Academy's Fellows. None of the progress described in this review would happen without the generosity and commitment of our Fellows and partners. In these momentous times – and in the face of momentous challenges ranging from climate change to public health, security, emerging technologies and more – it is our community that enables us to deliver, whether that's by reviewing applications, mentoring awardees, connecting us to local and international ecosystems, shaping our policy advice, speaking at our events, or championing public engagement activities.

We have taken steps this year to deepen engagement with the Fellowship, including to improve Fellows' digital experience of the Academy, on which work continues. We have also invested in creating more opportunities for engagement with our awardees, by establishing the Awardee Excellence Community, to deepen awardees' involvement with the work of the Academy and their connections with each other and with the Fellowship, while ensuring our thinking reflects the full diversity of future as well as current engineering leaders.

We hope this review successfully demonstrates our gratitude to our entire community for making our work possible. It is down to you that we can keep moving, step by step, towards the sustainable society and inclusive economy our future demands. Thank you.

Professor Sir Jim McDonald FREng FRSE
President, Royal Academy of Engineering
Dr Hayaatun Sillem CBE
CEO, Royal Academy of Engineering
CEO, Queen Elizabeth Prize for Engineering Foundation

Images from a selection of Academy events across the year, including the 2022 Awards Dinner, Heritage Society Lunch and the 2022 New Fellows Dinner

How we deliver impact

Harnessing the power of engineering to build a sustainable society and an inclusive economy that works for everyone

INPUTS

Expertise and leadership from Academy staff, Fellows, awardees, and industrial and institutional partners.
Funding from government, industry and other partners.
Consultation with and applications from engineers and innovators.
International and regional partnerships and networks.

OUTPUTS

TALENT AND DIVERSITY

Talented researchers, innovators and entrepreneurs with enhanced skills, careers and connections.

More diverse skills and inclusive cultures in engineering research and business.

INNOVATION

Engineering and technology research outputs with high potential for commercialisation and societal benefits.

More innovative, resilient and investment-ready engineering businesses.

POLICY AND ENGAGEMENT

Policymakers accessing engineering expertise and systems thinking.

Engineers engaging with the public on how innovation can enhance their lives.

OUTCOMES

A world-leading, highly skilled, truly inclusive engineering workforce across the UK.

Greater UK and global innovation capacity, and novel engineering solutions, to support a more sustainable and resilient future.

Engineering jobs and services across the UK that make the nation more productive, secure, healthier and competitive.

Greater investment into UK engineering and innovation.

Policymakers equipped to make more effective policies, including on net zero.

Wider recognition of the value of engineering.

IMPACT

Faster progress towards net zero and a sustainable world.
Engineering and technology better harnessed to address global and societal challenges.
More balanced and inclusive economic opportunity across the UK.
UK more competitive and productive.

Curiosity Live, funded by the Academy's Ingenious public engagement programme, at the Glasgow Science Centre © Martin Shields

Building a sustainable society...

Our Major Project Award for Sustainability was awarded **to the world's longest subsea connector between the UK and Norway**, which allows renewable energy to flow between the two countries for the first time, reducing carbon emissions by an estimated 23 million tonnes in the UK alone by 2030

Through Engineering X, **we launched a multi-stakeholder partnership to end the open burning of waste in Africa by 2040**, save lives and prevent pollution, by bringing together engineers, cities and African governments

Enterprise Hub member Notpla – which **has created a biodegradable alternative to plastic made from seaweed and plants** – won the Earthshot Prize, for its innovative solution to 'build a waste-free world'

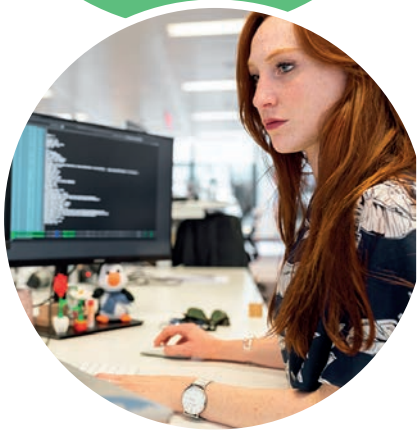
We **advised the government on hydrogen's critical role in a net zero energy system**, urging policymakers to capture the opportunities it presents and scale up its production to avoid falling behind international competitors

The Queen Elizabeth Prize for Engineering was awarded to Professor Martin Green, Professor Andrew Blakers, Dr Aihua Wang and Dr Jianhua Zhao for **transforming the efficiency of solar cells and dramatically reducing costs**, making solar the cheapest source of electricity in most countries

...and an inclusive economy

We launched a pilot equality, diversity and inclusion (EDI) platform that **provides startups and scaleups with access to tailored training, resources, case studies and policy templates**, to help them create workplace cultures in which everyone can thrive

We awarded **31 students who are women with Amazon Future Engineer bursaries to support them while studying for a computer science or related degree** at a UK university



We presented the MacRobert Award – the UK's longest running and most prestigious award for UK engineering innovation – **to Quanta Dialysis Technologies for its compact dialysis machine that enables kidney failure patients to treat themselves at home**, relieving pressure on hospitals

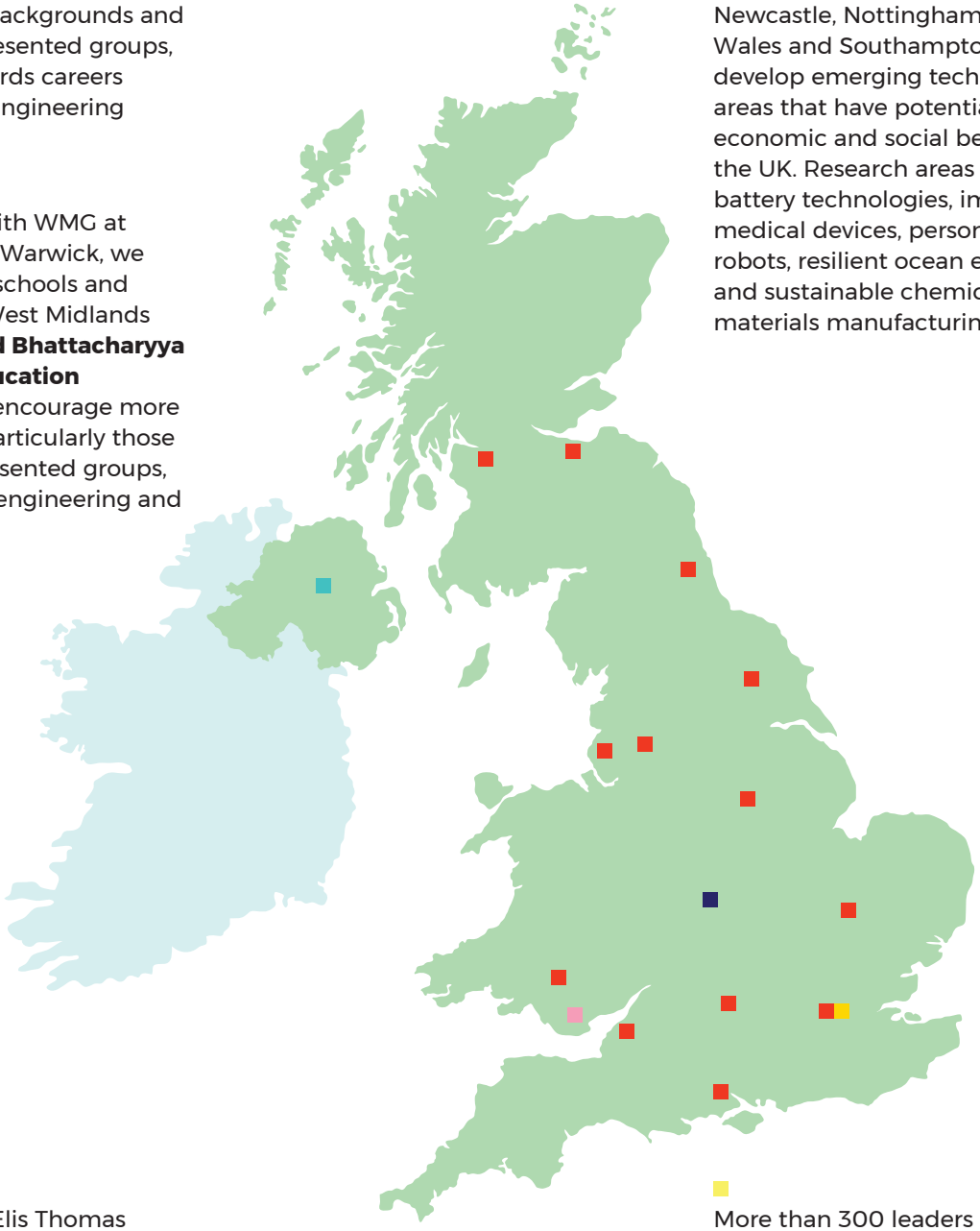
Our research, published on National Engineering Day, **found that the engineering economy plays an important role right across the UK**, with hotspots of engineering in Mid Ulster, West Cumbria, Flintshire and Wrexham, West Lothian, and Aberdeen and Aberdeenshire

In its first year, the Regional Talent Engines programme **awarded £380,000 in funding to innovators in Northern Ireland, Northwest England, Northeast England, and Yorkshire and Humber**, supporting 19 startups that have collectively attracted more than £3 million in follow-on funding

Our impact nationally...

We launched a **Northern Ireland Engineering Education Programme** to encourage more young people in the region, particularly young women and those from socially disadvantaged backgrounds and other underrepresented groups, to progress towards careers as engineers or engineering technicians

In partnership with WMG at the University of Warwick, we worked with 25 schools and colleges in the West Midlands through the **Lord Bhattacharyya Engineering Education programme**, to encourage more young people, particularly those from underrepresented groups, to progress into engineering and technician roles



Our **Chairs in Emerging Technologies programme** supports 40 global research visionaries at 17 universities, from Glasgow and Edinburgh to Newcastle, Nottingham, South Wales and Southampton, to develop emerging technology areas that have potential to deliver economic and social benefit to the UK. Research areas include battery technologies, implantable medical devices, personal assistive robots, resilient ocean engineering, and sustainable chemical and materials manufacturing

Undergraduate Elis Thomas became the first recipient of a £15,000 Panasonic Trust higher education bursary, as part of the **Welsh Valleys Engineering Project**, helping him to study engineering at Cardiff University

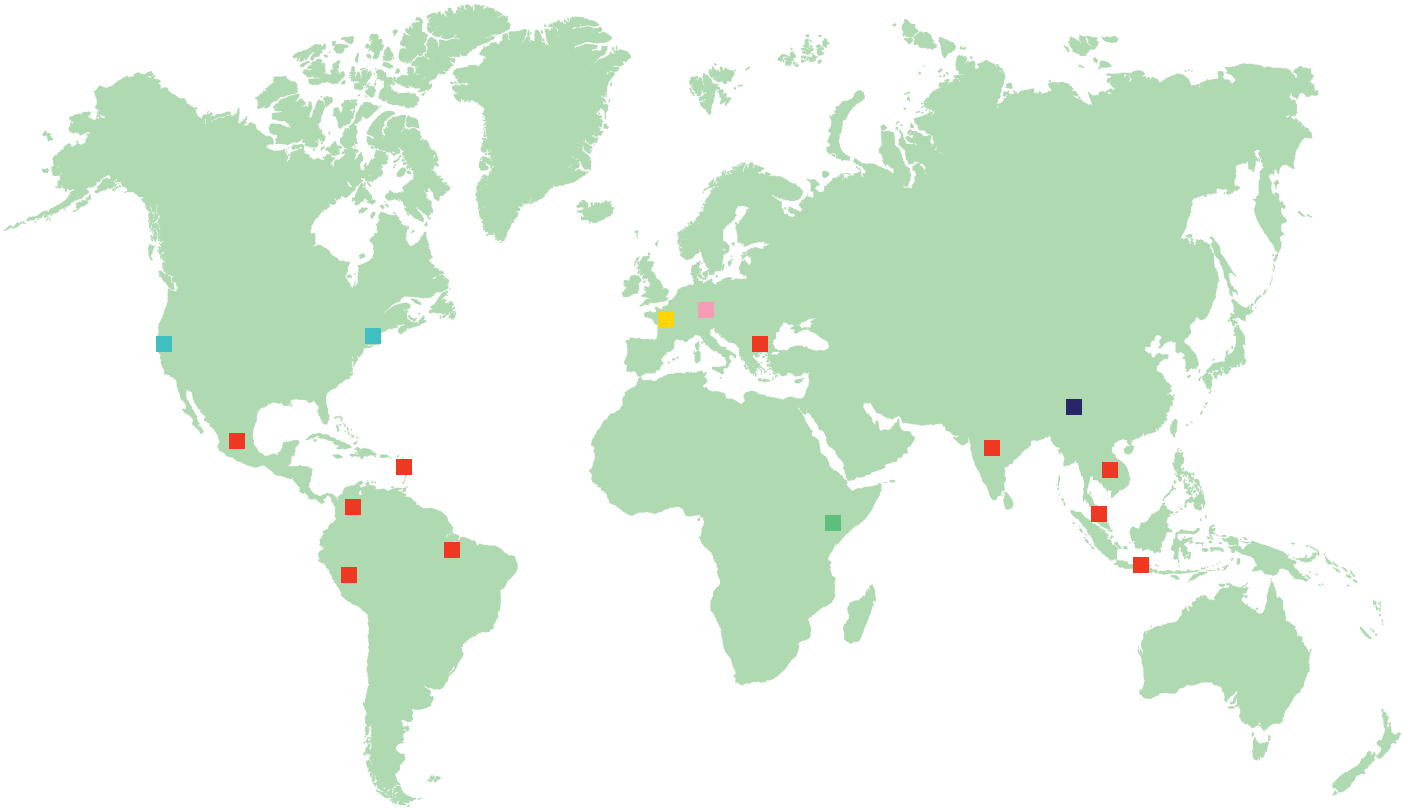
More than 300 leaders from industry, academia, government, media, and policy attended our **Awards Dinner**, and saw awards given for robotic skin, miniature AI sensors, a new imaging technique for healthcare or radiation mapping, new battery solutions, a tool for identifying antibiotic resistance, concrete decarbonisation, and much more

...and internationally

Engineering X's global review of the engineering response to COVID-19, which called for action by policymakers, business and academic leaders worldwide, was presented to senior delegates from 30 countries during the annual conference of the International Council of Academies of Engineering and Technological Sciences in Versailles. The report was covered by 194 news outlets in 37 countries and on the National Preparedness Commission website

We've **formed an alliance with seven national engineering academies in Europe** through Euro-CASE to develop policy advice on sustainable strategies for critical raw materials

The **LIF Global programme** delivered 349 hours of training and 1,226 hours of mentoring to 70 innovators from 10 countries – Barbados, Brazil, Colombia, India, Indonesia, Malaysia, Mexico, Peru, Romania and Thailand – resulting in 46 new IP registrations, 18 new UK partnerships, creation of 54 jobs, and over $2 million in funds raised



Five life sciences innovators built their networks, increased their visibility and accessed new opportunities in Massachusetts, while five AI and machine learning specialists did the same in San Francisco as part of the **Enterprise Hub's EXPLORE deep-tech programme**

We awarded the **Africa Prize for Engineering Innovation** to Norah Magero – the first Kenyan and second woman to win the award. It was awarded for Vaccibox, a small, mobile, solar-powered fridge that safely stores and transports medicines

We launched a **new framework for collaboration with China on net zero**, alongside a workshop to strengthen UK–China partnership on offshore wind

Talent and diversity

In the face of complex, evolving and interconnected global challenges, we need more engineers and technicians than ever, with a wider range of skills and a more diverse range of perspectives.

Our MSc in Motorsport Scholarship Programme aims to help more people from Black and mixed Black ethnic backgrounds study a motorsport-related subject

Engineers can and must be influential agents of change as we strive to build a more sustainable society, providing leadership both within and beyond the UK.

To respond to this need, the Academy's strategic goals include helping to increase the diversity, quality and quantity of engineers in the UK and internationally, and promoting a truly inclusive engineering workforce that sets the highest standards of technical excellence, ethics and professionalism.

In 2022/23, our work to foster talent and diversity sought to increase the number of people from underrepresented backgrounds entering the profession, including women, those from Black, Asian and minority ethnic backgrounds, LGBTQ+ people, and those with disabilities or who are neurodiverse; as well as efforts to better connect emerging engineering leaders to Academy networks to support their ongoing development.

FUELLING MOTORSPORT SCHOLARSHIPS FOR BLACK STUDENTS

Thanks to generous funding from The Ignite Partnership, in 2022 we launched the MSc Motorsport Scholarship Programme to support individuals from Black and mixed Black ethnic backgrounds to study for a master's degree related to motorsport.

The Ignite Partnership was created by Sir Lewis Hamilton HonFREng and the Mercedes-AMG PETRONAS F1 Team to increase diversity and inclusion in motorsport. Through the programme, the Academy will select an annual cohort of at least five final-year undergraduate students in 2023/24 and 2024/25 and provide wide-ranging support for their studies. The programme is a direct response to recommendations made by the Hamilton Commission report, *Accelerating Change: Improving Representation of Black People in UK Motorsport*, which was co-chaired by Sir Lewis and our CEO Dr Hayaatun Sillem CBE. The Board of Commissioners also included our Honorary

Fellows Dr Nike Folayan HonFREng and Dr Anne-Marie Imafidon HonFREng.

Scholarship applications opened for the first time in December 2022, and the successful students will receive £25,000 funding to cover tuition, as well as living costs. The programme also includes additional support such as networking events and motorsport experiences. Our objective is for 90% of scholarship awardees to be working in engineering roles – with the majority in motorsport – within two years of completing their MSc.

> "More than ever we must focus on how we can use action to change motorsport for the better and this is an exciting next step."
>
> **Sir Lewis Hamilton HonFREng**

LAUNCHING OUR AWARDEE EXCELLENCE COMMUNITY

After our 2020/21 governance review recommended creating a unified network to bring together the Academy's awardees, in July 2022 we launched the Awardee Excellence Community. It unites 3,000 current and past awardees and prize winners from across our UK and international programmes.

Our goal is to build a powerful, vibrant, connected, and diverse community of exceptional engineers, who support and inspire each other, and who work with the Academy to change the world for the better. The community aims to connect and harness the talent, passion and expertise of awardees, who will have the opportunity to meet, learn from and support each other, keep up with our latest news, and shape the Academy's work. A member of the community will also join the Academy's Trustee Board.

The initial response has been positive. Over 600 awardees responded to a survey about the community shortly after it was launched, with nine out of ten people saying they were interested in participating. The chance to network and guide the Academy's work were seen as the most valuable aspects. Soon after we launched the community, a group of awardees came together in discussions to help inform our long-term vision to 2040. We also hosted a series of Academy CAFÉ (Connecting Awardees/Fostering Engagement) online events, on issues such as influencing policy and politics, as this exciting new community continued to take shape.

We continue to support our alumni in other ways. Together with the Academy of Medical Sciences, British Academy, Learned Society of Wales, Royal Irish Academy, Royal Society of Edinburgh, and the Royal Society, in June we supported the launch of the UK Young Academy – the first UK-wide network connecting exceptional early-career researchers, innovators, clinicians, professionals, academics, and entrepreneurs. Dr Fiona Walport, a Research Fellow at Imperial College London and a former Academy awardee, read about the UK Young Academy in our newsletter and was encouraged to apply by her mentor – also an Academy Fellow. She said: "I feel privileged and excited to join the first cohort of the UK Young Academy … I have no doubt that my Royal Academy of Engineering Advanced Leadership Award propelled my early career, and I am forever grateful for the experiences that I was able to have."

Our Access Mentoring scheme is also working to increase the diversity of our grant applicants and awardees. It provides additional support to research programme applicants from groups that are persistently underrepresented within UK engineering. All Academy awardees receive mentoring from an Academy Fellow after receiving an award, but Access Mentoring enables people to access support while they are applying. It's a powerful way to improve diversity in the talent pipeline.

Since launching in 2021, 108 applicants have received Access Mentoring, and the feedback has been positive. One mentee said: "For someone with my disability, Access Mentoring was invaluable. I don't think I could have done the application without the help."

ENGAGING THE NEXT GENERATION OF ENGINEERS

Inspiring future engineers needs to begin in school classrooms. But engineering is not a distinct school subject and many educators have limited opportunities to learn about its potential. For 10 years, our Connecting STEM Teachers (CST) programme confronted this challenge, by creating a national support network for teachers across all STEM subjects. The network helps teachers gain the knowledge and confidence to engage more students from more backgrounds with STEM. In June 2022, we celebrated CST's impact with over 125 students and teachers at an anniversary event, held at Prince Philip House.

Students from Colyton Grammar School in Devon, who were winners of our Sustainable Futures Innovation Challenge, announced at CST's anniversary event, with their idea for a reusable, edible, plastic-free container

Many organisations have collaborated with the Academy to increase the impact of CST over the years, including EngineeringUK and STEM Learning. We are grateful to our partners – our strategic partner Shell, Amazon and the estate of the late Mr John Gozzard – and in July 2022 celebrated our ongoing relationship with Boeing, which has now donated £500,000 to CST. Boeing awarded the Academy further funding for 2022/23 that helped to improve STEM learning for up to 145,000 students. Sir Martin Donnelly, President of Boeing Europe and Managing Director of Boeing UK and Europe, said: "Equipping future skilled engineers is the golden thread that will guarantee the sustainable future of aviation. Boeing is thrilled that our donations are enthusing a future generation of STEM experts and engaging teachers and students across the country in the opportunities these subjects can bring."

In spring 2022, we launched a pilot initiative to encourage more young people in Northern Ireland, particularly young women and people from underrepresented groups and disadvantaged backgrounds, to progress towards professional engineering roles. Funded by the Department for the Economy in Northern Ireland, we support a network of 52 schools and colleges with grants, peer-to-peer support, links with industry, and more so that young people can continue into further and higher education.

In July 2022, our Welsh Valleys Engineering Project (WVEP) expanded to include all 54 schools in Blaenau Gwent and Merthyr Tydfil. WVEP encourages students to take up STEM subjects post-16 by enriching the curriculum and building links with local STEM employers to bring real-world engineering practice into schools.

Over the past five years, WVEP has delivered over 25,000 STEM learning opportunities. In 2022, Welsh Economy Minister Vaughan Gething MS called the project an 'integral part' of the government's efforts to enable the South Wales Valleys to become a globally recognised centre for technology.

Then in March 2023, 80 Year 12 students took part in a unique 'Build a dome in a day' engineering workshop in the nave at Holy Sepulchre, Holborn Viaduct – inner London's largest parish church, supported by funding from our Ingenious programme. As part of a series of events to mark the 300th anniversary of Sir Christopher Wren's death, the students built a replica of the famous St Paul's Cathedral Dome, alongside trainee engineers. The students' efforts captured the attention of BBC London, featuring on the evening news. It was another way to inspire the next generation of engineers, bringing students with a passion for design and technology closer to one of the masterpieces of structural engineering.

ENHANCING DIGITAL SKILLS

The engineers of 2030 and beyond must have the right skills for our increasingly digitised world, and a central part of our policy work is aiming to address this. In June 2022, we took on a leadership role in the Digital Skills Council, created following the launch of the government's UK Digital Strategy. The council brings together the government and leaders from industry, the public sector and academia to address the current and future demand for digital skills.

The council is co-chaired by Phil Smith CBE FREng, Chair of our Education and Skills Committee, who was already co-chairing the then Department for Digital, Culture, Media and Sport's Digital Skills Partnership. Academy CEO Dr Hayaatun Sillem is also a member and our Head of Education and Skills Policy, Juliet Upton, acts both as Secretariat and provides policy advice. In its first year of operation, the council has built strong stakeholder relationships to ensure that it works in partnership to amplify ongoing work. Activities so far include co-funding a roadmap with FutureDotNow for collective action to build basic digital capability in working-age adults; commissioning a study on the perception of tech subjects and careers, in particular to understand why fewer women choose digital courses and careers; and identifying how best to incentivise SMEs to offer more and higher quality digital apprenticeships both to young people and those in work seeking to re-skill.

IN FOCUS

Loughborough University students use the Inclusive Engineering Excellence Hub, created with support and funding from our Diversity Impact Programme © Phil Wilson, Photographer for Loughborough University Creative and Print Services

THE DIVERSITY IMPACT PROGRAMME

Our Diversity Impact Programme aims to inspire change in university engineering departments, so all students can succeed and the unique perspectives and experiences of engineers from diverse backgrounds can enhance the profession. Through the programme, which is funded by the Department for Science, Innovation and Technology, we provide grant funding of up to £100,000 for new projects in engineering departments that address unequal outcomes experienced by students from underrepresented groups.

Loughborough University was one of 19 institutions we supported in 2022/23. It used the funding to help co-create an Inclusive Engineering Excellence Hub with students, taking an intersectional approach to build inclusive learning environments, enhance opportunities for students from all backgrounds, and ensure every student feels welcomed and valued.

"Our newly refurbished space comprises accessible study and activity zones peer-led by student ambassadors, a kitchen and relaxed area to create a common room-feel that also supports students affected by the cost-of-living crisis with dignity, and a support zone for daily drop-in access to support services, such as our careers network and student success coaching.

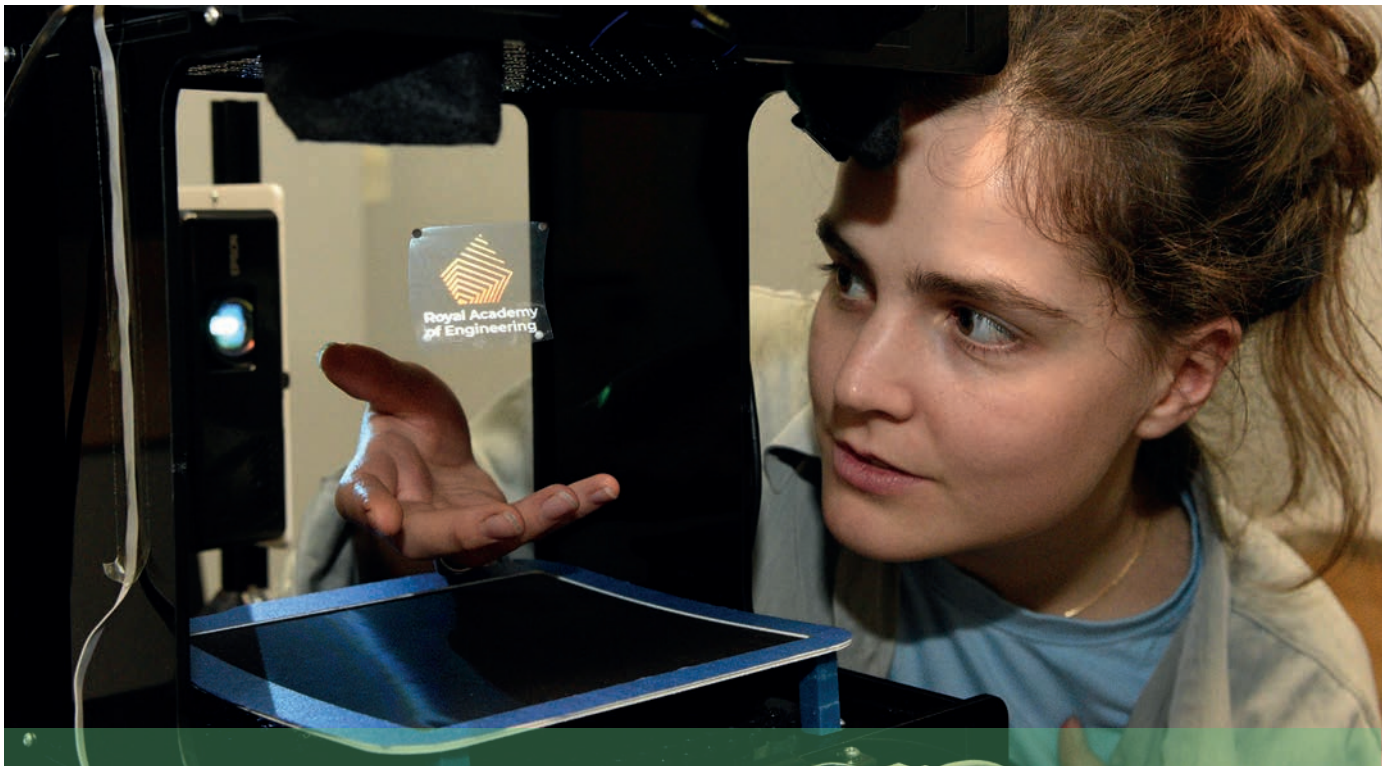
"Sheryl Williams, Professor in Technology Enhanced Learning, Laura Justham, Senior Lecturer in Machine Learning, and I have led a programme of activities to generate interest – from encouraging students to become Inclusive Engineering Hub ambassadors and EDI Champions, to organising engineering, professional skills and self-care activities, which comprise hands-on and inspirational demonstrations covering everything from bioreactors and robotics to programming and workshops.

"The biggest benefit of working with the Academy is the support and the acceleration this can have on an initial vision. It stems from the openness and flexibility of working with the Academy's programme officer and team, because everyone has a genuine interest in the development of our work to make a positive difference and drive positive change for engineering and society. It is a partnership and the values of the Academy centre on progressive leadership, diversity and inclusion, excellence, collaboration, creativity, and innovation."

Dr Elizabeth Ratcliffe, Senior Lecturer in Biological Engineering, and Director of Equity, Diversity and Inclusion for the School of Aeronautical, Automotive, Chemical and Materials Engineering, Loughborough University

Innovation

Engineering innovation and enterprise have the power to improve productivity, competitiveness, public health, safety and security, while also delivering economic and social value for people from all parts of the UK.



A piece of fabric with the Royal Academy of Engineering logo is levitated using sound waves at our annual Research Forum, demonstrating the work of Professor Sriram Subramanian's team at UCL. Professor Subramanian is a Chair in Emerging Technology, researching interactive technologies using metamaterials

A key focus of the Academy's strategy is on fostering a bigger, more resilient and more diverse network of engineering innovators, with the connections, insights, commercial awareness and leadership skills to turn ideas into reality. We do this in a wide range of ways, including supporting entrepreneurs directly, driving a more favourable policy environment, investing in groundbreaking research, and bringing innovators from academia and industry closer together.

INVESTING IN RESEARCH

Since 2018, the Academy has invested £94 million into the Chairs in Emerging Technologies (CiET) programme, supporting 40 global research visionaries over 10 years. Funded by the UK Department for Science, Innovation and Technology, the programme provides long-term support to enable researchers to advance innovative technologies in a strategic way. The chairs are asked to:

- lead major research, translation and innovation programmes around key emerging technologies
- build world-leading centres of excellence in strategically important technologies, supporting their commercialisation and adoption
- build and maintain a strong network of industrial and other partners to facilitate technology commercialisation and the creation of significant UK economic and social benefit.

In early 2023, we carried out our first mid-term review to evaluate the chairs who received awards in 2018. The nine site visits across the country – in Glasgow, Edinburgh, York, Oxford, Bristol, and London – assessed progress against original objectives and milestones, and the pathways to impact for the emerging technology. They showed that the awards have helped: raise £95 million in additional funding; support 236 team members; create 12 spinout companies;

license 12 patents and grant nine; and foster 111 UK collaborations and 76 international collaborations.

We continued to announce new awards, with four new awardees in December 2022 and two more in February 2023. Each received £2.5 million for research focused on areas including the next generation of quantum sensors, an emerging platform for electronics and optoelectronics, and exploiting the circular economy for sustainable cellulose photonic pigments.

We play an important role in stimulating collaboration and mobility between industry and academia. In 2022/23, we supported partnerships between 22 universities and 34 industrial partners through 24 Industrial Fellowships and 10 Research Chair/Senior Research Fellowships, 18 of which were collaborations with SMEs.

The projects covered a range of research areas from developing advanced technological solutions to relieve overstretched health services and advancing the digital security of nuclear facilities and critical national infrastructures, to improving the sustainability of food production and computing systems' energy efficiency. Other projects focused on achieving carbon capture and storage at scale, reducing waste in high-value manufacturing, improving future aircraft design, and unlocking quantum computing's full potential.

One of the rounds of Industrial Fellowships was themed: seven talented engineering researchers received awards for projects that addressed a sustainable zero-carbon-energy future. Other projects addressed a wide range of engineering challenges including human–robot cooperation, better batteries and bigger wind turbines.

Additionally, the UK Intelligence Community Postdoctoral Research Fellowships, which are offered by the Government Office for Science and administered by the Academy, provide a vital link between academia and the intelligence community. Each awardee receives funding for at least two years of their project and mentorship from an Academy Fellow, as well as an advisor from the intelligence community. Focusing on areas of unclassified basic research, the fellowships support cutting-edge work that can assist the intelligence, security and defence communities.

Intelligence Community awards made in 2022 supported development of new technologies to improve the cybersecurity of neural networks, address the increasingly complex demands of deception analysis, and deliver future 6G wireless systems, as well as the use of autonomous robot swarms for underground excavation. Awardees are also invited to attend the Intelligence Community Academic Research Symposium to exchange ideas and engage with fellow experts from diverse scientific backgrounds. Previous awardees have been also invited by the Australian Office of National Intelligence to attend the National Intelligence Community Research Symposium in Canberra to network and develop collaborations.

FOSTERING INNOVATION, INTERNATIONALLY

In 2022, our Leaders in Innovation Fellowships (LIF) programme brought together 70 emerging innovation leaders from 10 countries – in Asia, the Caribbean, Europe, and Latin America – for six months of bespoke training and mentoring. A comprehensive commercialisation training programme was delivered in partnership with Shine – a consortium of partners including the University of Suffolk, ChangeSchool and Mowgli Mentoring that delivers entrepreneurship and mentoring programmes in 40 countries.

Over the course of the programme, innovators received a total of 1,226 hours of mentoring (an average of 18 hours per innovator over five months), and 94% of innovators and mentors said that they will continue their relationship beyond the programme – a strong testament to the connections they've built.

While it is still early days, all the innovators derived significant benefit from their time in the UK, whether this was through business meetings, access to subject matter experts, external speakers and trainers, or from meeting each other. During the residential, and through visiting and experiencing different ecosystems, the participants made many connections in the UK.

"For me, the most important thing was having the opportunity to meet people and make some connections within the local ecosystem, to foresee some opportunities of business development with our LIFers, and we were able to build a community, which for me is really good."

LIF Global 2022 participant

Innovators at a Leaders in Innovation Fellowships in-country event in Colombia meet a vertical agricultural farmer in the suburbs of Medellin

INSPIRING NEW THINKING AND GROWTH ACROSS THE UK

Our Enterprise Hub celebrates its 10th anniversary in 2023. Over the past decade, the Academy has supported over 350 of the brightest engineering and technology entrepreneurs through the Hub, including with over £11 million of grants, mentoring from Academy Fellows, training, and lifetime membership of an unparalleled network of like-minded innovators. Hub member startups have gone on to raise over £1.3 billion in additional funding. Set up in 2020, Enterprise Hub Northern Ireland has continued to expand and provide specialist training, events and opportunities for peer-to-peer networking throughout 2022/23.

In 2022 we launched Enterprise Hub Wales to help continue this growth and support the research and enterprise ecosystem across the country. Based in Swansea, Enterprise Hub Wales will build on the work done by Swansea and Cardiff universities, fostering startups, scaleups and deep-tech innovation, supporting job creation, and collaborating with organisations across Wales. Professor Gareth Davies, Principal Investigator and Chair of the AgorIP Project, said: "The Royal Academy of Engineering has already contributed significantly to high-potential companies established in Wales, and the new Hub provides a powerful endorsement and further boost to this work." We also secured funding in 2022 to develop Enterprise Hub Scotland, which is due to open in Glasgow in summer 2023.

PUBLISHING GUIDANCE FOR SPINOUT ENTREPRENEURS

Our 2022 *Spotlight on Spinouts* report, published in April, analysed the universities, local authorities, sectors, and investors supporting spinouts across the UK (with a spinout defined as a startup that builds on an idea developed at a university or research institute). It showed the enormous potential of spinouts, with 1,130 active in the UK in 2021 and a record £2.54 billion generated in equity investment – almost double the previous year. Less positively, however, the report also showed the stark lack of diversity among directors and founders of UK spinouts – with 86% having all-male founders and 92% having all-male directors.

Our new *Entrepreneur's Handbook*, published in August 2022, is designed to support more academics from every background to understand and navigate the challenges of building a spinout. It covers a wide range of advice, from forming a business idea to securing investment, with sections on negotiating with universities, business planning, market research, and growing companies. It also includes numerous insights from Enterprise Hub members, entrepreneurs, technology transfer officers, and investors to help explain the motivations and potential behaviours of stakeholders with diverse objectives. Commenting on the advice in the handbook, Enterprise Hub member Florence Gschwend, Co-Founder and CTO of spinout company Lixea, said: "After receiving amazing support from the Enterprise Hub to develop my own business, which provided me with mentoring and other opportunities that I needed to start my venture, I know that the *Entrepreneur's Handbook* will provide an invaluable reference for those looking to spinout."

IN FOCUS

The first cohort of the EXPLORE mission in Boston, Massachusetts, with Dr Katerina Spranger in the centre

EXPLORE

EXPLORE is an exclusive programme for Academy alumni, run through the Enterprise Hub, that supports the UK's most promising engineering entrepreneurs working in deep tech. In each cohort, up to five Hub members are given bespoke support, based on their needs and the sector they work in, and embark on an international mission packed with meetings, insights, and networking opportunities. The aim is to help innovators navigate the challenges of being a deep-tech founder, while increasing their visibility, connections and exposure to investment in new ecosystems.

The support includes £25,000 of grant funding, guidance from industry experts on subjects such as capital, talent and intellectual property, expert-led training, mentoring and coaching, and a five-day international mission to connect with prestigious deep-tech leaders and investors.

Our first cohort brought together deep-tech founders focused on life sciences. They travelled to Massachusetts in April 2022 for their international mission. In February 2023, the second cohort – all specialists in artificial intelligence and machine learning – travelled to California to immerse themselves in San Francisco's renowned deep-tech ecosystem. Dr Katerina Spranger, CEO and Founder of Oxford Heartbeat, was a member of the first cohort.

"Through an Enterprise Fellowship, the Academy was among the first supporters of Oxford Heartbeat – invaluable during those early days. The programme not only provided essential courses, mentorship, and a stipend, but more importantly, it granted access to an amazing network of individuals who shared the same values and belief that engineering has the power to change the world. As a female founder, for me this recognition and support were particularly empowering and encouraging.

"The EXPLORE programme came at the perfect time for us as we were looking to expand into the US market. The preparatory sessions offered a comprehensive overview of all the factors involved in such a move. The week-long mission to Boston itself was impressive, filled with impactful events and networking opportunities with senior leaders in the Massachusetts medtech ecosystem … we established invaluable connections and gained a clear plan of action for our US expansion journey. We received an invitation to join the US accelerator programme in Boston, where we fully immersed ourselves in the entrepreneurial ecosystem for several months. This experience proved invaluable, expanding our network and providing opportunities for technology pilots and other promising avenues of growth.

"Currently, we are diligently working towards obtaining FDA approval for our first neurovascular product, a pivotal milestone that will enable us to launch our innovative solution in one of the most crucial healthcare markets. These remarkable developments, made possible through the EXPLORE programme, have positioned us for future success and exponential growth."

Dr Katerina Spranger, CEO and Founder, Oxford Heartbeat

Policy and engagement

To help drive prosperity and increase progress towards a sustainable, inclusive future, engineering expertise should be at the heart of decision-making – across government, within communities and internationally.

Great British Bake Off **engineers (L–R) Andrew Smyth, Dr Giuseppe Dell'Anno and Dr Rahul Mandal with the working clock cake that they baked for National Engineering Day in 2022**

Engineering uses problem-solving, creativity and systems thinking to make things that work and make things work better, meaning engineers can play a valuable role in the face of global challenges – from securing a green energy transition to improving preparedness for pandemics. Guided by our strategy for 2020–25, the Academy strives to ensure engineering expertise is easily accessible to policymakers across all government departments, and engages with wider society to advocate for engineering and raise awareness of its relevance and impact.

In 2022/23, this work ranged from leading the debate on low-carbon hydrogen to broadening public perceptions of what engineering looks like by collaborating with *Great British Bake Off* contestants to engineer an edible, working clock cake.

GUIDING POLICY DEVELOPMENT

Led by the Academy, the National Engineering Policy Centre (NEPC) is a partnership of 42 professional organisations, covering the breadth and depth of our profession. Since its launch in 2019, the NEPC's partners have provided rapid policy advice on a wide range of urgent issues, along with deep insight on long-term challenges.

In 2022, the NEPC launched a new five-year strategy, outlining four priorities to guide its work until 2027. These are to:

- deploy engineering insights
- promote engineering and its role in policy
- develop an inclusive and forward-looking partnership
- extend its networks beyond engineering.

These priorities were in evidence throughout the year, including in the publication of new research into infection control in indoor environments. Commissioned by Sir Patrick Vallance HonFREng FRS FMedSci, the government's then Chief Scientific Adviser, and entitled *Infection-resilient environments: time for a major upgrade*, the NEPC study showed that infection control measures could save up to £23 billion

INFECTION RESILIENT ENVIRONMENTS: PROGRESS SO FAR

MARCH 2021

Sir Patrick Vallance commissions the NEPC to identify interventions needed in the UK's built environment and transport systems to reduce infection transmission.

With the Chartered Institution of Building Services Engineers (CIBSE), we plan a two-phase programme of work on infection resilient environments.

JULY 2021

We publish *Infection resilient environments: buildings that keep us healthy and safe*. It is also available on the government website and to read at the meeting of the Scientific Advisory Group for Emergencies (SAGE) on 22 July 2021.

The report receives coverage in national and regional news media including *The Times*, *Daily Telegraph*, *Wired*, *Financial Times*, the *I*, and *Yorkshire Post*.

AUTUMN 2021

Input into:
- Cabinet Office's Advisory Group on Ventilation to support implementation of the recommendations
- Cabinet Office teach-in on infection resilient environments
- UKRI research agenda
- senior official cross-government roundtable meeting on infection resilient environments.

Interest from the Cabinet Office and other government departments in continued engagement.

FEBRUARY 2022

The government's *Living with COVID-19* publication highlights phase two of the work.

JUNE 2022

We publish *Infection resilient environments: time for a major upgrade*.

It receives positive feedback from Chief Scientific Advisers from the Department for Levelling Up, Housing and Communities and for Scotland, and the Office for Product and Safety Standards.

It receives coverage in the *Guardian*, *The Times* and *The Engineer*, and Professor Catherine Noakes OBE FREng features on Radio 4's *Today* programme.

Academy representatives attend a teach-in with GO-Science and meet with government Chief Scientific Advisers.

MARCH 2023

We launch the *Ventilation matters* interactive infographic, which is also in Department for Education guidance on using CO_2 monitors in education and care settings.

a year during future pandemics. Its authors called on ministers to seize the opportunity to mandate long-term improvements now in commercial, public and residential buildings. Upon publication, Sir Patrick Vallance commented: "I would like to thank the Royal Academy of Engineering and the National Engineering Policy Centre for this independent report which provides government with important evidence and insight to consider as we learn lessons from COVID-19 and ensure we are prepared for the future."

In September, the NEPC published *The role of hydrogen in a net zero energy system*. The report examined the sustainability of hydrogen for major applications across the economy, including industry, power, transport, and heat and buildings. It called on the UK government to act swiftly to scale-up low-carbon hydrogen production to avoid falling behind international competitors. At a time when there is a lot of attention on hydrogen, this report provided a balanced and objective assessment of the key opportunities from low-carbon hydrogen, how its supply can be scaled up and, crucially, the risks and uncertainties that need to be managed if it is to fulfil its potential in a net zero energy system.

As debate about the development of AI and its impacts on society intensifies, the NEPC set out the conditions needed for safe and ethical use of autonomous systems. While not all AI operates autonomously, autonomous systems do rely on AI. We set out examples of AI-enabled systems in healthcare alongside the particular considerations relating to their safe and trustworthy use in health settings. This work was shared ahead of a collaborative workshop with the Academy of Medical Sciences on the adoption of AI in healthcare involving clinicians, researchers, regulators and patients. The NEPC has also called for attention to be given to cross-cutting regulations for autonomous systems that apply across sectors, on important issues including transparency and failsafe.

CHAMPIONING SYSTEMS THINKING WITH OUR POLICY FELLOWS

In 2022 the Academy selected 19 exceptional policymakers to become policy fellows. They work across the public sector in a wide variety of roles, but share one goal: to understand engineering thinking and apply it to their policy challenges.

Throughout the year, policy fellows championed systems thinking in policy, reaching 800 policy professionals through a series of knowledge-sharing events produced with the government's Policy Profession Unit. These covered truly diverse topics. For example, diplomat Chris Thomson explored how systems thinking can be applied to both River Clyde regeneration and diplomacy in Washington DC, while Eleanor Brown from the Department for Environment, Food and Rural Affairs (Defra) proposed taking a systems approach to the question of how to eradicate bovine tuberculosis.

We also connected the 19 new policy fellows with 181 engineering experts from across industry and academia, and piloted peer-to-peer groups to build collaboration around topics of interest. As Dame Clare Moriarty DCB, Chief Executive of Citizens Advice and former Permanent Secretary for both Defra and the Department for Exiting the EU, said in 2022: "The Policy Fellowship shatters the myth that 'engineering is for engineers'." Gareth Lavan, policy fellow and Policy Lead for Climate Education and Sustainability Leadership at the Department for Education, added: "My time as a policy fellow has been instrumental in allowing me to progress my policy challenge. To the uninitiated (as I was!), the term 'systems thinking' does, prima facie, conjure up pictures of cold logic models – but the opposite is actually true: rigorous systems thinking demands that the user and their needs be put at the heart of policymaking."

REACHING MILLIONS ON NATIONAL ENGINEERING DAY

National Engineering Day is a central part of our ongoing *This is Engineering* campaign to inspire young people to consider a career in engineering. Held in early November and with a new name in 2022, it once again brought significant numbers of people closer to our work, with a focus this year on how engineering improves lives.

There was widespread media interest throughout the day, including Zoe Ball talking about the day on her BBC Radio 2 breakfast show and Steph McGovern dedicating a whole slot to it on her Channel 4 Show *Steph's Packed Lunch*. National Engineering Day videos were watched over 200,000 times, related social media posts achieved over 77 million potential impressions across social media – almost double the number for 2021 – and National Engineering Day trended at #3 on Twitter. Engineering champions from Tim Peake to Danica Patrick, the world's most successful female racing driver, shared National Engineering Day content online.

Much of the interest was created by three former stars of the *Great British Bake Off* – who also happen to be engineers – teaming up to create a unique, edible clock cake. We had challenged them to make a bake celebrating engineers and they responded in style, creating a classic antique clock with a mahogany-effect chocolate veneer. A timely and very tasty way to make the point that we need more engineers to address current and future challenges!

> "People always jokingly ask me why engineers do so well at Bake Off. There's no way of knowing for sure. But we do know that engineers are used to thinking creatively and tackling problems, small and large, on a daily basis. This gives them the tools needed to create a great bake and avoid the dreaded soggy bottom!"
>
> **Dr Giuseppe Dell'Anno, contestant and engineer**

Events to mark the day included a parliamentary reception, hosted by Lord Mair and attended by an audience of over 70 parliamentarians, industry partners, Academy representatives and *This is Engineering* campaign representatives. Academy CEO Dr Hayaatun Sillem CBE raised further awareness by speaking at the WIRED Impact conference about diversity and inclusion, the role of engineering in sustainable development and the need to support entrepreneurs from underrepresented backgrounds. Numerous other organisations got yet more people talking about engineering – from Amazon creating an Engineering Heroes booklist to Transport for London displaying National Engineering Day-themed posters.

IN FOCUS

Workers at the Dandora dumpsite in Nairobi, Kenya, where open burning of waste has a significant impact on human health*

ENGINEERING X AND THE OPEN BURNING OF WASTE

Engineering X is an international collaboration that brings together some of the world's leading problem-solvers to develop practical, sustainable and accessible solutions to the most pressing engineering, safety and sustainability challenges. In 2022/23, a key focus of the project's Safer End of Engineered Life programme was the open burning of waste in Africa.

Currently, only 11% of waste from Africa's urban areas goes to managed landfills, with the rest dumped and burned. This dramatically impacts human health, as poor air quality is linked to 1.2 million premature deaths annually in Africa. The black carbon emissions also contribute to climate change, with an impact up to 5,000 times greater than CO_2 and of a scale equivalent to 2–10% of global CO_2 equivalent emissions: potentially double the impact of aviation but attracting a fraction of the finance.

In August 2021, Engineering X partnered with the United Nations High Level Climate Champions (UNHLCC) team, launching a multi-stakeholder partnership at COP27 in November 2022 to end the open burning of waste in Africa by 2040. The partnership will help mobilise African governments to implement a landmark resolution, agreed in September 2022, to improve waste management through new technology, infrastructure, funding and behaviour change campaigns.

Dr Andriannah Mbandi is the Waste Lead for the UNHLCC. She believes the collaboration with Engineering X is critical to create awareness, momentum and a path to solving this challenge:

"From the first moments, our team knew that partnership was the only way to end an unsafe practice that has been going on for centuries. By bringing together NGOs and civil society, alongside public and private sector entities – including those informal groups that currently handle waste, often by burning – we've already made excellent progress. Together, we've bought the issue to the front of minds everywhere in major global and regional forums, including the African Ministerial Conference on Environment, and the 26th and 27th UN Climate Change Conferences."

Professor Desta Mebratu of Stellenbosch University, who led the Engineering X project until the end of 2022, added: "It's quite tremendous to see this level of support from stakeholders right across Africa. We have momentum, we have goodwill and – with the backing of Engineering X – we have the resources to help bring people and organisations together to work towards ending this practice and prevent more impact on health, safety and the environment."

*Images used were taken by Sam Barker as part of Lloyd's Register Foundation's Impact Review 2022. Engineering X is a collaboration between Lloyd's Register Foundation and the Royal Academy of Engineering.

People and operations

In order to deliver on the ambitions in our strategy and to create the best experience for everyone connected to the Academy, we are working intensively to improve our operational capability and our capacity to attract, retain and engage excellent staff.

Academy staff members from the Engineering X team at the Lloyd's Register Foundation Safer World Conference

In December 2022, we launched our new People Strategy, which supports the Academy's overarching strategy. Our focus is on having aligned, healthy, fulfilled and highly engaged employees, with the skills, knowledge, behaviours and values to succeed, always supported by talented leaders. The People Strategy comprises three central strands:

- A talent management review – focused on how we support development, progression, recruitment, reward and recognition.
- Employee voice and engagement – focused on creating routes to provide feedback, raise concerns, understand the lived of experiences of employees across the Academy, and develop effective communication, including from the Senior Leadership Team (SLT).
- People excellence – ensuring our systems, processes, policies and procedures are inclusive, progressive, accessible, simple and transparent.

Our staff team continues to grow, rising from 162 employees in April 2022 to 184 in March 2023, and we now have an increasing number of staff who are based regionally. We have added capacity to our HR team to enable a culture where our people can deliver the Academy's charitable objectives and thrive while doing so.

We have also increased our capacity in the analysis team to enable greater focus on more effective and appropriate use of qualitative and quantitative analysis. The function supports all teams in two

main areas: monitoring and evaluation (M&E) and policy and projects (P&P). Building in an analysis or evaluation stage in project or policy design will help to better understand the project or policy's impact, make a better case for the projects and policies we implement, and strengthen policy recommendations. We've also added new roles to aid engagement with our communities, including our first Fellowship Engagement and Events Manager and a Digital Community Manager, who works across Fellowship and the Awardee Excellence Community.

We successfully launched our first internal audit function, which has already added value with recommendations and follow up that has built on our values and appetite for continuous improvement.

Our programmes function has expanded and we've appointed our first Head of Grants Processes, who is working with our Programme Managers Group and supporting processes on grant giving and management across the Academy. Our policy directorate has also restructured, with engineering policy advice focusing on three critical areas for engineering: climate and sustainability; health and resilience; and digital and physical infrastructure.

Reflecting these changes, towards the end of 2022, our SLT was restructured and a new Executive Leadership Team (ELT) created, alongside a number of new Associate Director roles. As the Academy grows, it is important that our structure adapts to reflect this growth and that complexity is reduced.

REDUCING OUR CARBON FOOTPRINT

Our Environmental Sustainability Action Group continues to ensure that the Academy improves its environmental performance. Following our first carbon benchmarking exercise with Planet Mark, which offers certification based on leading international standards, to establish a carbon baseline for the financial year 2019 to 2020, we worked with them again to do the same for 2020 to 2021. With much of that year spent in lockdown and no international travel, the reduction when compared to 2019 to 2020 was extensive: 91%. The emissions from the building were also 22% reduced from the previous year. We are now collecting data for following years to offer comparisons, improve our data quality score, reduce our footprint, and include more data into our measurements going forward. We've also been working with Company of Cooks, Prince Philip House's in-house caterers, to reduce food waste at Academy events and the Academy's SLT all committed to sustainability resolutions at the beginning of 2023.

TOTAL CARBON EMISSIONS 2020 TO 2021

118.6
tCO_2e total emissions

TOTAL EMISSIONS EQUIVALENT TO
105 flights from London to New York

0.9
tCO_2e per employee

BUILDINGS

117.5 tCO_2e

Used enough electricity to power **67** UK homes for one year

TRAVEL

0.0 tCO_2e

Travelled **0** times around the world

WASTE

0.2 tCO_2e

Produced waste that weighs the same as **1** London bus

WATER

0.7 tCO_2e

22 litres per employee per day

PROCUREMENT

226 sheets of paper used per day

HOMEWORKING

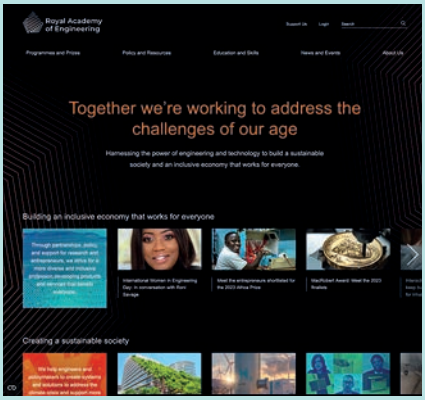
90.2 tCO_2e

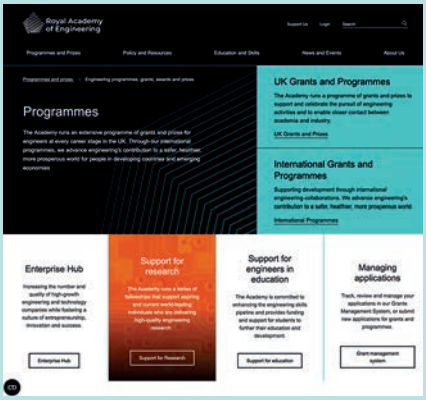
Used enough energy to power **27** UK homes for one year

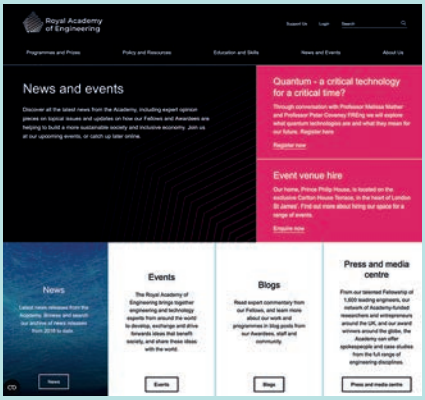
tCO_2e – metric tonnes of carbon dioxide equivalent

NEW DIGITAL PRESENCE

In summer 2022, we launched our new website, fulfilling an objective in our 2020–25 strategy to better engage with our identified audiences. The new site continues to be developed to provide an improved digital experience for Fellows, applicants, awardees, policymakers and other audiences, by making information easier to find, and by better showcasing the impact of our activities and highlighting upcoming events and opportunities. This includes pages loading much faster, better functionality and a more modern design, aligned to the Academy's brand.







A FELLOWSHIP FIT FOR THE FUTURE

Our Fellowship represents an unrivalled community of leading businesspeople, entrepreneurs, innovators and academics from every part of engineering and technology. Over the past year, Fellows have volunteered an estimated 22,500 hours to support the next generation of engineers and address societal challenges.

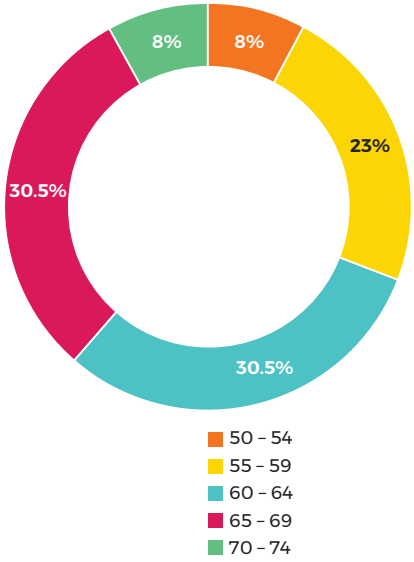
Our Fellows elected in 2022 reflect the Academy's ongoing Fellowship Fit for the Future initiative, with 57% of those elected from underrepresented groups. The initiative is driving more nominations of outstanding engineers from underrepresented groups ahead of our 50th anniversary in 2026. It sees the Academy striving for increased representation from women, disabled and LGBTQ+ engineers, those from minority ethnic backgrounds, non-traditional education pathways and emerging industries, and those who have achieved excellence at an earlier career stage than normal.

The Academy's Trustee Board is also committed to forming a Board that is fit for the future, defined as a body that represents the full breadth and diversity of engineering excellence, as well as the skills and experiences needed to provide effective leadership for the Academy. To help achieve this, one of the main responsibilities of the Academy's Nominations Committee is to actively seek and encourage people from different groups to stand for election. The Board is guided by the values of the Academy to create a culture in which everyone can thrive and diverse perspectives enrich its collective performance.

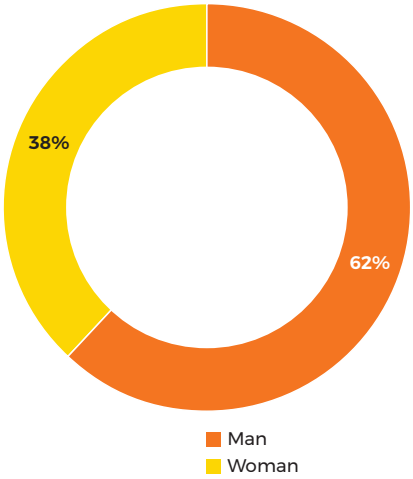
In support of this commitment, the Trustee Board has agreed to publish its own diversity data.

Academy Fellows at the 2022 New Fellows briefing at Prince Philip House on 11 November

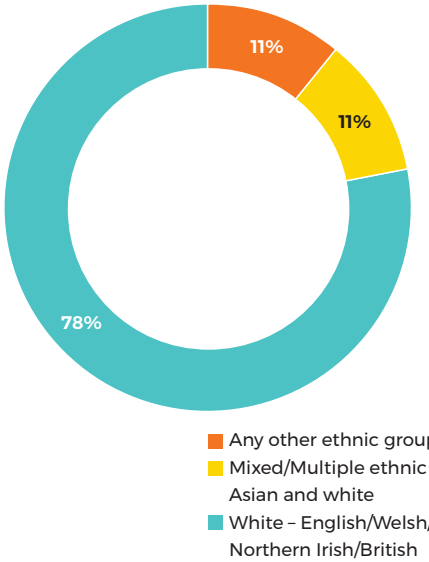
AGE



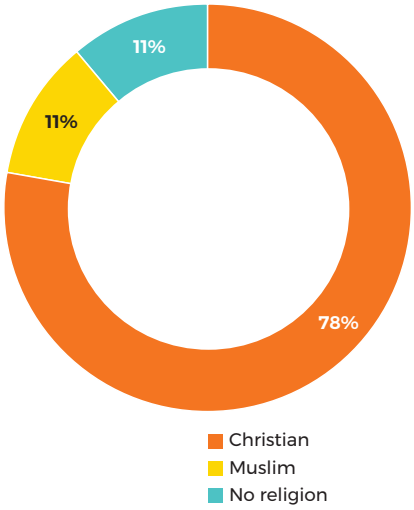
GENDER



ETHNICITY



RELIGION



The figures for age and gender represent all members of the Trustee Board. The figures for ethnicity and religion only represent Trustee Board members who submitted their diversity data. Of those who submitted data, all respondents declared that they had no disability when asked and all respondents stated that they were heterosexual when asked.

Future plans

As set out in our five-year strategy, the Academy's overarching goal is to **harness the power of engineering to build a sustainable society and an inclusive economy that works for everyone**.

In keeping with our values, many of these goals will be delivered through collaboration with key partners around the world and will deliver against our four impacts:

- Faster progress towards net zero and a sustainable world.
- Engineering and technology better harnessed to address global and societal challenges.
- More balanced and inclusive economic opportunity across the UK.
- UK more competitive and productive.

We have made progress in implementing the strategy over the last three years but there is still much to do.

TALENT AND DIVERSITY

In 2023–25, we will support talented researchers, innovators and entrepreneurs by:

- enhancing the connections of all our talented awardees and building their links to the whole Academy through our Awardee Excellence Community
- helping highly talented engineering and technology researchers through our research programmes to pursue their vision, build their capabilities and produce research outputs with high potential for commercialisation and societal benefit
- continuing to support the progression of highly talented engineers through our higher education programmes
- offering support for enhancing the skills and connections of engineering and technology entrepreneurs through our Enterprise Hub, Leaders in Innovation Fellowships (LIF) programme and Africa Prize for Engineering Innovation
- building the capacity of organisations in emerging economies to support talented engineers, primarily through facilitating global partnerships, including through our Higher Education Partnerships in Sub-Saharan Africa (HEP SSA) and Engineering X programmes
- reviewing applications while meeting all quality and timeliness standards through our Global Talent Visa endorsement programme.

In 2023–25, we will deliver more diverse skills and inclusive cultures in engineering research and business by:

- supporting internal diversity and inclusion activity across all Academy teams with a single coherent action plan
- supporting development of progressive leadership across the engineering community, including through our new EDI toolkit platform for startups, scaleups and SMEs
- promoting engineering to all individuals and supporting their progression into engineering, particularly through our bursary programmes supporting those from underrepresented backgrounds and our regional education programmes
- increasing transition rates of engineering students from Black, Asian and minority ethnic backgrounds and low socio-economic backgrounds through our Graduate Engineering Engagement Programme
- ending the Connecting STEM Teachers programme, and subject to funding, developing the *This is Engineering*: School Engagement Programme, which will be smaller in scale, operate within the Regional Talent Engine areas, and specifically target schools and colleges in areas of low social mobility. Our education policy activity will increase through the NEPC.

All these activities will help us make progress towards our outcome of a world-leading, truly inclusive and influential engineering workforce.

INNOVATION

In 2023–25, we will deliver engineering and technology research outputs with high potential for commercialisation and social benefit by:

- continuing to deliver high-quality, long-term partnerships between industry and academia through our industrial partnership research programmes
- supporting 10-year programmes to advance novel technologies of high societal and economic benefit to the UK through our Chairs in Emerging Technologies
- holding Frontiers symposia to bring together researchers and innovators from around the world to build their networks and supporting seed grants for new collaborations as well as continuing projects
- exploring further partnerships with government national security and resilience organisations to support applied research programmes focusing on the UK population's safety and prosperity.

In 2023–25, we will deliver more innovative, resilient and investment-ready engineering businesses by:

- celebrating the Enterprise Hub's 10th anniversary in 2023, building on successes to date in helping engineering entrepreneurs build their capabilities to make their businesses more innovative and investment ready
- building our position as leading experts in the UK and internationally for engineering and tech entrepreneurs, innovators and policymakers looking to support innovative businesses encouraging a sustainable society and an inclusive economy, through partnership between the Hub and our innovation policy work
- continuing to promote engineering enterprise in emerging economies as a critical means of addressing Sustainable Development Goals through the Africa Prize for Engineering Innovation in its 10th anniversary year and the LIF programme.

All these activities will help us support more innovative engineering solutions for a more sustainable and resilient future, engineering jobs that make the UK more productive, secure, healthier, safer and more competitive, and greater investment into UK innovation.

POLICY AND ENGAGEMENT

In 2023–25, we will harness the insights of engineers across the Fellowship and broader engineering community to deliver engagement, capacity building and policy advice with real-world impact by:

- ensuring that policymakers are equipped to make more effective policies, including on net zero, health and resilience, and digital infrastructures
- positioning the Academy and profession as a thought leader and convener at the centre of delivering a more competitive, productive and inclusive UK economy, and an influential voice in the debate about securing UK Strategic Advantage through science and technology
- supporting engineers' engagement with the public on how innovation can contribute to their lives, through our Technology Pathways and Meaningful Innovation programme
- providing necessary engineering leadership around complex systemic global challenges through Engineering X, to improve health, quality of life and sustainability, particularly in low-income countries
- bringing ideas, expertise, data, and challenge from relationships built through our international programme partnerships together with the work of the NEPC, to address the need for a global presence able to bring engineering expertise to bear on shared international challenges.

In 2023–25, we will ensure engineers engage with the public on how innovation can contribute to and enhance their lives by:

- broadening public perceptions of engineering through *This is Engineering*, and the development of a new champions community and redeveloped website
- upweighting our innovation communications to celebrate both the Enterprise Hub and the Africa Prize's 10th anniversaries
- amplifying engineering's contribution to sustainability through a revived Engineering Zero campaign.

All these activities will help us make progress towards our outcomes of policymakers equipped to make more effective policies, including on net zero, and greater recognition of the value of engineering.

ENABLERS

In 2023–25 the Academy will achieve its goals by:

- delivering a programme of awardee engagement
- strengthening Fellowship engagement, including technical briefings, regional engagement opportunities and ongoing development of the Fellows area of the website
- developing an impact framework that provides evidence of impact and underpins decision-making and prioritisation
- developing our culture, systems and processes to attract, retain and enable our people to contribute and thrive in meeting the Academy's objectives
- implementing the Digital Strategy, ensuring that critical digital platforms and central organisational processes are fit for purpose, widely adopted and supported by digital solutions
- developing culture, systems and processes to assure compliance, manage risk and continuously improve, including through the new internal audit programme
- developing new unrestricted revenue sources and increasing revenue from existing trading activities
- securing significant support for the Prince Philip Fund
- increasing long-term sustainable funding streams by growing the number of funders and the number of multi-year gifts as part of the development campaign.

Report of Trustee Board

Financial Review

Group results for the year

The Academy has produced group accounts for the year, having consolidated its accounts with those of its two subsidiaries: the Queen Elizabeth Prize for Engineering Foundation and RAE Trading Limited. The annual report, incorporating the financial statements for the year ended 31 March 2023, has been prepared in accordance with the Academy's Royal Charter, and in compliance with Accounting and Reporting by Charities: Statement of Recommended Practice 2019, applicable to charities preparing their accounts in accordance with the Financial Reporting Standard applicable in the UK and Republic of Ireland (FRS102) (effective 1 January 2019) – (Charities SORP (FRS102)), the Financial Reporting Standard applicable in the UK and Republic of Ireland (FRS102). The Academy meets the definition of public benefit entity under FRS102. These financial statements are prepared under FRS102.

Group income for the year was £57.1 million (2021/22 £48.3 million). During the year, income from grants and other contracts totalled £52.9 million (2021/22 £45.6 million). Donations totalled £2.0 million (2021/22 £0.7 million), of which £0.2 million was to the Queen Elizabeth Prize for Engineering Foundation. Other major sources of income during the year were: investments, subscriptions, events, and facilities hire income at a total of £2.2 million compared to £2.0 million in the previous year.

Group expenditure on charitable activities was £55.9 million (2021/22 £47.5 million): 97% of total resources expended. Of this total, £49.9 million represented charitable activities and grants paid under various programmes and £6.1 million represented the costs of operating those programmes.

The cost of generating funds across the group was £1.6 million: 3% of total resources expended. The cost of generating funds consists of fees paid to investment managers, facilities hire and catering, and the staff costs and expenses associated with fundraising. The Academy is continuing with major fundraising activity aimed at obtaining funds for the enhancement and expansion of the Academy's programmes to support talent and diversity, innovation, and policy and engagement, as well as central infrastructure.

Group asset value

The carrying value of the group's net assets was £66.8 million (2021/22 £70.7 million). Investments were valued at £50.1 million, with the Academy holding £25.5 million and the Queen Elizabeth Prize for Engineering Foundation holding £24.6 million.

Tangible fixed assets valued at £25.5 million included the £10.9 million value of the Carlton House Terrace lease and the £12.5 million of leasehold improvements to Prince Philip House. The main liability was a bank loan of £11.5 million, which funded the extension of the Academy's property lease secured in 2017. The loan also funded part of the lower ground floor extension and settled the previous loan with NatWest.

Group fixed assets

Capital expenditure during the year amounted to £1.5 million, which was on computer systems and equipment, office fixtures and fittings, and leasehold improvement.

Reserves policy

The Academy's intention is to maintain sufficient reserves to ensure financial resilience and sustainability, including protection against risks identified in the risk register. The reserves policy sets out the target reserves level and the key principles by which the Academy will manage any excesses or deficits compared to the target. The aim is to strike the appropriate balance between ensuring a sustainable financial position and using funds to fulfil the charitable objectives of the Academy and deliver public benefit. The reserves policy is reviewed regularly.

Year ended 31 March	**2023 £000**	**2022 £000**
Total funds as per group balance sheet	66,819	70,664
Exclude:		
Restricted funds	35,008	38,168
Unrestricted funds tied up in tangible fixed assets	25,487	24,628
Designated and special funds	3,880	3,724
Free Reserves	**2,444**	**4,144**

Free Reserves

Free Reserves are available to be spent for any purpose that meets the Academy's charitable objectives. Free Reserves would cover a short-term emergency or longer-term structural change. The reserves policy states that the recommended range for Free Reserves is £3.0 million to £4.5 million. Whenever the Academy's Free Reserves fall below the recommended range, the intention is to build the level of Free Reserves to be within the recommended range within five years. The decrease in Free Reserves is driven by the decrease in investment value and is not reflective of underlying operational performance.
The strategy to bring Free Reserves in line with the recommended range is to grow the value of investments, increase fundraising and ensure the continued improvement in trading subsidiary performance.

Royal Academy of Engineering (parent charity of group)

Results for the year

Total income for the year was £55.6 million (2021/22 £47.2 million). The Academy is grateful to the Department for Business, Energy and Industrial Strategy (BEIS)* for providing the government core grant to support activities aimed primarily at promoting engineering research in the UK. The core grant at £38.4 million (2021/22 £19.7 million) represented 67% of total group incoming resources.

Income from other grants and contracts decreased by 44% to £14.5 million. Included in this amount were grants received from BEIS of £5.2 million from the Global Challenges Research Fund and £1.9 million from the Newton Fund programme.

Expenditure on charitable activities was £54.1 million compared to £46.2 million in the previous year. An analysis based upon the principal objective of each activity shows that, of the total charitable expenditure: 75% was on innovation; 12% on policy and engagement; and 13% on talent and diversity. Employment costs increased from the previous year by 23% to £10.1 million due to additional resources required to deliver the increased scale of programmes.

Investments

The value of the Academy's investment portfolio decreased over the year by £2.0 million to £25.5 million. Realised and unrealised investment losses during the year were £2.0 million. 70% of the Academy's investment portfolio is held in global equities and 30% is held in fixed interest bonds and asset backed and alternative investments. Income to the Academy from dividends decreased by 23% during the year to £378,000.

The Academy's investments are held in a managed investment fund and index funds. The Academy's investments underperformed versus the composite benchmark by 7%. The composite benchmark for the portfolio was set as 70% FTSE All World and 30% cash plus 2%.

Investment policy

The Academy has adopted the following sustainable principles within its investment policy:

1. The Academy's assets should be invested in line with its aims.
2. The Academy aims for the best possible financial return from its investments. However, the Academy understands the importance of sustainable investing practices that are compliant with the United Nations Principles of Responsible Investments (UN PRI). The Trustees believe that the two considerations are not contradictory and that sustainable investing principles should not lead to lower return expectations over the long term.
3. The Academy's charitable object is the pursuit, encouragement and maintenance of excellence in the whole field of engineering to useful purpose. The Trustees conclude that a blanket exclusionary policy on certain sectors, as followed by many institutional investors, is not appropriate for the Academy.
4. The Academy requires its fund managers to pay appropriate regard to relevant corporate governance, social, ethical, and environmental considerations in the selection, retention and realisation of all fund investments. The Academy requires all investment managers to be signatories to UN PRI.
5. These principles will be reviewed on a regular basis to ensure that they are in-sync with the broader ethical and sustainability policies of the Academy.

The Trustees' general powers of investment derive from and are restricted by the Trustee Act 2000. These powers are not restricted by the Academy's Royal Charter, which states that "the Board may invest any monies of the Academy not immediately required for the purposes of the Academy". The investment objective is to generate a total return of inflation (Consumer Price Index) plus 4% per annum over the long term, after expenses. This will allow the Academy to maintain the real value of the assets, while funding annual expenditure at the level generally not exceeding 4% per annum.

The funds have been invested in a diversified portfolio of assets. The core of the portfolio has been invested in the income and return generating assets. Asset classes include domestic and international equities, fixed income instruments, property, commodities, cash, and any other assets deemed suitable for the Academy.

Designated fund

A strategic development fund of £1.8 million is available to deliver impactful charitable activities over the next five years and/or strengthen the Academy for the longer term and fund non-recurring costs of major projects without impacting annual operating budgets.

Capital building fund

Within restricted and designated funds there is a fund of £2.2 million to cover major capital improvements to Prince Philip House.

The specific uses and needs of the restricted and designated funds held by the Academy are detailed separately in the notes to the accounts referred to above. The Academy's reserves are available and adequate to fulfil the current obligations of the Academy.

*BEIS was restructured in February 2023 and the Department for Science, Innovation and Technology was created. All funding agreements in place are with BEIS.

Risk management and appetite

The Trustees have agreed a risk appetite statement and associated risk management policy. The Audit and Risk Committee reviews the risk register four times a year. The Chair of the Audit and Risk Committee provides updates to the Trustee Board. Risk management is supported by the work of the Audit and Risk Committee as well as various operating committees. The Academy's overall approach to risk is illustrated by the following table:

Risk appetite table

	Very low	Low	Some	Acceptance
Health, safety and security	✓			
Safeguarding	✓			
Compliance and governance	✓			
Data protection and cybersecurity	✓			
Reputation for credibility, integrity, and quality	✓			
Reputation for thought leadership, progressive thinking, and campaigning			✓	
IT infrastructure and development		✓		
People and culture			✓	
Environment and sustainability		✓		
Financial		✓		
Programme delivery		✓		
Impact			✓	
Programme innovation				✓

See table below for description of risk appetite classification

Risk appetite classification

Very low	As low as reasonably possible.
Low	Preference for safe options that have a low degree of residual risk.
Some	Willing to consider all potential options and choose one that is most likely to result in successful delivery, despite the potential for some degree of risk.
Acceptance	Eager to innovate and to choose options offering potentially higher reward, despite greater inherent risk.

The most significant risks currently faced by the Academy and managing actions are shown in the table below.

Academy funding: non-government Risk of insufficient funding raised from non-government sources caused by insufficient or unsuccessful fundraising attempts leading to threat to financial sustainability and/or inability to deliver programmes and activities required for successful implementation of the strategy.	• A fundraising cultivation and stewardship programme is in place. • Financial strategy in place that sets out purpose of and appropriate levels of reserves. • Development Advisory Board has been re-established. • RAE Trading with AV upgrade. • Business Development Group meeting regularly to discuss commercial opportunities.
Staff resources and capability Risk of poor staff retention and inability to hire high-quality staff caused by competitive market conditions and/or lack of support, development opportunities or value proposition leading to the Academy being unable to deliver its programme of work at the quality required.	• External salary benchmarking was carried out for RemCo in November 2022. • Utilising different resourcing models such as freelancers, inbound and outbound secondments, and contractors. • Regular staff surveys to track engagement and highlight issues. • New People Strategy being implemented. • Talent management review underway.

Cyber attack Risk of cyber attacks caused by poor system security leading to compromised IT systems and diminished service delivery.	• Up-to-date technology and methodologies including third-party daily monitoring, malware protection, regular patching on laptops and servers, and email and web filtering. • Encryption on laptops and VPN, and two-factor authentication is required when using Academy laptops and/or other services remotely. • Risks addressed following annual penetration testing. • Specific mitigation solution in place against distributed denial of service attacks. • Business continuity exercise complete.

Queen Elizabeth Prize for Engineering Foundation

The Queen Elizabeth Prize for Engineering Foundation is governed by the Articles of Association for a private company limited by guarantee. These were agreed by Queen Elizabeth Prize for Engineering Foundation Trustees on 21 May 2012 and amended on 4 March 2013. The sole member of the charitable company is the Royal Academy of Engineering.

The Queen Elizabeth Prize for Engineering Foundation Trustee Board consists of at least two (and no more than six) nominated trustees, who are appointed by ordinary resolution or by a decision of the Queen Elizabeth Prize for Engineering Foundation Trustees and one Ex-Officio Trustee who is holder of the office of the President of the Royal Academy of Engineering. All material decisions in relation to the Foundation are taken by Queen Elizabeth Prize for Engineering Foundation Trustees.

Royal Academy of Engineering Trustees meet periodically with Queen Elizabeth Prize for Engineering Foundation Trustees. The Queen Elizabeth Prize for Engineering Foundation Trustees formally report to the Royal Academy of Engineering Trustee Board once per annum.

Results for the year

Total income for the year was £0.8 million (2021/22 £0.8 million). Expenditure on charitable activities was £2.1 million compared to £0.8 million the previous year. The Queen Elizabeth Prize for Engineering has moved from a biennial to an annual cycle. The Foundation pays a management fee to the Academy for services, which includes staff employed and office space. A CEO is shared across the Royal Academy of Engineering and Queen Elizabeth Prize for Engineering Foundation group entities.

Investments

The value of the Queen Elizabeth Prize for Engineering Foundation investment portfolio decreased by £1.6 million (2022: £0.2 million decrease). Investments were valued at £24.6 million (2021: £26.1 million).

Investment policy

The overall investment objectives are to create both income and capital growth such that the real capital value of the portfolio is maintained over the long term, thus allowing the prize to be awarded in perpetuity. The portfolio is managed on a total return basis with a medium risk profile. The Queen Elizabeth Prize for Engineering Foundation ensures that portfolio performance is measured against a customised benchmark. The investments are maintained with a long-term investment time horizon of over 10 years.

The Queen Elizabeth Prize for Engineering Foundation does not invest in organisations that conflict with the charity's purpose. The Trustees do not wish to invest in companies or funds that derive their income from the sale or manufacture of tobacco products. No initial investment to exceed 10% of the value of the fund. Bonds held will "BBB" or better classification.

Reserves policy

Queen Elizabeth Prize for Engineering Foundation Trustees consider the level of the Foundation's reserves as part of their risk assessment review process. These reserves are restricted within the group balance sheet.

RAE Trading Limited

Results for the year

The commercial activity undertaken by the company during the year was the provision of rooms and catering services within Prince Philip House, primarily to corporate customers. Catering services are also provided to the Academy at cost. Revenue for the year was £1.0 million (2021/22 £0.5 million). Operating expenditure, including the cost of providing a service to the Academy, was £0.7 million (2021/22 £0.4 million). The net profit for the year was £136,000 compared to £92,000 in the previous year.

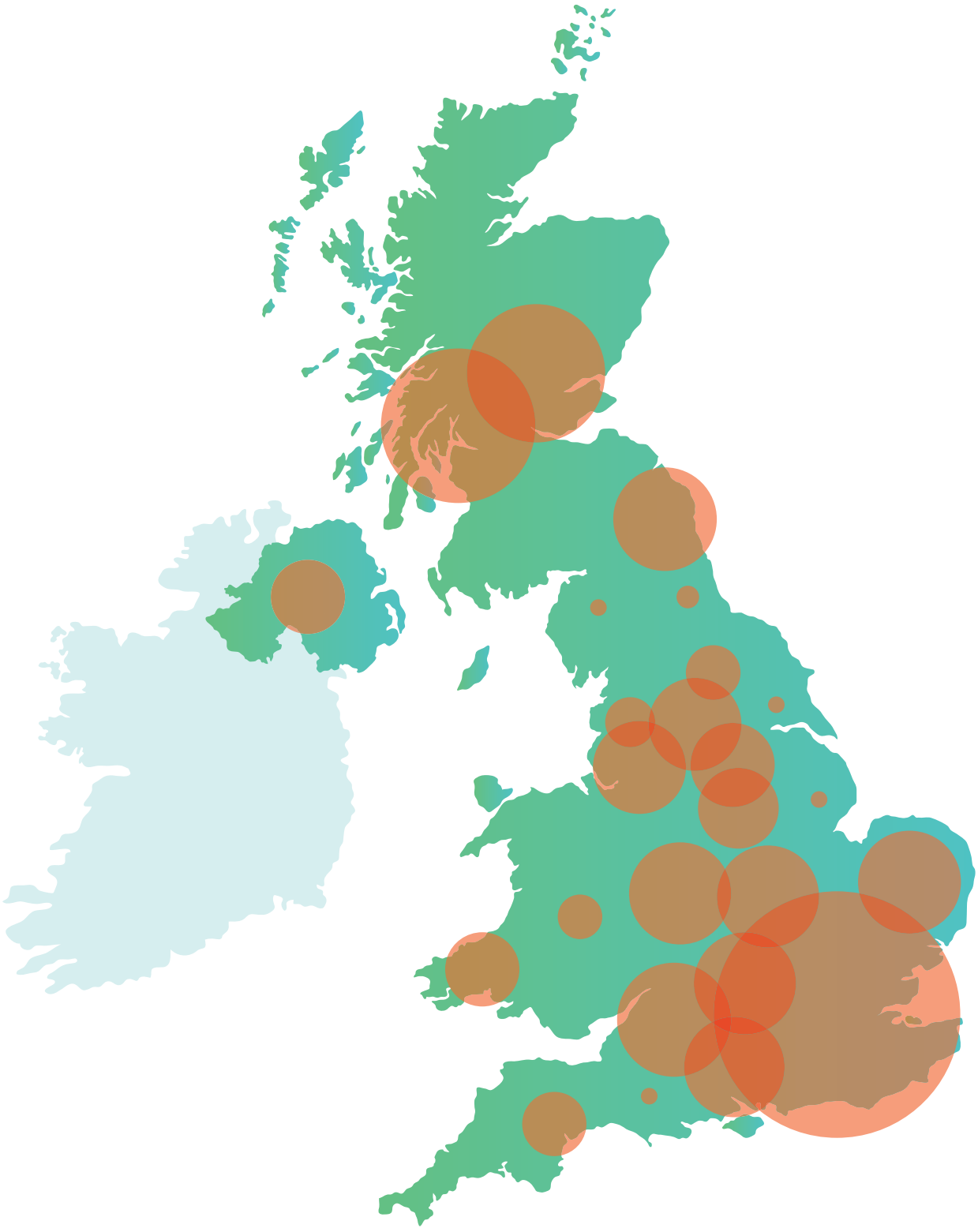
There are no reserves held by RAE Trading Limited as all profit arising is gift aided to the Academy.

Recipients of Academy grants

The Academy made over 1,000 grants and awards to organisations and individuals in 2022/23 totalling £31.5 million. The first 25 organisations, in order of total amount of funds paid to recipients, are listed below.

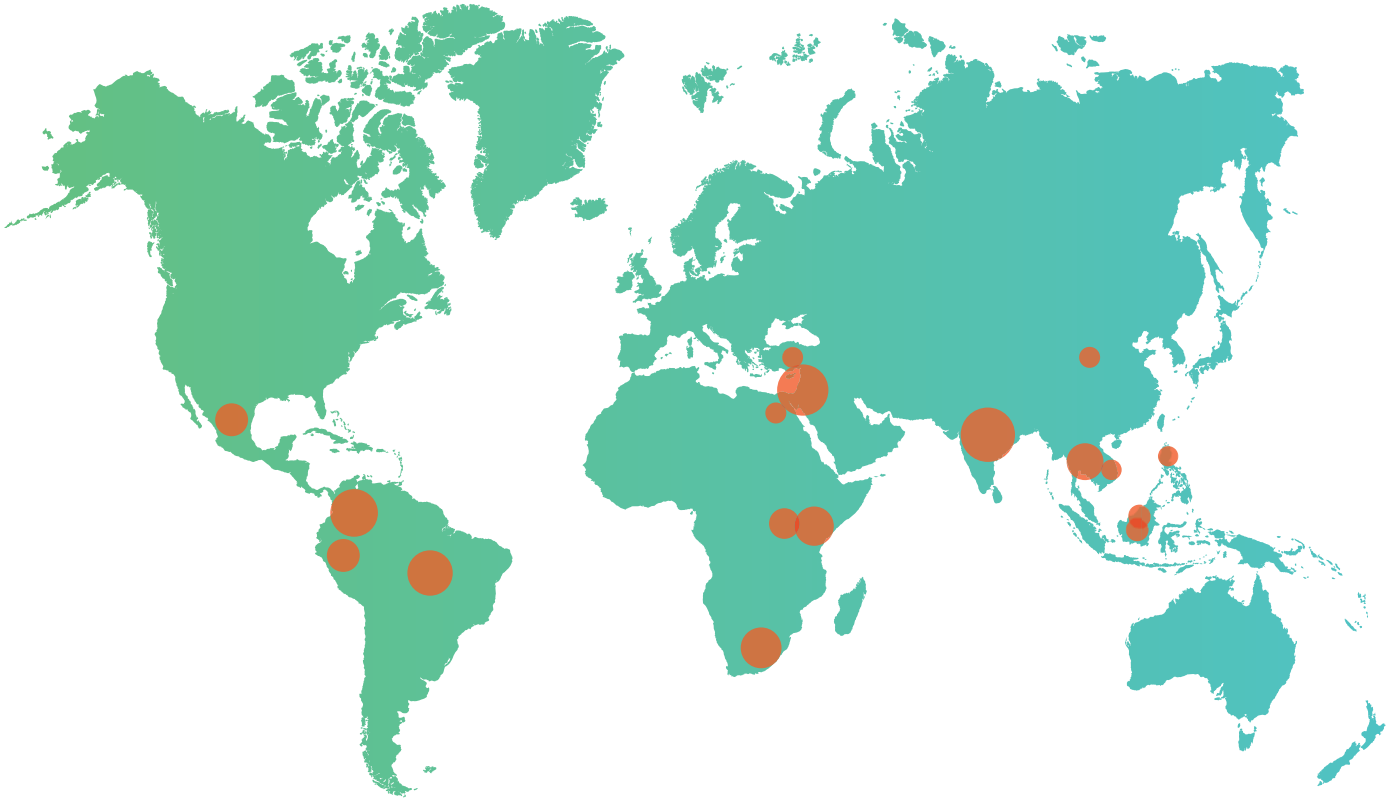
		Innovation	Policy and engagement	Talent and diversity	Total amount in £
1	Imperial College London	2,757,856	–	15,642	2,773,498
2	University College London	2,436,319	11,778	45,600	2,493,697
3	University of Glasgow	1,882,981	–	10,037	1,893,018
4	University of Oxford	1,555,336	–	10,000	1,565,336
5	University of Edinburgh	1,426,804	–	9,750	1,436,554
6	University of Bristol	1,177,778	8,127	44,300	1,230,205
7	University of Manchester	1,089,375	38,362	6,000	1,133,737
8	University of Strathclyde	995,829	–	16,300	1,012,129
9	University of Southampton	945,636	–	18,550	964,186
10	Heriot-Watt University	910,165	7,061	10,989	928,215
11	Newcastle University	842,948	3,800	12,981	859,729
12	University of Cambridge	792,433	–	32,000	824,433
13	University of Nottingham	623,003	–	425	623,428
14	University of Leeds	599,164	–	498	599,662
15	King's College London	540,921	–	9,993	550,914
16	Queen's University Belfast	440,465	–	9,520	449,985
17	University of Sheffield	390,137	1,384	11,321	402,842
18	University of Warwick	360,556	–	–	360,556
19	Loughborough University	340,430	–	13,995	354,425
20	University of Liverpool	346,028	5,483	2,000	353,511
21	University of Birmingham	304,224	1,679	27,940	333,843
22	Aston University	283,911	4,935	40,510	329,356
23	University of Exeter	326,532	–	–	326,532
24	University of York	314,278	–	2,000	316,278
25	University of Bath	210,930	15,000	49,960	275,890
Total		**21,894,039**	**97,609**	**400,311**	**22,391,959**

The Academy awarded grants across the UK and internationally. A heatmap of awards made across the UK is shown below by ITL2* region. The map shows only grant funding and does not include other regionally based Academy activities.



* International Territorial Level or ITL is a geocode standard for referencing the subdivisions of countries for statistical purposes

A heatmap of directly related expenditure made across Official Development Assistance (ODA) programmes by country is shown below.



Royal Academy of Engineering (parent charity of group) structure, governance and management

Election to the Trustee Board

Trustee Board members are elected for a term of three years with the exception of the President who is elected for a term of up to five years. With the exception of the President, Trustees are eligible for re-election for a further three-year term. The Trustee election is by a ballot of Fellows each year. The Nominations Committee helps to ensure that there is an appropriate candidate slate for election to the Trustee Board and the associated governance roles.

Induction and training of Trustee Board members

Following election, Trustees are provided with an information pack comprising the Academy's Charter, Statutes and Regulations, a Charity Commission publication on the responsibilities of charity trustees and the Academy strategy. Trustee Board members receive a full induction briefing from senior staff and the Academy's legal advisor and are encouraged to attend recommended external training courses for charity trustees.

Charity Governance Code

The Trustees have undertaken a review of current Academy practice mapped against the recommended practice of the Charity Governance Code. The vast majority of Academy practices correspond with the recommended practices set out in the Code. A governance review was conducted beginning in 2020/21 and adopted in 2021/22 following an Extraordinary General Meeting.

Code of Conduct

A Code of Conduct is in place to cover the conduct and ethical behaviour expected of Fellows of the Royal Academy of Engineering. Fellows are ambassadors for the Academy and should therefore conduct themselves in a manner that supports the Academy's aims and that upholds and enhances the reputation of the Academy and its Fellows. Fellows are expected to follow the Nolan principles of selflessness, integrity, objectivity, accountability, openness, honesty, and leadership. Fellows who are working for or on behalf of the Academy must act in accordance with Academy policies on conduct and behaviour covering items such as conflicts of interest, equality, diversity and inclusion, anti-bullying and harassment, and anti-bribery. The Conduct Committee, chaired by the Vice-President for Committee Coordination, oversees the Code and its implementation.

Internal control

Finance Committee

The Finance Committee is mandated by and reports to the Trustee Board on the following issues:

- Setting a budget prior to each financial year for approval by the Trustee Board.
- Appointing and monitoring the performance of independent investment advisers.
- Approving authorised signatories and setting limits on delegated financial authorities.
- Monitoring financial performance against budget.
- Reviewing the reserves policy annually.
- Ensuring that accounting rules are followed.

Detailed management accounts are prepared monthly within 10 working days of the month end and submitted six times a year to the Finance Committee. Summarised accounts are submitted at each Trustee Board meeting.

The Finance Committee meets at least six times during each financial year. Included in the items considered by the Committee during the year were the Academy's investment strategy and the performance of RAE Trading Limited.

Audit and Risk Committee

The Audit and Risk Committee is mandated by and reports to the Trustee Board on the following issues:

- The effectiveness and development of the Academy's risk management policy and processes and compliance with these.
- The review of the Academy's main risks and their management, particularly strategic risks and control processes concerns, and assessment of the level of assurance on the controls in place.
- The audit and review of the Academy's activities, assessing compliance with and effectiveness of controls, policies and processes.
- The review of significant projects, programmes and other activities to ensure that suitable contracts are in place and that the financial, operational and risk management is appropriate.
- Recommendations on the appointment, reappointment and removal of the external auditors.
- The review of the external auditor's findings and in particular any problems, reservations and observations arising during the audit.

The Audit and Risk Committee meets at least four times during each financial year. Included in the items considered by the Committee during the year were the review of the external audit findings, a review of the risk appetite statement, a review of the development programme, and a cybersecurity review.

Fundraising statement

Section 162a of the Charities Act 2011 requires charities to make a statement regarding fundraising activities. Although the Academy does not undertake widespread fundraising from the general public, the legislation defines fundraising as "soliciting or otherwise procuring money or other property for charitable purposes". Such amounts receivable are presented in the Academy's accounts as 'voluntary income' and include legacies and grants. The day-to-day management of all income generation is delegated to the executive leadership team, who are accountable to the Trustees.

The charity adheres to the Chartered Institute of Fundraising Code of Fundraising Practice, which outlines standards expected of all charitable fundraising organisations in the UK. The Academy has received no complaints in relation to fundraising activities. Its terms of employment require staff to behave reasonably at all times.

Grant-making policy

The grant and award programmes are run by committees or steering groups of Fellows of the Academy, and where appropriate other experts, chosen based on their experience and expertise. Fellows of the Academy offer their time freely; no remuneration was paid in the year beyond the reimbursement of reasonable expenses. There is a policy of strict impartiality and no Fellow may participate in a group/award decision if there is a conflict of interest.

Grant awardees are issued with agreements and progress is monitored and recorded utilising a grant management system.

Remuneration policy

The Academy's policy is to pay staff salaries at the market mid-point. Salaries are reviewed in alternate years following a market benchmarking exercise conducted by an independent consultancy. The last independent review was undertaken during 2022 to inform the salary review implemented with effect from 1 April 2023.

The remuneration of the Chief Executive and directors is set annually by the Remuneration Committee. In setting appropriate levels of senior management pay, the Remuneration Committee considered the skills, experience and competencies required for each role, and the remuneration level for those roles in sectors where suitable candidates would be found.

Executive leadership team

Day-to-day management of the Academy is the responsibility of the Chief Executive who, with the directors listed below comprise the executive leadership team, which meets regularly. Strategy is set by the Trustee Board, and implemented by the executive leadership team, with oversight provided by Academy committees.

The executive leadership team who served during the period of the report are as follows:

Chief Executive | Dr Hayaatun Sillem CBE

Chief Operating Officer | Chris Boyle

Executive Director, Programmes | Dr Andrew Clark

Director, Policy and International | Dr Nick Starkey

Director, Communications and Engagement | Joanna Trigg

Trustees' responsibilities

The Trustees are responsible for preparing the annual report and the financial statements in accordance with applicable law and regulations.

Charity law requires the Trustees to prepare financial statements for each financial year in accordance with United Kingdom Generally Accepted Accounting Practice (United Kingdom Accounting Standards and applicable law). Under charity law the Trustees must not approve the financial statements unless they are satisfied that they give a true and fair view of the state of affairs of the group and charity and of the incoming resources and application of resources, including the income and expenditure, of the group for that period.

In preparing these financial statements, the Trustees are required to:

- select suitable accounting policies and then apply them consistently
- make judgements and accounting estimates that are reasonable and prudent
- state whether applicable UK Accounting Standards have been followed, subject to any material departures disclosed and explained in the financial statements
- prepare the financial statements on the going concern basis unless it is inappropriate to presume that the charity will continue in business.

The Trustees are responsible for keeping adequate accounting records that are sufficient to show and explain the charity's transactions and disclose with reasonable accuracy at any time the financial position of the charity and enable them to ensure that the financial statements comply with the Charities Act 2011. They are also

responsible for safeguarding the assets of the charity and hence for taking reasonable steps for the prevention and detection of fraud and other irregularities.

Financial statements are published on the charity's website in accordance with legislation in the UK governing the preparation and dissemination of financial statements, which may vary from legislation in other jurisdictions. The maintenance and integrity of the charity's website is the responsibility of the Trustees. The Trustees' responsibility also extends to the ongoing integrity of the financial statements contained therein.

Signed on behalf of the Trustee Board on 15 August 2023

Professor Sir Jim McDonald FREng FRSE
President

David Eyton CBE FREng
Chair of the Finance Committee

Auditor's report

Independent auditor's report to Trustees of the Royal Academy of Engineering

Opinion on the financial statements

In our opinion, the financial statements:

- give a true and fair view of the state of the Group's and of the Parent Charity's affairs as at 31 March 2023 and of the Group's incoming resources and application of resources for the year then ended;
- have been properly prepared in accordance with United Kingdom Generally Accepted Accounting Practice; and
- have been prepared in accordance with the requirements of the Charities Act 2011.

We have audited the financial statements of Royal Academy of Engineering ("the Parent Charity") and its subsidiaries ("the Group") for the year ended 31 March 2023 which comprise the consolidated statement of financial activities, the group and charity balance sheets, the consolidated statement of cash flows and notes to the financial statements, including a summary of significant accounting policies. The financial reporting framework that has been applied in their preparation is applicable law and United Kingdom Accounting Standards, including Financial Reporting Standard 102 *The Financial Reporting Standard applicable in the UK and Republic of Ireland* (United Kingdom Generally Accepted Accounting Practice).

Opinion on other matter as required by BEIS grant letters

In our opinion, in all material respects, the grant payments received from the Department for Business, Energy, and Industrial Strategy (BEIS) have been applied for the purposes set out in the Grant Letters and in accordance with the terms and conditions of the agreements.

Basis for opinion

We conducted our audit in accordance with International Standards on Auditing (UK) (ISAs (UK)) and applicable law. Our responsibilities under those standards are further described in the Auditor's responsibilities for the audit of the financial statements section of our report. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Independence

We remain independent of the Group and the Parent Charity in accordance with the ethical requirements relevant to our audit of the financial statements in the UK, including the FRC's Ethical Standard, and we have fulfilled our other ethical responsibilities in accordance with these requirements.

Conclusions related to going concern

In auditing the financial statements, we have concluded that the Trustees' use of the going concern basis of accounting in the preparation of the financial statements is appropriate.

Based on the work we have performed, we have not identified any material uncertainties relating to events or conditions that, individually or collectively, may cast significant doubt on the Group and the Parent Charity's ability to continue as a going concern for a period of at least twelve months from when the financial statements are authorised for issue.

Our responsibilities and the responsibilities of the Trustees with respect to going concern are described in the relevant sections of this report.

Other information

The Trustees are responsible for the other information. The other information comprises the information included in the Annual Report, other than the financial statements and our auditor's report thereon. Our opinion on the financial statements does not cover the other information and, except to the extent otherwise explicitly stated in our report, we do not express any form of assurance conclusion thereon.

Our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial statements, or our knowledge obtained in the audit or otherwise appears to be materially misstated. If we identify such material inconsistencies or apparent material misstatements, we are required to determine whether there is a material misstatement in the financial statements themselves. If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact.

We have nothing to report in this regard.

Matters on which we are required to report by exception

We have nothing to report in respect of the following matters in relation to which the Charities (Accounts and Reports) Regulations 2008 requires us to report to you if, in our opinion;

- the information given in the Trustees' Report for the financial year for which the financial statements are prepared is inconsistent in any material respect with the financial statements; or
- adequate accounting records have not been kept by the Parent Charity; or
- the Parent Charity financial statements are not in agreement with the accounting records and returns; or

- we have not received all the information and explanations we require for our audit.

Responsibilities of Trustees

As explained more fully in the Trustees' responsibilities statement, the Trustees are responsible for the preparation of the financial statements and for being satisfied that they give a true and fair view, and for such internal control as the Trustees determine is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, the Trustees are responsible for assessing the Group's and the Parent Charity's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless the Trustees either intend to liquidate the Group or the parent Charity or to cease operations, or have no realistic alternative but to do so.

Auditor's responsibilities for the audit of the financial statements

We have been appointed as auditor under section 144 of the Charities Act 2011 and report in accordance with the Act and relevant regulations made or having effect thereunder.

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with ISAs (UK) will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

Extent to which the audit was capable of detecting irregularities, including fraud

Irregularities, including fraud, are instances of non-compliance with laws and regulations. We design procedures in line with our responsibilities, outlined above, to detect material misstatements in respect of irregularities, including fraud. The extent to which our procedures are capable of detecting irregularities, including fraud is detailed below:

Non-compliance with laws and regulations

- Based on our understanding of the Group and the sector in which it operates; we identified that the principal laws and regulations that directly affect the financial statements to be relevant charities acts in the UK and Ireland. We assessed the extent of compliance with these laws and regulations as part of our procedures on the related financial statement items.
- In addition, the group and charity are subject to many other laws and regulations where the consequences of non-compliance could have a material effect on amounts or disclosures in the financial statements, for instance through the imposition of fines or litigation.
- In order to help identify instances of non-compliance with other laws and regulations that may have a material effect on the financial statements, we made enquiries of management and those charged with Governance about whether the audited entity is in compliance with such laws and regulations, and we inspected any relevant regulatory and legal correspondence.

Our procedures in respect of the above included:

- Review of minutes of meeting of those charged with governance for any instances of non-compliance with laws and regulations;
- We agreed the financial statement disclosures to applicable legislation;
- We determined that the most significant laws and regulations which are directly relevant to specific assertions in the financial statements are those related to the financial reporting framework including but not limited to United Kingdom Generally Accepted Accounting Practice and the Charities Act 2011, Statement of Recommended Practice for Accounting Reporting by Charities (SORP FRS 102);
- We confirmed from management that there were no serious incidents reported to the Charity Commission in the year under review. We also confirmed that there was no ongoing litigation or claims;
- We understood how the charity is complying with those legal and regulatory frameworks that are significant to their activities by making enquiries to management and those responsible for legal and compliance procedures. We corroborated our enquiries through our review of minutes.

Fraud

We assessed the susceptibility of the financial statements to material misstatement, including fraud. Our risk assessment procedures included:

- Enquiry with management and those charged with governance and also considered Audit Committee, regarding any known or suspected instances of fraud;
- Obtaining an understanding of the Group's/Charity's policies and procedures relating to:
  - Detecting and responding to the risks of fraud; and
  - Internal controls established to mitigate risks related to fraud.

- Review of minutes of meeting of those charged with governance for any known or suspected instances of fraud;
- Discussion amongst the engagement team as to how and where fraud might occur in the financial statements;
- Performing analytical procedures to identify any unusual or unexpected relationships that may indicate risks of material misstatement due to fraud.

Based on our risk assessment, we evaluated management's incentives and opportunities for fraudulent manipulation of the financial statements (including the risk of management override of controls) and determined that the principal risks were related to posting inappropriate journal entries to manipulate financial results and management bias in accounting estimates.

Our procedures in respect of the above included:

- In addressing the risk of fraud through management override of controls; testing the appropriateness of journal entries and other adjustments; testing the application of cut off and revenue recognition, particularly around all revenue streams, and evaluating the business rationale of any significant transactions that are unusual or outside the normal course of business;
- Testing a sample of journal entries throughout the year, which met a defined risk criterion, by agreeing to supporting documentation;
- Challenging the assumptions made by management in their significant accounting estimates in particular investment valuation and cash flow forecasts used in going concern assessments; and
- Performed audit procedures to identify any unusual or unexpected relationships that may indicate risks of material misstatement due to fraud.

We also communicated relevant identified laws and regulations and potential fraud risks to all engagement team members and remained alert to any indications of fraud or non-compliance with laws and regulations throughout the audit.

Our audit procedures were designed to respond to risks of material misstatement in the financial statements, recognising that the risk of not detecting a material misstatement due to fraud is higher than the risk of not detecting one resulting from error, as fraud may involve deliberate concealment by, for example, forgery, misrepresentations or through collusion. There are inherent limitations in the audit procedures performed and the further removed non-compliance with laws and regulations is from the events and transactions reflected in the financial statements, the less likely we are to become aware of it.

A further description of our responsibilities for the audit of the financial statements is located at the Financial Reporting Council's ("FRC's") website at: www.frc.org.uk/auditorsresponsibilities. This description forms part of our auditor's report.

Use of our report

This report is made solely to the Charity's trustees, as a body, in accordance with the Charities Act 2011. Our audit work has been undertaken so that we might state to the Charity's trustees those matters we are required to state to them in an auditor's report and for no other purpose. To the fullest extent permitted by law, we do not accept or assume responsibility to anyone other than the Charity and the Charity's trustees as a body, for our audit work, for this report, or for the opinions we have formed.

BDO LLP, Statutory auditor
London, UK

Date:

BDO LLP is eligible for appointment as auditor of the charity by virtue of its eligibility for appointment as auditor of a company under section 1212 of the Companies Act 2006.

BDO LLP is a limited liability partnership registered in England and Wales (with registered number OC305127).

Consolidated statement of financial activities

Year ended 31 March 2023	Notes	Unrestricted funds 2023	Restricted funds 2023	Total 31 March 2023	Unrestricted funds 2022	Restricted funds 2022	Total 31 March 2022
		£	£	£	£	£	£
Income from:							
Charitable activities	2, 3, 4	–	52,933,947	52,933,947	–	45,639,341	45,639,341
Donations and legacies	5	680,187	1,343,167	2,023,354	99,813	559,955	659,768
Other trading activities	6a	1,146,958	–	1,146,958	924,392	–	924,392
Investments	6	352,041	667,935	1,019,976	457,015	593,587	1,050,602
Total income		**2,179,186**	**54,945,049**	**57,124,235**	**1,481,220**	**46,792,883**	**48,274,103**
Expenditure on:							
Raising funds		1,424,255	164,962	1,589,217	1,099,835	189,311	1,289,146
Charitable activities	7	1,271,231	54,652,816	55,924,047	1,423,251	46,100,598	47,523,849
Other	8	100,112	8,763	108,875	29,517	3,675	33,192
Total expenditure		**2,795,598**	**54,826,541**	**57,622,139**	**2,552,603**	**46,293,584**	**48,846,187**
Net (losses)/gains on investment	11	(1,898,624)	(1,448,090)	(3,346,714)	804,854	2,019,879	2,824,733
Net (expenditure) / income		**(2,515,036)**	**(1,329,582)**	**(3,844,618)**	**(266,529)**	**2,519,178**	**2,252,649**
Transfer between funds	16	**1,830,301**	**(1,830,301)**	**–**	**677,084**	**(677,084)**	**–**
Net movement in funds		(684,735)	(3,159,883)	(3,844,618)	410,555	1,842,094	2,252,649
Fund balances brought forward 1 April		32,495,907	38,167,859	70,663,766	32,085,352	36,325,765	68,411,117
Fund balances carried forward 31 March	16, 17	31,811,172	35,007,976	66,819,148	32,495,907	38,167,859	70,663,766

All the above results are derived from continuing activities. There are no gains and losses other than those stated above.

The notes on pages 44 to 59 form part of these financial statements.

Balance sheets

At 31 March 2023	Notes	Group 2023 £	Group 2022 £	Charity 2023 £	Charity 2022 £
Tangible fixed assets	10	25,486,605	24,628,325	25,486,605	24,628,325
Investments	11	50,104,356	53,651,386	25,505,010	27,503,846
Total fixed assets		**75,590,961**	**78,279,711**	**50,991,615**	**52,132,171**
Current assets:					
Debtors	12	9,130,743	8,150,622	9,483,942	8,161,068
Stock	13	2,439	3,004	2,439	3,004
Short-term deposits		247,041	1,049,046	62,236	117,345
Cash at bank		3,806,932	3,647,571	2,585,488	2,531,101
		13,187,155	**12,850,243**	**12,134,105**	**10,812,518**
Liabilities					
Creditors (amounts falling due within one year)	14a	(10,458,968)	(8,966,188)	(9,662,146)	(8,241,851)
Net current assets		**2,728,187**	**3,884,055**	**2,471,959**	**2,570,667**
Total assets less current liabilities		78,319,148	82,163,766	53,463,574	54,702,838
Creditors (amounts falling due beyond one year)	14c	(11,500,000)	(11,500,000)	(11,500,000)	(11,500,000)
Total net assets		**66,819,148**	**70,663,766**	**41,963,574**	**43,202,838**
The funds of the Group/Charity:					
Restricted income funds	16	35,007,976	38,167,859	10,374,183	10,870,683
Unrestricted funds					
Designated fund		3,880,132	3,724,180	3,724,180	3,197,927
General fund		27,931,040	28,771,727	27,865,211	29,134,228
Total unrestricted funds		31,811,172	32,495,907	31,589,391	32,332,155
Total charitable funds		**66,819,148**	**70,663,766**	**41,963,574**	**43,202,838**

The notes on pages 44 to 59 form part of these financial statements.

These financial statements were approved and authorised for issue by the President and Chair of the Finance Committee under delegated authority from the Trustee Board.

Signed on behalf of the Trustee Board on 15 August 2023

Professor Sir Jim McDonald FREng FRSE
President

David Eyton CBE FREng
Chair of the Finance Committee

Consolidated statement of cash flows

Year ended 31 March 2023

	2023 £	2022 £
Cash flows from operating activities:		
Net cash expended by operating activities	(315,081)	(1,795,630)
Cash flows from investing activities:		
Dividends, interest and rents from investments	1,019,976	1,050,602
Purchase of property, plants and equipment	(1,547,850)	(408,084)
Proceeds from the sale of investments	5,995,223	28,901,597
Purchase of investments	(5,794,912)	(26,628,384)
Net cash (expended)/provided by investing activities	(327,563)	2,915,731
Change in cash and cash equivalents in the reporting period	(642,644)	1,120,101
Cash and cash equivalents at 1 April	4,696,617	3,576,516
Cash and cash equivalents at 31 March	**4,053,973**	**4,696,617**
Reconciliation of net (expenditure)/income to net cash flow used in operating activities		
Net (expenditure)/income for the reporting periods (as per the statement of financial activities)	(3,844,618)	2,252,649
Net losses/(gains) on investments	3,346,714	(2,824,733)
Adjustments for:		
Depreciation charges	689,574	615,939
Dividends, interest and rents from investments	(1,019,976)	(1,050,602)
Decrease in stocks	566	104
(Increase)/decrease in debtors	(980,121)	645,036
Increase/(decrease) in creditors	1,492,780	(1,434,023)
Net cash expended by operating activities	**(315,081)**	**(1,795,630)**
Analysis of cash and cash equivalents		
Cash in hand	3,806,932	3,647,571
Notice deposits	247,041	1,049,046
Total cash and cash equivalents	**4,053,973**	**4,696,617**

The notes on pages 44 to 59 form part of these financial statements.

Analysis of changes in net debt

	2023 £	Cash flows £	2022 £
Cash and cash equivalents			
Cash in hand	3,806,932	159,361	3,647,571
Notice deposits	247,041	(802,005)	1,049,046
	4,053,973	**(642,644)**	**4,696,617**
Borrowings			
Debt due within one year	–	–	–
Debt due after one year	(11,500,000)	–	(11,500,000)
Total funds	**(7,446,027)**	**(642,644)**	**(6,803,383)**

The notes on pages 44 to 59 form part of these financial statements.

Notes to the accounts

For the year ended 31 March 2023

Note 1 – Accounting policies

(a) Basis of preparation of the accounts

The annual report, incorporating the financial statements for the year ended 31 March 2023, has been prepared in accordance with the Academy's Royal Charter, and in compliance Accounting and Reporting by Charities: Statement of Recommended Practice 2019 applicable to charities preparing their accounts in accordance with the Financial Reporting Standard applicable in the UK and Republic of Ireland (FRS102) – (Charities SORP (FRS102)), the Financial Reporting Standard applicable in the UK and Republic of Ireland (FRS102). The Academy meets the definition of public benefit entity under FRS102.

(b) Historical cost convention

The financial statements have been prepared under the historical cost convention, as modified for the inclusion of investment assets at market value.

(c) Consolidation

The financial statements consolidate the results of the Academy and its own wholly owned subsidiaries, RAE Trading Limited and the Queen Elizabeth Prize for Engineering Foundation, on a line-by-line basis. Transactions and balances between the Academy and its subsidiaries have been eliminated from the consolidated financial statements. Balances between the Academy and the subsidiaries are disclosed in the notes of the Academy's balance sheet. A separate statement of Financial Activities and Income and Expenditure Account for the Academy has not been presented because the Academy has taken advantage of the exemption afforded by FRS 102.

(d) Income

The specific bases for accounting for income are described below. In general terms, income is accounted for on a receivable basis, gross of related expenditure. Income is only recognised where there is evidence of entitlement, where it is probable that income will be received and recognised only when income can be measured.

- Grants receivable are recognised when entitlement to the grant is approved and communicated, and also include returned grants that are accounted for on receipt.
- Gifts and donations and legacies are included in full in the statement of financial activities when receivable.
- For legacies, entitlement is taken as the earlier of the date on which either: the Academy is aware that probate has been granted, the estate has been finalised and notification has been made by the executor(s) to the Academy that a distribution will be made; or when a distribution is received from the estate. Receipt of a legacy, in whole or in part, is only considered probable when the amount can be measured reliably and the Academy has been notified to the executor's intention to make a distribution.
- Income from sales of goods or contracts for services is recognised when the goods and services are delivered.
- Investment income is included in the Statement of Financial Activities in the year in which it is receivable.
- Other incoming resources consist of subscriptions which are recognised on an accruals basis.

(e) Donated services and facilities

Donated professional services and donated facilities are recognised as income when the Academy has control over the item, any condition associated with the donated item has been met, the receipt of economic benefit from the use by the Academy of the item is probable and that economic benefit can be measured reliably. On receipt, donated professional services and donated facilities are recognised on the basis of the value of the gift to the Academy, which is the amount the Academy would have been willing to pay to obtain services or facilities of equivalent economic benefit on the open market; a corresponding amount in then recognised in expenditure in the period of receipt.

(f) Expenditure

Expenditure is recognised on an accruals basis, gross of any related income. Costs are allocated to activities as described below. Indirect costs are apportioned to activities on a basis consistent with the use of the resources.

- Costs of raising funds comprise direct costs and expense of staff involved with fundraising, fees paid to investment fund managers, and trading costs.
- Charitable activities – grants. Grants payable are charged in the year in which the commitments to pay the grants are made.
- Charitable activities – other. Other charitable expenditure includes all direct expenditure, including irrecoverable VAT and staff costs, which is directly attributable to activities. Indirect costs are allocated to each charitable activity based on the number of staff directly supporting the activity.

(g) Support costs

Support costs are those functions that assist the work of the Academy and mainly comprise of staff costs and overheads. Support costs, which include irrecoverable VAT, are assigned to the Academy's charitable objectives in line with the direct expenditure under each heading.

(h) Operating leases

Rental costs under operating leases are charged to the Statement of Financial Activities evenly over the term of the lease.

(i) Tangible fixed assets

Depreciation is provided on all tangible fixed assets at rates

calculated to write off the cost of each asset over its expected useful life, as follows:

Office fixtures and fittings – *over five years.*

Computer equipment – *over three years.*

Leasehold cost – *over the term of lease.*

Carlton House Terrace – *over the term of lease.*

(j) Investments

Listed investments are included in the financial statements at market value at the balance sheet date. Gains/losses on disposal of investments and revaluation of investments are recognised in the year of gain or loss and are allocated to the funds to which the investments relate. Investments in subsidiaries are included in the financial statements at cost.

(k) Pensions

The Academy operates a defined contribution pension scheme. The assets of the scheme are held separately from those of the Academy in independently administered funds. The pensions cost charge represents contributions payable to the scheme in the year. The Academy has no liability under the scheme other than the payment of those contributions.

(l) Funds

General funds are those that are available for use at the Trustee Board's discretion in the furtherance of the Academy's objectives. Designated funds are unrestricted funds set aside for unrestricted purposes and which would otherwise form part of general funds. Details of the nature and purpose of each designated fund are set out in note 16. Restricted funds are funds that are subject to restrictions imposed by donors and are applied in accordance with these restrictions. Details of the nature and purpose of each restricted fund are set out in note 16.

(m) Debtors

Trade and other debtors are recognised at the settlement amount due after any trade discount offered. Prepayments are valued at the amount prepaid net of any trade discounts due.

(n) Stock

Stock is included at the lower of cost or net realisable value.

(o) Cash and cash equivalents at bank

Cash and cash equivalents at bank includes cash and short term highly liquid investments obtainable within three months.

(p) Creditors

Creditors are recognised where the Academy has a present obligation resulting from a past event that will probably result in the transfer of funds to a third party and the amount due to settle the obligation can be measured or estimated reliably. Creditors are normally recognised at their settlement amount after allowing for any trade discounts due.

(q) Financial instruments

The Academy only has financial assets and financial liabilities of a kind that qualify as basic financial instruments. Basic financial instruments are initially recognised at transaction value and subsequently measured at their settlement value with the exception of bank loans, which are subsequently measured at amortised cost using the effective interest method.

(r) Corporation taxation

The Academy is exempt from tax on income and gains falling within section 505 of the Taxes Act 1988 or section 252 of the Taxation of Chargeable Gains Act 1992 to the extent that these are applied to its charitable objectives.

(s) Going concern

No material uncertainties that may cast significant doubt about the ability of the charity to continue as a going concern have been identified by the Trustees and therefore these accounts have been prepared on a going concern basis.

Royal Academy of Engineering's senior leadership team monitor the Group and Charity's cash position on a monthly basis by looking at the cash flow forecast for the next 12 months, broken down by month. This forecast, combined with an assessment of the future reserves position, forms the basis of our assessment of going concern. It has been stress tested to reflect a significant reduction of the Charity's government funding over and above our key risk assumptions (set out in the report of Trustee Board).

Based on these forecasts, and the Group's net asset position of £66.8 million, which is comprised primarily of cash and investments, we believe that the going concern basis of accounting remains appropriate for our accounts.

(t) Grants payable

Grants payable are recognised when entitlement to the grant is approved and communicated, and also include returned grants that are accounted for on receipt.

Year ended 31 March 2023	Unrestricted funds	Restricted funds	Totals 31 March 2023	Unrestricted funds	Restricted funds	Totals 31 March 2022
	£	£	£	£	£	£
Note 2 – Grants						
Government grant (See note 3)	–	38,394,166	38,394,166	–	19,730,182	19,730,182
Note 3 – Government grant						
Grant was expended on:						
Programme expenditure	–	35,526,229	35,526,229	–	18,696,206	18,696,206
Cost of managing programmes	–	2,867,937	2,867,937	–	1,033,976	1,033,976
	–	**38,394,166**	**38,394,166**	**–**	**19,730,182**	**19,730,182**
Note 4 – Other grants and contracts						
Global Challenges Research Fund	–	5,234,222	5,234,222	–	2,974,270	2,974,270
Newton Fund	–	1,900,720	1,900,720	–	1,705,680	1,705,680
End of engineered life	–	1,270,437	1,270,437	–	500,626	500,626
UK Intelligence Community (IC) Postdoctoral Research Fellowships	–	1,268,850	1,268,850	–	2,210,530	2,210,530
Engineering skills where they are most needed	–	903,370	903,370	–	816,276	816,276
Programme for safer complex industrial and engineered systems	–	898,426	898,426	–	235,223	235,223
Global Talent Visas	–	713,575	713,575	–	493,175	493,175
Sainsbury Management Fellowships	–	458,417	458,417	–	528,375	528,375
Amazon Future Engineer Bursaries	–	445,735	445,735	–	337,500	337,500
Leverhulme Fellowships	–	325,643	325,643	–	450,425	450,425
1851 Royal Commission Enterprise Fellowships	–	300,000	300,000	–	350,003	350,003
Connecting STEM Teachers	–	149,528	149,528	–	353,010	353,010
Other awards and contracts	–	131,977	131,977	–	182,930	182,930
Frontiers IIED	–	122,000	122,000	–	–	–
Africa Programmes	–	121,310	121,310	–	–	–
Welsh Valleys Bursaries Scheme	–	121,152	121,152	–	107,393	107,393
Motorsport MSc Scholarships	–	22,786	22,786	–	–	–
Sir Ralph Robins Scholarships	–	50,000	50,000	–	50,000	50,000
Engineering Leadership Scheme – Buro Happold	–	39,300	39,300	–	–	–
Enterprise Hub	–	38,000	38,000	–	100,902	100,902
MacRobert Award	–	20,750	20,750	–	–	–
RAEng/EPSRC Research Fellowships	–	3,583	3,583	–	47,349	47,349

Year ended 31 March 2023	Unrestricted funds	Restricted funds	Totals 31 March 2023	Unrestricted funds	Restricted funds	Totals 31 March 2022
	£	£	£	£	£	£
Investment in Research Talent	–	–	–	–	13,304,319	13,304,319
Northern Ireland Engineering Education Programme	–	–	–	–	477,000	477,000
BEIS Bhattacharrya	–	–	–	–	309,750	309,750
Connecting STEM Teachers social mobility pilot	–	–	–	–	300,000	300,000
Education studies and support	–	–	–	–	99,600	99,600
Africa Prize for Engineering Innovation	–	–	–	–	2,250	2,250
Engineering FE	–	–	–	–	(27,427)	(27,427)
	–	14,539,781	14,539,781	–	25,909,159	25,909,159
Engineering FE is showing negative income 2021/22 due to the return of funds following the end of the scheme						
Total charitable activities	**–**	**52,933,947**	**52,933,947**	**–**	**45,639,341**	**45,639,341**

Note 5 – Donations and legacies						
Annual Appeal	–	–	–	54,301	–	54,301
ERA Foundation Enterprise Fellowships	–	62,500	62,500	–	–	–
Wikipedia Project	–	50,000	50,000	–	–	–
This is Engineering	–	1,080,667	1,080,667	–	360,000	360,000
Prince Philip Fund	680,187	–	680,187	41,736	–	41,736
Queen Elizabeth Prize for Engineering	–	150,000	150,000	–	199,955	199,955
Legacies	–	–	–	2,811	–	2,811
Other	–	–	–	965	–	965
	680,187	**1,343,167**	**2,023,354**	**99,813**	**559,955**	**659,768**
Unrestricted annual appeal and legacies income has been recorded under the Prince Philip Fund in 2022/23						

Note 6 – Investment income						
Dividends and income from equity investments and fixed interest bonds	322,391	664,168	986,559	456,415	593,481	1,049,896
Interest on bank deposits	29,650	3,767	33,417	600	106	706
	352,041	**667,935**	**1,019,976**	**457,015**	**593,587**	**1,050,602**

Note 6a – Other trading income						
Sponsorship and events	108,980	–	108,980	118,584	–	118,584
Subscription income	185,792	–	185,792	355,579	–	355,579
Advertising income and merchandising	23,212	–	23,212	16,469	–	16,469
Conferencing business	828,974	–	828,974	433,760	–	433,760
	1,146,958	**–**	**1,146,958**	**924,392**	**–**	**924,392**

	Talent and diversity	Innovation	Policy and engagement	Queen Elizabeth Prize for Engineering Foundation	Total 31 March 2023	Total 31 March 2022
	£	£	£	£	£	£
Note 7 – Charitable expenditure						
Unrestricted						
Charitable activities	9,339	–	102,779	–	112,118	59,733
Charitable grants	–	–	–	–	–	91,717
Direct salaries	53,326	–	260,902	–	314,228	286,824
Support costs	124,183	–	720,702	–	844,885	984,977
	186,848	**–**	**1,084,383**	**–**	**1,271,231**	**1,423,251**
Restricted						
Charitable activities	2,576,983	4,567,720	1,423,789	1,265,198	9,833,690	7,151,879
Charitable grants	3,008,021	29,357,043	824,293	–	33,189,357	30,152,283
Direct salaries	847,842	2,929,942	2,448,876	186,126	6,412,786	5,121,326
Support costs	677,810	3,883,268	494,907	160,998	5,216,983	3,675,110
	7,110,656	**40,737,973**	**5,191,865**	**1,612,322**	**54,652,816**	**46,100,598**
Total charitable activities	**7,297,504**	**40,737,973**	**6,276,248**	**1,612,322**	**55,924,047**	**47,523,849**

Total support costs of £6,061,868 are made up of indirect staff costs totalling £1,877,891 and accommodation costs and overheads totalling £4,183,977

2022 Total charitable activities	**6,636,540**	**33,911,008**	**5,867,528**	**1,108,773**		**47,523,849**

In 2022 £1,423,521 of charitable activities expenditure related to unrestricted funds and £46,100,598 related to restricted funds

	2023 £	2022 £
Note 8 – Other costs		
Auditor's fees:		
– Audit	49,948	33,075
– Other services	14,364	117
Legal and professional fees	44,563	–
	108,875	**33,192**

£5,440 was charged to the Academy in relation to operating leases

Note 9 – Staff and pensions costs	2023	2022
Gross salaries	7,711,583	6,177,989
Employer's National Insurance less NI Allowance	903,963	680,395
Benefits in kind	39,967	34,578
Pension charge	764,399	625,725
Recruitment costs	256,791	223,395
Temporary staff costs	333,301	233,872
Training costs	41,359	65,362
Other costs	51,999	147,045
	10,103,362	**8,188,361**

Average number of staff in the year by activity:	2023	2022
– Engineering and education	26	20
– Programmes and fellowship	61	49
– Policy and external affairs	36	29
– Executive, development, finance and administration	42	39
– Queen Elizabeth Prize for Engineering Foundation	4	5
	169	**142**

No remuneration is paid to the President or members of the Trustee Board of the Academy. Travelling expenses to attend Trustee Board meetings were nil in 2022/23 (2021/22 nil).

No ex gratia payments were made in 2022/23 (2021/22 nil).

The emoluments of higher paid staff within the following scales were:	2023	2022
£60,000 – £70,000	7	11
£70,001 – £80,000	5	3
£80,001 – £90,000	2	1
£90,001 – £100,000	3	3
£100,001 – £110,000	3	1
£110,001 – £120,000	1	1
£120,001 – £130,000	–	1
£130,001 – £140,000	1	1
£190,001 – £200,000	1	1

Emoluments include salary, bonuses and benefits in kind but exclude pension scheme contributions. Staff numbers are based on full-time equivalent.

The executive leadership team comprises a chief executive, chief operating officer, executive director programmes, and two directors (2021/22 two directors) who manage the day-to-day operations of the charity. Their aggregate remuneration in the year was £730,210 (2021/22 £686,608).

Note: There were no resignations and no appointments among the senior management team during the year.

Note 9(b) – Pensions

The Academy operates a defined contribution pension scheme for staff that joined after 1 January 2000 that is compliant with auto-enrolment legislation. The assets of the scheme are held separately from those of the Academy in independently administered funds. The Academy has no liability under the scheme other than the payment of contributions.

Note 10	Computer systems and equipment	Office fixtures and fittings	Leasehold	Carlton House Terrace improvement	Total
	£	£	£	£	£
Tangible fixed assets (group and charity)					
Cost					
At 1 April 2022	2,029,385	1,413,543	12,509,790	13,996,607	29,949,325
Additions	1,305,251	242,600	–	–	1,547,851
At 31 March 2023	**3,334,636**	**1,656,143**	**12,509,790**	**13,996,607**	**31,497,176**
Depreciation					
At 1 April 2022	(1,456,024)	(905,884)	(1,559,176)	(1,399,916)	(5,321,000)
Charge for year	(268,556)	(203,862)	(91,257)	(125,896)	(689,571)
At 31 March 2023	**(1,724,580)**	**(1,109,746)**	**(1,650,433)**	**(1,525,812)**	**(6,010,571)**
Net book value					
At 31 March 2023	**1,610,056**	**546,397**	**10,859,357**	**12,470,795**	**25,486,605**
At 1 April 2022	573,361	507,659	10,950,614	12,596,691	24,628,325

All assets are used for charitable purposes.

Medal collections

- The Sir Denis Rooke Medals Collection is on loan from the family of Sir Denis Rooke OM CBE FRS FREng, who served as Academy President from 1986 to 1991. The collection includes many of the awards Sir Denis received during his distinguished career as a pioneer of the UK's gas industry.
  The Whittle Medals Collection is on loan from the family of Sir Frank Whittle OM KBE CB FEng FRS, who patented the jet propulsion engine in 1930. The medals relate to his achievements in engineering and celebrate his successes.
- The Warner Medals Collection was a personal gift by Professor Sir Frederick Warner FRS FREng after his death in 2010. The medals relate to his achievements in engineering and celebrate his successes.

These medal collections are not held on the balance sheet. The Trustees consider that it is not practicable to obtain a valuation, but are satisfied that the value of the medals collections is not material.

Note 11 – Investments (group and charity)

Investments held in the general fund portfolio represent those held by the Royal Academy of Engineering with the objective of generating income for the Academy's charitable objective while preserving the capital value of the portfolio.

Investments held in the restricted fund portfolio represent those held by the Queen Elizabeth Prize for Engineering Foundation with the objective of generating income for the Foundation's charitable objective.

	2023 General fund (Charity)	2023 Designated income funds (Charity)	2023 Total funds (Charity)	2023 Restricted fund (Subsidiary)	2023 Total Portfolio (Group)
Market value at 1 April	25,763,606	1,740,141	27,503,747	26,147,639	53,651,386
Add acquisitions at cost	965,718	65,161	1,030,879	4,764,032	5,794,911
Less: sales proceeds	(951,445)	(64,236)	(1,015,681)	(4,979,542)	(5,995,223)
Net investment losses for the year	(1,898,624)	(115,411)	(2,014,035)	(1,332,683)	(3,346,718)
Market value at 31 March	**23,879,255**	**1,625,655**	**25,504,910**	**24,599,446**	**50,104,356**

Investments in the general fund (charity) consist of securities listed on global stock markets (70% of portfolio) and fixed interest bonds/diversified assets (30% of portfolio).

The designated income funds consist of funds invested in line with the general fund (charity) investment strategy to support the MacRobert Award and funds invested in securities listed on global stock markets to support the Colin Campbell Mitchell Award.

Investments in the restricted fund (subsidiary) consist of securities listed on global stock markets (75% of portfolio) and fixed interest bonds/diversified assets (25% of portfolio).

	Group		Charity	
	2023 £	2022 £	2023 £	2022 £
Note 12 – Debtors				
Grants and sponsorship receivable	7,416,051	6,654,024	7,416,050	6,654,024
Prepayments	201,104	293,739	201,104	293,739
Other debtors	1,513,588	1,202,859	1,327,164	967,469
Amounts due for subsidiary undertakings	–	–	539,624	245,836
	9,130,743	**8,150,622**	**9,483,942**	**8,161,068**
Note 13 – Stocks (Group and Charity)				
Publications, Academy ties, presentation plates and medals	2,439	3,004	2,439	3,004

	Group		Charity	
	2023 £	2022 £	2023 £	2022 £
Note 14a – Creditors (amounts falling due within one year)				
Committed grants and prizes	7,631,797	6,920,722	7,631,795	6,920,722
Deferred income	646,748	497,387	646,748	497,387
Subscriptions in advance	192,471	203,363	192,471	203,363
Other creditors	1,738,527	1,344,716	931,750	542,432
Amounts due to subsidiary undertakings	–	–	9,957	77,947
Social security and other costs	249,425	–	249,425	–
	10,458,968	**8,966,188**	**9,662,146**	**8,241,851**
Note 14b – Deferred income				
Deferred income comprises of advance funding for the Connecting STEM Teachers programme, Enterprise Fellowships and Research Fellowships.				
Balance at 1 April	497,387	598,475	497,387	598,475
Amount released to income earned from charitable activities	(471,958)	(1,172,702)	(471,958)	(1,172,702)
Amount deferred in year	621,319	1,071,614	621,319	1,071,614
Balance as at 31 March	**646,748**	**497,387**	**646,748**	**497,387**
Note 14c – Creditors (amounts falling beyond one year)				
Bank loan*				
– Due one to two years	–	–	–	–
– Due within two to five years	11,500,000	11,500,000	11,500,000	11,500,000
– Due after five years	–	–	–	–
	11,500,000	**11,500,000**	**11,500,000**	**11,500,000**

**The Academy has a secured loan of £11.5 million with Aviva, the capital sum is repayable February 2027, an interest rate of 3.11% fixed being applied. The loan is secured against 3 Carlton House Terrace, which was valued at £30.05 million on 1 December 2022. There is currently a 38% loan-to-value ratio. There is a maximum 45% loan to value ratio set out in the terms of the loan.*

Note 15 – Future commitments				
Total minimum commitments under operating leases				
Rent				
not later than one year	240,000	240,000	240,000	240,000
Equipment				
not later than one year	–	1,738	–	1,738
Total	**240,000**	**241,738**	**240,000**	**241,738**

Note 16 – Statement of changes in reserves

(a) Restricted funds

The Academy's restricted funds consist of the monies received under grants, corporate donations and contracts to support specific schemes as follows:

- **Department for Business, Energy and Industrial Strategy (BEIS)** provides a government grant to fund programmes in the areas of engineering research and promoting the public understanding of engineering.
- **Investment in Research Talent** recognises the importance of engineering research to the UK. The government has provided the Royal Academy of Engineering with a significant increase in funding over the next four years to attract the best research talent to the UK and support their work.
- **End of engineered life** is a programme funded by the Lloyd's Register Foundation to improve safety in waste and decommissioning for industrial and engineered systems, delivered through Engineering X.
- **Programme for safer complex industrial and engineered systems** is a programme funded by the Lloyd's Register Foundation, delivered through Engineering X.
- **Engineering skills where they are most needed** is a programme funded by the Lloyd's Register Foundation, delivered through Engineering X.
- **Gatsby Charitable Foundation** supports Sainsbury Management Fellowships.
- **RAEng/EPSRC Research Fellowships** are administered by the Academy and funded jointly by the Academy and the Engineering and Physical Sciences Research Council.
- **Leverhulme Trust** supports Senior Research Fellowships of one-year duration.
- **Engineering Leaders Scholarships** assist undergraduate engineering students to realise their full potential and achieve their career goals.
- **Connecting STEM Teachers programme** is building a national network of support for STEM leaders in secondary schools and is supported by Shell, The Arthur Clements Fund, BAE Systems, Boeing, the estate of the late Mr John Gozzard, and the Helsington Foundation.
- **Further Education Fund** is made up of various donations that are used to support the development of new, and the extension of existing, programmes in further education.
- **The Enterprise Hub** supports exceptional entrepreneurs with high-potential ideas to build bold and disruptive enterprises that have a positive impact on society.
- **Africa Prize for Engineering Innovation** aims to stimulate, celebrate and reward innovation and entrepreneurship in sub-Saharan Africa.
- **Ms Morag Campbell Nelder Legacy** is to be used to fund the Colin Campbell Mitchell Award, which is given to an individual or group of outstanding engineers.
- **Newton Fund** schemes promote research and innovation intended to have a direct and long-term impact on the economic development and social welfare of countries participating with the UK in the Newton Fund.
- **The Capital Building Fund** has been used to create a base for the Academy's enterprise activities and develop 3 Carlton House Terrace into a national forum of engineering excellence.
- **This is Engineering**, previously known as the Engineering Talent Project, is a multi-year campaign to encourage more young people from all backgrounds to consider a career in engineering by changing perceptions of the profession.
- **Enriching Engineering Education Programme** is centred on a combination of two-way secondments and collaborative workshops. These secondments and workshops lead to improved industry-academia links and result in wide-ranging benefits for both parties.
- **Other awards and contracts** are donations and contracts by a number of companies for specific programmes each year.
- **Global Challenges Research Fund** is part of a £1.5 billion UK government fund to support cutting-edge research that addresses the challenges faced by lower- and middle-income countries (LMICs) through collaborative research and innovation, and research and innovation capacity building within both the UK and LMICs.
- **UK Intelligence Community (IC) Postdoctoral Research Fellowships** are offered by the Government Office for Science with the Academy acting as academic engagement partner. They support outstanding early-career science or engineering researchers to promote unclassified basic research in areas of interest to the intelligence, security and defense community.
- **Northern Ireland Engineering Education Programme** is working with schools and colleges across Northern Ireland to encourage more young people, particularly young women and those from socially disadvantaged backgrounds and other underrepresented groups, to progress towards careers in engineering.
- **Amazon Future Engineer Bursaries** is a national bursary programme aimed at supporting women A-level and BTEC/OCR (or Scottish equivalent) students from low-income households who wish to study computer science or related engineering courses at UK universities.
- **Connecting STEM Teachers social mobility pilot** is an evaluated two-year pilot project supporting schools to run action research projects to identify and tackle problems in their schools that they see as barriers that disadvantaged groups of young people face in accessing STEM education and

continuing onto STEM careers.
- **Shott Scale Up Accelerator** focuses on leadership skills development and carefully tailored support designed in collaboration with industry experts and leading engineering and technology business leaders.
- **Frontiers** connects and empowers enthusiastic researchers, innovators and practitioners from the UK and around the world to work together on new ways to solve complex global challenges.
- **Africa Programmes** provide funding and training to individuals and institutions in Africa in order to strengthen the engineering profession and demonstrate the importance of engineering in improving quality of life and economic development.

(b) Designated funds
The Strategic Development Fund is used to deliver impactful charitable activities over the next five years and strengthen the Academy for the longer term.

	Balance at 1 April 2022	Incoming resources	Resources expended	Transfers between funds	Net investment (losses)	Balance at 31 March 2023
	£	£	£	£	£	£
Restricted funds						
Government grant	–	38,394,166	(38,394,166)	–	–	–
End of engineered life	456,221	1,270,437	(663,215)	–	–	1,063,443
Programme for safer complex industrial and engineered systems	476,895	898,426	(253,132)	–	–	1,122,189
Engineering skills where they are most needed	546,874	903,370	(977,601)	–	–	472,643
Sainsbury Management Fellowships	–	458,417	(458,417)	–	–	–
RAEng/EPSRC Research Fellowships	–	3,583	(3,583)	–	–	–
Leverhulme Fellowships	–	325,643	(325,643)	–	–	–
Engineering Leaders Scholarships	176,846	–	–	–	–	176,846
Connecting STEM Teachers	396,897	149,528	(388,121)	–	–	158,304
Connecting STEM Teachers social mobility pilot	300,000	–	(48,982)	–	–	251,018
Amazon Future Engineer Bursaries	229,973	445,735	(232,777)	–	–	442,931
Northern Ireland Engineering Education Programme	477,000	–	(178,335)	–	–	298,665
Sir Ralph Robins Scholarships	300,631	50,000	(30,815)	–	–	319,816
Welsh Valleys Bursaries Scheme	93,240	121,152	(143,749)	–	–	70,643
Engineering FE	299,893	–	(54,640)	–	–	245,253
Enterprise Hub	214,721	38,000	(38,000)	–	–	214,721
Shott Scale Up Accelerator	840,624	–	(289,990)	–	–	550,634
Africa Prize for Engineering Innovation	410,618	–	(132,499)	–	–	278,119
Colin Campbell Mitchell Award	400,830	6,305	(18,323)	–	(10,909)	377,903
Newton Fund	–	1,900,720	(1,900,720)	–	–	–
Capital Building Fund	1,725,820	–	–	(1,547,851)	–	177,969
This is Engineering	7,878	1,080,667	(437,281)	–	–	651,264

	Balance at 1 April 2022	Incoming resources	Resources expended	Transfers between funds	Net investment (losses)	Balance at 31 March 2023
	£	£	£	£	£	£
Enriching Engineering Education Programme	304,794	–	(73)	–	–	304,721
Education studies and support	21,000	–	(21,000)	–	–	–
MacRobert Award	1,279,029	39,292	(73,171)	–	(104,498)	1,140,652
Other awards and contracts	203,734	131,977	(27,413)	–	–	308,298
1851 Royal Commission Enterprise Fellowships	–	300,000	(300,000)	–	–	–
Global Challenges Research Fund	90,483	5,234,222	(5,324,705)	–	–	–
Global Talent Visas	–	713,575	(713,575)	–	–	–
Wikipedia Project	–	50,000	–	–	–	50,000
UK Intelligence Community (IC) Postdoctoral Research Fellowships	1,452,932	1,268,850	(1,423,805)	–	–	1,297,977
Frontiers IIED	–	122,000	(91,645)	–	–	30,355
Africa Programmes	–	121,310	–	–	–	121,310
Motorsport MSc Scholarships	–	22,786	(14,014)	–	–	8,772
Engineering Leadership Scheme – Buro Happold	–	39,300	(21,344)	–	–	17,956
ERA Foundation Enterprise Fellowships	–	62,500	(62,500)	–	–	–
Queen Elizabeth Prize for Engineering	27,460,926	793,088	(1,783,307)	(282,450)	(1,332,683)	24,855,574
Total restricted funds	**38,167,859**	**54,945,049**	**(54,826,541)**	**(1,830,301)**	**(1,448,090)**	**35,007,976**
Designated funds						
Strategic Development Fund	2,750,000	–	–	(921,899)	–	1,828,101
Capital Building Fund	974,180	–	–	1,077,851	–	2,052,031
Ingenia designated fund	–	23,098	(23,098)	–	–	–
Total designated funds	**3,724,180**	**23,098**	**(23,098)**	**155,952**	–	**3,880,132**
General fund	**28,771,727**	**2,156,088**	**(2,772,500)**	**1,674,349**	**(1,898,624)**	**27,931,040**
Total funds	**70,663,766**	**57,124,235**	**(57,622,139)**	–	**(3,346,714)**	**66,819,148**

The general fund deficit of £616,412 is the difference between incoming resources of £2,156,088 and resources expended of £2,772,500.

All other funds, other than the Queen Elizabeth Prize for Engineering, are funds of the parent charity.

Capital Building Fund transfer relates to fixed asset additions. Queen Elizabeth Prize for Engineering transfer relates to the management fee charged by the charitable parent.

	Balance at 1 April 2021	Incoming resources	Resources expended	Transfers between funds	Net investment gains	Balance at 31 March 2022
	£	£	£	£	£	£
Restricted funds						
Government grant	–	19,730,182	(19,730,182)	–	–	–
Investment in Research Talent	–	13,304,320	(13,304,320)	–	–	–
End of engineered life	346,941	500,626	(391,346)	–	–	456,221
Programme for safer complex industrial and engineered systems	510,745	199,223	(233,073)	–	–	476,895
Engineering skills where they are most needed	236,107	816,276	(505,509)	–	–	546,874
BEIS Bhattacharyya	–	309,750	(309,750)	–	–	–
Sainsbury Management Fellowships	–	564,375	(564,375)	–	–	–
RAEng/EPSRC Research Fellowships	–	47,349	(47,349)	–	–	–
Leverhulme Fellowships	–	450,425	(450,425)	–	–	–
Engineering Leaders Scholarships	176,846	–	–	–	–	176,846
Connecting STEM Teachers	992,701	353,010	(948,814)	–	–	396,897
Connecting STEM Teachers social mobility pilot	–	300,000	–	–	–	300,000
Amazon Future Engineer Bursaries	–	337,500	(107,527)	–	–	229,973
Northern Ireland Engineering Education Programme	–	477,000	–	–	–	477,000
Sir Ralph Robins Scholarships	280,631	50,000	(30,000)	–	–	300,631
Welsh Valleys Bursaries Scheme	87,471	107,393	(101,624)	–	–	93,240
Engineering FE	372,391	(27,427)	(45,071)	–	–	299,893
Enterprise Hub	1,214,721	100,902	(100,902)	(1,000,000)	–	214,721
Shott Scale Up Accelerator	–	–	(159,376)	1,000,000	–	840,624
Africa Prize for Engineering Innovation	552,704	2,250	(144,336)	–	–	410,618
Colin Campbell Mitchell Award	371,833	5,011	(20,680)	–	44,666	400,830
Newton Fund	–	1,705,680	(1,705,680)	–	–	–
Capital Building Fund	2,133,904	–	–	(408,084)	–	1,725,820
This is Engineering	13,957	360,000	(366,079)	–	–	7,878
Enriching Engineering Education Programme	313,524	–	(8,730)	–	–	304,794
MacRobert Award	1,270,100	26,268	(61,207)	–	43,868	1,279,029
Other awards and contracts	222,699	182,930	(201,895)	–	–	203,734
1851 Royal Commission Enterprise Fellowships	–	350,003	(350,003)	–	–	–
Global Challenges Research Fund	–	2,974,270	(2,883,787)	–	–	90,483
Tier 1 Visa Applications	–	493,175	(493,175)	–	–	–
UK Intelligence Community (IC) Postdoctoral Research Fellowships	847,199	2,210,530	(1,604,797)	–	–	1,452,932
Pandemic Response	46,056	–	(46,056)	–	–	–

	Balance at 1 April 2021	Incoming resources	Resources expended	Transfers between funds	Net investment gains	Balance at 31 March 2022
	£	£	£	£	£	£
Queen Elizabeth Prize for Engineering	26,335,235	762,262	(1,298,916)	(269,000)	1,931,345	27,460,926
Total restricted funds	**36,325,765**	**46,792,883**	**(46,293,584)**	**(677,084)**	**2,019,879**	**38,167,859**
Designated funds						
Strategic Development Fund	2,531,831	–	–	218,169	–	2,750,000
Capital Building Fund	666,096	–	–	308,084	–	974,180
Ingenia designated fund	–	16,336	(16,336)	–	–	–
Total designated funds	**3,197,927**	**16,336**	**(16,336)**	**526,253**	**–**	**3,724,180**
General fund	**28,887,425**	**1,464,884**	**(2,536,267)**	**150,831**	**804,854**	**28,771,727**
Total restricted funds	**68,411,117**	**48,274,103**	**(48,846,187)**	**–**	**2,824,733**	**70,663,766**

The general fund deficit of £1,071,383 is the difference between incoming resources of £1,464,884 and resources expended of £2,536,267

All other funds, other than the Queen Elizabeth Prize for Engineering, are funds of the parent charity.

Transfers between funds: a £1 million donation was received 2020/21 for the Enterprise Hub. The donor agreed that his donation should be included within our 50th anniversary fundraising campaign, and for this named donation to be reflected in the title of the programme 'Shott Scale Up Accelerator'. Capital Building Fund transfer relates to fixed asset additions. Queen Elizabeth Prize for Engineering transfer relates to the management fee charged by the charitable parent.

Note 17 – Analysis of net assets between funds

	Tangible fixed assets 2023	Investments 2023	Current assets 2023	Liabilities 2023	Total net assets 2023
	£	£	£	£	£
Restricted funds	25,486,605	26,225,101	3,686,485	(20,390,215)	35,007,976
Special and designated funds	–	–	3,880,132	–	3,880,132
General funds	–	23,879,255	5,620,538	(1,568,753)	27,931,040
Total funds	**25,486,605**	**50,104,356**	**13,187,155**	**(21,958,968)**	**66,819,148**

	Tangible fixed assets 2022	Investments 2022	Current assets 2022	Liabilities 2022	Total net assets 2022
	£	£	£	£	£
Restricted funds	24,628,325	27,887,781	3,052,427	(17,400,674)	38,167,859
Special and designated funds	–	–	3,724,180	–	3,724,180
General funds	–	25,763,605	6,073,636	(3,065,514)	28,771,727
Total funds	**24,628,325**	**53,651,386**	**12,850,243**	**(20,466,188)**	**70,663,766**

Note 18 – Subsidiary activities

The Academy has one wholly owned subsidiary, RAE Trading Limited (registered company number 08038360) and a charitable subsidiary company, the Queen Elizabeth Prize for Engineering Foundation (registered charity number 1147743, registered company number 8077332). RAE Trading Limited was formed in April 2012 and manages a conferencing business at Prince Philip House; all available trading profits are gift-aided to the charity.

RAE Trading Limited and the Queen Elizabeth Prize for Engineering Foundation are registered in the UK and have the same year end date as the charity.

The Academy owns all 100 £1 shares in RAE Trading Limited.

The Queen Elizabeth Prize for Engineering Foundation was formed in May 2012 and advances the education of the public in the subject of engineering by awarding an annual high-profile and internationally recognised prize for engineering.

All activities have been consolidated on a line-by-line basis in the statement of financial activities and these results have been adjusted to eliminate income and expenditure relating to conferencing activities to the Academy and the Queen Elizabeth Prize for Engineering, and management fees payable to the Academy.

At 31 March 2022	RAE Trading Ltd		Queen Elizabeth Prize for Engineering Foundation	
	2023	2022	2023	2022
	£	£	£	£
Total incoming resources	1,046,284	505,779	793,088	762,262
Total resources expended	(909,950)	(413,424)	(2,065,757)	(1,567,916)
	136,333	92,355	(1,272,669)	(805,654)
Total investment (losses)/gains	–	–	(1,332,683)	1,931,345
Net funds/(deficit) before gift aid	136,333	92,355	(2,605,352)	1,125,691
Gift aid to Royal Academy of Engineering	(136,333)	(92,355)	–	–
Retained net (deficit)/funds for the year	–	–	(2,605,352)	1,125,691
The aggregate of the assets, liabilities and funds was:				
Assets	687,327	317,033	25,514,751	27,550,402
Liabilities	(610,975)	(376,793)	(659,177)	(89,476)
Funds/(deficit)	**76,352**	**(59,760)**	**24,855,574**	**27,460,926**

The parent charity's results for the year are disclosed as follows:

	Academy	
	2023	2022
	£	£
Gross income	54,695,246	47,984,118
Retained net (deficit)/funds for the year	(1,655,514)	813,140

Note 19 – Related party transactions

The Academy has the following transactions within its subsidiaries during the year:

	Sales	Salary recharges	Management charges	Debtors	Creditors
	£	£	£	£	£
Queen Elizabeth Prize for Engineering Foundation	–	275,115	282,450	107,354	–
RAE Trading Limited	217,310	–	214,000	432,270	9,957

A member of staff of the Royal Academy of Engineering R Earnshaw is a close family relation of C Earnshaw who is a Trustee of the Royal Academy of Engineering. The staff appointment was made prior to C Earnshaw becoming a Trustee. All employee salaries including that of R Earnshaw are set in line with market benchmarks.

All transactions in respect of Trustees are provided for in Note 9.

Legal and administrative information

Name and registered office

The Royal Academy of Engineering is a registered charity No. 293074. It is a corporate body governed by Royal Charter. The registered office is Prince Philip House, 3 Carlton House Terrace, London SW1Y 5DG.

Bankers

Bankers
National Westminster Bank plc
Charing Cross, London Branch
PO Box 113, Cavell House
2a Charing Cross Road
London WC2H 0NN

Solicitors
Womble Bond Dickinson
4 More London Riverside
London SE1 2AU

Auditor
BDO LLP
55 Baker Street
London W1U 7EU

Investment managers
Waverton Investment Management Limited
16 Babmaes Street
London SW1Y 6AH

Trustee Board members

The Academy's Trustee Board comprises 13 members elected by and from the Fellowship with the discretion to co-opt up to two additional members. Trustee Board members are the Trustees of the Academy as defined under its status as a registered charity. The Trustee Board meets at least six times a year and is responsible for the governance of the Academy. At these meetings, the Trustee Board will discuss issues of strategy and policy and also matters referred to it by the governance committees for Finance, Audit and Risk, Conduct, Membership, Nominations, and Remuneration.

All Trustee Board members and committee members give their time freely; no remuneration was paid in the year beyond the reimbursement of reasonable expenses. The majority of Academy activities are controlled by committees primarily composed of Fellows. The members of the Trustee Board during the year were:

Officers
President
Professor Sir Jim McDonald FREng FRSE

Vice-Presidents
Professor Peter Guthrie OBE FREng
Vice-President for Committee Coordination

Catriona Schmolke FREng
Vice-President for Fellowship Engagement

Members of the Trustee Board at the date the report was approved:
Professor Bashir Al-Hashimi CBE FREng

Jane Atkinson CBE FREng (appointed 20 September 2022)

Sir Simon Bollom KBE CB FREng

Chris Earnshaw OBE FREng

David Eyton CBE FREng (appointed 20 September 2022)

Dame Sue Gray DBE CB FREng (appointed 20 September 2022)

Dr Carolyn Griffiths FREng

Professor Eileen Harkin-Jones OBE FREng

Professor Ric Parker CBE FREng (appointed 20 September 2022

Professor Nilay Shah OBE FREng

Other Trustees who served during the period of the report:
Dame Judith Hackitt DBE FREng (retired 20 September 2022)

Professor John Loughhead CB OBE FREng (retired 20 September 2022)

Professor Jeremy Watson CBE FREng (retired 20 September 2022)

Professor Stephen Young CBE FREng FRS (retired 20 September 2022)

Chairs of Governance Committees

Audit and Risk
Chris Earnshaw OBE FREng

Conduct
Peter Guthrie OBE FREng

Finance; Investment
David Eyton CBE FREng

Membership
Professor Nilay Shah OBE FREng

Nominations; Remuneration
Professor Sir Jim McDonald FREng FRSE

Chairs of Operating Committees

Awards
Professor Bashir Al-Hashimi CBE FREng

Education and Skills
Phil Smith CBE FREng

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