

JBA Trust Limited Annual Report 2019-20

Charity Number: 1150278 Company Number: 07840801 www.jbatrust.org



The JBA Trust is a charity that enhances understanding and management of risks in the water environment by enabling research, education and training

We work with leading academic researchers, NGOs, charities and the JBA Group of companies in four key areas:

> Providing training and education in schools and in the water management community

Facilitating collaboration between academia and industry to deliver high quality scientific research

Supporting post-graduate education by providing technical expertise and financial bursaries for MSc and PhD studentships Publishing and disseminating research outputs, enabling knowledge exchange and sharing good practice



Highlights





Director's Report



"This year has tested everyone's resilience and highlighted how we all have a stake in risk analysis, modelling and data."

This year has tested everyone's resilience. Despite lockdowns and restrictions on society in 2020, we have been fortunate to have continued support from our sponsors.

We have also had to adapt. Our strategy has always been to take a wide range of approaches in promoting research, supporting education and sharing knowledge. We have blended in-person engagement at events, often using our physical models, with digital content. We have attended and supported conferences and meetings, whilst also using online collaboration tools and publishing research. We adopted this multi-modal strategy because we thought, and still think, it is the most effective way for us to deliver public benefit. But it has also given us the capacity to adapt over the past year.

Our usually busy schedule of engagement events paused completely in March 2020 with the onset of strict public health measures in the UK. We quickly shifted our focus to digital content with the launch of a set of online resource packs, driven by the sudden switch to home learning. Our packs are geared towards two school age ranges, and to higher education. I am pleased to say that more than 2,700 visitors have accessed our learning packs since we published them.

We have been learning, along with all our partners, about how to "do" research and knowledge-sharing

through lockdowns, social distancing and working from home (or is it living at work?). We have contributed to academic conferences that moved online, and continue to see outputs being produced from our research collaborations, with seven peerreviewed journal papers published over the last year. Our academic partners have been making huge efforts to adapt and keep projects going, especially where this has involved changes, sometimes extensive, to planned lab work, field visits or physical model applications.

It's been heartening to see the graduate researchers we support finding ways to keep their projects moving forwards. We have been able to help four graduate students approach and achieve successful completion of their doctorates. I am very pleased that we have also supported new graduate researchers starting PhD projects this year, working on important topics in environmental risks and resilience. Starting a three- or four-year research project is a big commitment and daunting enough in any circumstances, let alone having to do it all through online meetings. Hopefully, we will be able to meet in person before too long.

Looking ahead to the coming year, we are adapting our plans and systems of work in the hope that we may be able to safely re-introduce some in-person engagement activities. Meanwhile, we will continue to focus on digital content. Covid-19 is causing significant disruption to learning at all levels, which will doubtless have repercussions over the coming years. We will be exploring how we can keep helping students and educators through our digital resources, interactive online events and "virtual" placements.

The Covid-19 pandemic has caused almost everyone to take an immediate and pressing stake in risk analysis, modelling and data. It has concentrated attention on the connections between health, society, environment, economies and communities. Increasingly, there is a sense of urgency about our relationship with the environment. We need skilled, knowledgeable people across a wide range of scientific, engineering, technical and creative disciplines to tackle environmental challenges of resilience and sustainability, along with recovery from the pandemic. We will increase our support for graduate training over the coming year, and will be exploring further ways in which we can help create opportunities for education and training at different levels.

Finally, a word of thanks to the directors of the JBA Group companies for their commitment to the JBA Trust, and, in particular, the individuals who have at various times offered and given extra in-kind support privately to help us with our work during a difficult year.

Professor Rob Lamb, Managing Director

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JBA trust



1 Our purpose and activities

Our aim is to enhance understanding and management of risks in the environment by enabling research, education and training.

Our activities for the year reflect the Trustees' consideration of the Charity Commission's guidance on public benefit. The major areas of activity are:

- Providing water management training and education in schools and in the flood risk management community;
- Support for post-graduate education through provision of technical expertise and financial bursaries for MSc and PhD studentships;
- Facilitating collaboration between academia and industry to deliver scientific research that improves society's understanding and management of environmental risks and resources;
- Publication and dissemination of research outputs, enabling knowledge exchange and sharing best practice;
- Sponsorship of relevant conferences to enable students in higher education or early career professionals to attend.

This report reviews the activities of the JBA Trust over the past year and how the outcomes of our work have delivered public benefit.



2 Environmental education and training

We support a wide range of activities aimed at encouraging students at schools and universities across the country to develop or enhance their interests in water and environmental management, which could also ultimately lead them to pursue careers in the field. Our education and training activities also extend to the wider community, and to flood risk management professionals.

Home learning resources

From March 2020, COVID-19 restrictions meant that our normal educational outreach activities in schools and to the wider community, in particular our physical model demonstrations, were significantly limited. However, we were able to adapt our activities and continue our support for the STEM (Science, Technology, Engineering and Maths) curriculum. In response to the first COVID lockdown in the UK, we focused on supporting those having to learn from home by creating and launching three new packages of online home learning resources in April 2020.

The home learning resources are packaged by age and have the STEM curriculum at their heart, with elements of engineering, maths and geography included in each topic in the context of flood risk and water management. Our physical models play a big part in many of the topics, but others can be explored without a demonstration model. The resources include videos, worksheet activities, puzzles, case studies and exercises. There were 2,700 visits to our learning resource packs, with over 1,000 individual resources downloaded. The learning resources can be accessed and downloaded at <u>www.jbatrust.org/how-we-help/learning-resources/</u>.





Physical models

Prior to COVID-19 restrictions, we were able to use our physical models of rivers and coasts to raise awareness, and demonstrate the technical principles, of flood and coastal risk management. Our <u>suite of physical models</u> includes four different sized hydraulic flumes, two wave tanks, an AR (Augmented Reality) sandbox and a PARM (Projection Augmented Relief Model).

We demonstrated these models at schools and events across the country to support the school curriculum, STEM events and highlight careers in environmental risk management.

In 2019-20, the flumes were used at 11 events, including three primary schools and two secondary schools. Our mini flume was also used to support a community event held by the River Worth Friends, a group which aims to raise the status of the river amongst local people. An overview of our physical models is provided below.

Hydraulic flumes

Our hydraulic flumes all show the flow of water in a simple channel, driven by a system of re-circulating pumps. The collection comprises a <u>trailer flume</u>, a <u>free-standing flume</u>, a <u>mini flume</u> and a <u>sectional flume</u>. Scale models of typical engineered structures such as weirs, bridges, culverts and debris screens show how different structures interact with the flow and affect flood risk.

The sectional hydraulic flume is the latest addition to our suite of models. Built in sections, which can be clipped together in different combinations, this flume is specifically designed to demonstrate culvert and debris screen hydraulic behaviour.

Different structures and lengths of channel can be combined with varying water flow rates to represent a wider variety of situations than in our simpler models. The new flume can be extended in one metre increments, from 1m to 5m long. There are also 10° and 30° bend modules.

Pipes, arched culverts, service crossings and debris or security screens can be added in any order or combination, to show how they affect flow rates and water levels. The flume can also demonstrate the effect of changes in gradient and flow rate on water levels, as well as variations in channel roughness.

This year we uploaded <u>new videos of the hydraulic flume</u> with a comprehensive commentary on how engineered structures affect flow in rivers. The video has had 1.9 million views since it was posted in January 2020.







Wave tanks

In the <u>wave tanks</u>, different types and combinations of coastal defences can be demonstrated, and their effectiveness at preventing overtopping and flood risk tested.

Our wave tank education video shows the rates of overtopping for a beach during a storm surge, vertical and recurved sea walls, stepped and sloped revetments, rock armour and submerged near-shore breakwater. It has had 6.9 million views on the <u>JBA Trust YouTube channel</u> since it was posted in October 2016.

The video is also being used a resource to support the Geography GCSE AQA curriculum.

PARM

<u>PARM</u> (Projection Augmented Relief Model) tools use a 3D printed landscape based on LIDAR data to create an accurate model that is then augmented with projected images, for example of areas at risk of flooding.

We are continuing our collaboration with Dr Gary Priestnall at the University of Nottingham to communicate about flood risk in Skipton, North Yorkshire. We supported Emily Richardson, a research-based Masters student, to explore how a 'virtual' online PARM simulator helps people understand flood risk, helping her to adapt her research to the Covid-19 restrictions. Emily's research will help us target our education and engagement activities to improve how we communicate about flood risk concepts and strategic decision making.

Augmented Reality Sandbox

The <u>sandbox</u> is a very interactive visualisation tool that shows how topography affects water moving through a catchment. Participants can shape the sand to create their own river catchments and valleys which are then 'augmented' in real time by a projector which shows a coloured elevation map and contour lines. Virtual rain can be introduced to explore how catchment management and river engineering can affect the flow of water.

The sandbox and PARM were used at an Interactive Geography Day, delivered for 120 pupils at Ermysted's School in Skipton, in January 2020. The models were also used for eight other public engagement, careers and training events, including one at the Wildfowl & Wetlands Trust in Slimbridge in February 2020.





Weather station

We installed a wireless Davis Vantage Pro 2 automatic weather station and manual rain gauge at our Broughton Park office near Skipton, North Yorkshire.

The weather station measures air temperature, humidity, wind speed and direction, rainfall and pressure. In addition, a manual rain gauge is read at 09:00 GMT each day for calibration purposes.

Data recorded from this weather station is freely available for use by schools, universities and communities. It can be used for a variety of educational projects, for example weather reporting, understanding meteorological measurements and data handling. Real time weather information is available on our <u>weather station dashboard</u>.

Flow meter

Our Valeport 'Braystoke' Model 001 flow meter is an easy to use and reliable method of measuring water velocity in a variety of open channel environments, including salt, fresh and effluent water, from shallow streams to tidal waterways, and is ideal for field study use and hydrometric work. The portable flow meter and display unit are particularly useful for education and outreach activities, research and monitoring projects and flow gauging technique training. This year, we have been developing resources to support its use by students, professional groups and communities.

The flow meter was kindly donated by the Canal and River Trust in October 2019.







3 Science and research

One of the aims of JBA Trust is to facilitate collaboration between academia and industry and deliver scientific research that improves society's understanding and management of risks in the environment. We publish and disseminate the resulting research outputs, enabling knowledge exchange and sharing best practice.

Collaborative research

In 2019-20 we worked with universities, research institutions, public sector and charitable organisations. We are pleased to report on the good progress of the following collaborative research projects.

Third UK Climate Change Risk Assessment

The Third UK Climate Change Risk Assessment (CCRA) report was published in July 2020. It updates the projections of current and future flood risk to predict how flood risk would affect properties, people and assets in the mid to late century.

The analysis considered river, coastal, surface water and groundwater flooding, taking into account population growth, adaptation measures and climate change using the new UKCP18 climate projections.

The CCRA Evidence Report is used to inform the UK Government's actions to adapt to the challenges of climate change.

We supported the CCRA through co-authorship of the research on future flood risk, including analysis of the role of nature-based flood risk management approaches.

Access the Third UK Climate Change Risk Assessment, Future Flood Risk (CCRA) reports





The role of Digital Technologies in understanding, mitigating and adapting to environmental change

Partners: Lancaster University

We have been supporting a 5-year EPSRC funded research project at Lancaster University led by Professor Gordon Blair, looking at three areas of innovation: the Internet of Things (IoT), cloud computing and data science. In the first year the team focused on utilising digital technologies to enhance flood modelling within a concentrated programme of agile development – a "Flood Modelling Sprint".

We co-hosted and participated in workshops with the Lancaster University team in 2017 and 2018 to identify industry drivers and technology needs in applications of flood risk modelling. A wide range of organisations were part of this process including the Environment Agency, ECMWF, United Utilities, Oxford University, CEH and JBA.

The outputs of the workshops were incorporated into research papers, including a publication in the journal Environmental Modelling and Software on "Models of Everywhere revisited", in December 2019. The paper is a technological perspective on an approach to environmental modelling that emphasises models to learn about places.

We also contributed to a paper on data-driven decision support in flood risk management published in the Journal of Flood Risk Management in August 2020. This work demonstrated examples of the use of semantically-enriched data, natural language processing and semantic queries to blend structured data from detailed flood models with postflood event reports.

Access "Models of everywhere revisited: A technological perspective"

Access "Rethinking data-driven decision support in flood risk management for a big data age"

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DARE - Data Assimilation for the REsilient city

Partners: Reading University

We are working with Professor Sarah Dance at Reading University who was awarded a Fellowship (EPSRC Senior Fellow in Digital Technology for Living with Environmental Change) and is leading the DARE project - Data Assimilation for the REsilient city.

This project has led to the development of a PhD topic on data assimilation using Earth observation data for 2D flood modelling through the SCENARIO DTP (Doctoral Training Partnership) and with help from our sponsors we are supporting a doctoral research student, Helen Hooker.

Historical chronology of flash flood and hail events

Partners: David Archer, Newcastle University and Reading University

This year, we added a database to our website, produced by David Archer, that lists flash flood events in Britain derived from historical reports dating back over more than 200 years. The aim is to support improved assessments of flash flood risk for a given location and more generally of catchment vulnerability to flash flooding. Flash floods arising from intense rainfall are rare events at a specific location and there may be few if any recent records. A search of a chronology of more than 200 years provides a better basis for assessing the probability of occurrence than the limited observations currently available, especially for surface water floods.

This chronology is a culmination of the "SINATRA" (Susceptibility of catchments to INTense RAinfall and flooding) research project that we worked on with Newcastle and Reading universities and was funded by the UK NERC Flooding from Intense Rainfall programme (the 'early chronology').

Access the British Chronology of Flash Floods



JBA

Yorkshire iCASP

Partners: Led by Universities of Leeds, Sheffield and York, with the National Centre for Atmospheric Science. 16 additional 'springboard' partners (including industry, NGOs and government)

iCASP is a 5-year programme that will utilise £4.5m of NERC funding combined with in-kind and delivery support from partners to inform policy, investment decisions and new practice for regional and national agencies focusing on the Ouse catchment.

It aims to build on NERC-funded science in climate change, flooding, integrated catchment management, carbon storage in soils, water quality and water resources to generate economic, societal and environmental benefits in rural and urban areas of Yorkshire. JBA Trust are a 'springboard' partner and sit on the governance panel.

Our technical contribution has focused on supporting the Yorkshire Region Climate Change Forum, providing case studies and guidance for organisations to update existing planning and assessment processes using UKCP18 data.

> Access iCASP resources and publications for UK climate projections





Doctoral research projects

Our collaboration with universities across the UK enables us to support graduate researchers (research students) working on doctoral projects to develop advanced skills and deliver high quality research that helps enhance the understanding of a wide range of risks in the environment. We support doctoral researchers through a variety of programmes including doctoral training centres funded by UK Research and Innovation (UKRI).

The projects we supported in 2019-20 are summarised below; more information about each project can be found on the <u>PhD research</u> pages of our website.

Table X. Summary of doctora	l research projects
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Торіс	Partners	Researcher
Storm clustering and its influence on coastal morphology and defences	University of Southampton, Environment Agency	Luke Jenkins
Enhancing forecasting flood inundation mapping through data assimilation	Reading University	Helen Hooker
Understanding and estimating uncertainty in global flood risk models	Bristol University	Georgios Saralidis
Modelling wave interactions over space and time	Lancaster University	Jake Grainger
Examining the role of habitat quality in determining river ecosystem resilience to extreme flood events	University of Leeds, Environment Agency	Andrew Johnson
Estimating flood frequency using documentary and floodplain sedimentary archives to extend flood series	University of Lincoln, Environment Agency	Josephine Westlake
Methods and tools to communicate climate change and air quality risk	Lancaster Environment Centre	Suzanne van Zuijlen
Hydrodynamically- and ecologically-driven design of weirs, hydropower plants and fish passes	University of Leeds	Tom Padgett
Multi-scale sediment and debris impacts of Natural Flood Management (NFM) measures	University of Leeds	Eleanor Pearson
Impact of woody debris on hydro-geomorphological processes and flood risk	University of Leeds, Yorkshire Dales Rivers Trust	Zora Van Leeuwen
Impact of a Water Level Management Plan on the Humberhead Wetlands	Edinburgh University, Natural England	Ashley Buchan

As our programme matures, the graduate researchers we have supported are completing their work and generating research outputs.

This year, for example, working with the Fluid Dynamics Centre for Doctoral Training (CDT) at the University of Leeds, we supported PhD student Tom Padgett to develop a modelling tool to optimise weir, fish pass and hydro-electric power (HEP) plant configurations for given river discharge regime and channel dimensions.

Tom's paper was published in the Royal Society Open Science journal in January 2020.

Access journal paper on using computational fluid dynamics to improve fish pass design

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Publication summary 2019-20

During the year, we supported and co-authored studies published as papers in peer-reviewed scientific journals. The peer review process can be lengthy, and so some of these papers report on research activity carried out in previous years.

Table X. Summary of papers published in 2019-20

Title	Journal	Authors	Status
Individual-based model of juvenile eel movement parametrized with computational fluid dynamics-derived flow fields informs improved fish pass design	Royal Society Open Science	Padgett T.E., Thomas R.E., Borman D.J., Mould D.C.	Published
Models of Everywhere Revisited: A Technological Perspective	Environmental Modelling and Software	Blair, G, Beven, K, Lamb, R, Bassett, R, Cauwenberghs, K, Hankin, B, Dean, G, Hunter, N, Edwards, L, Nundloll, V, Samreen, F, Simm, W & Towe, R	Published
Rethinking data-driven decision support in flood risk management for a big data age	Journal of Flood Risk Management	Towe, R, Dean, G, Edwards, L, Nundloll, V, Blair, G, Lamb, L, Hankin, H, Manson, S.	Published
Developing observational methods to drive future hydrological science: Can we make a start as a community?	Hydrological Processes	Beven, K., Asadullah, A., Bates, P., Blyth, E., Chappell, N., Child, S., Cloke, H., Dadson, S., Everard, N., Fowler, H. J., Freer, J., Hannah, D. M., Heppell, K., Holden, J., Lamb, R., Lewis, H., Morgan, G., Parry, L., & Wagener, T.	Published
A risk-based network analysis of distributed in-stream leaky barriers for flood risk management	Natural Hazards and Earth System Sciences	Hankin, B., Hewitt, I., Sander, G., Danieli, F., Formetta, G., Kamilova, A., Kretzschmar, A., Kiradjiev, K., Wong, C., Pegler, S., Lamb, R.	Published Code and data SI on JBA Trust GitLab site
Modelling the Clustering of Extreme Events for Short-Term Risk Assessment	J. Agricultural, Biological and Environmental Statistics	Towe, R., Tawn, J., Eastoe, E., Lamb, R.	Published
Third UK Climate Change Risk Assessment (CCRA3): Future flood risk	Committee on Climate Change, London	Sayers, P., Horritt, M., Carr, S., Kay, A.L., Mauz, J., Lamb, R., Penning-Rowsell, E.	Published



4 Support for students in higher education

There are many academic subjects that touch upon our core interests in environmental risks and resources. Whilst undergraduate courses such as Geography and Environmental or Physical Sciences are important, the relevant specialist training often comes into greater focus at postgraduate (masters or doctoral) level. JBA Trust therefore emphasises support for students and projects at this level.

Masters projects

JBA Trust helps provide students with placements, technical expertise and access to software resources and case study data, as well as offering a platform for them to share highlights from their research projects. The students we help have gained insight into how methodologies and techniques are applied in industry and have an opportunity to see how they will be able to use their skills in a future career.

In 2019-20, the JBA Trust helped five students from the Universities of Nottingham and Leeds. The students worked with support from our colleagues in the JBA Group of companies on these MRes and MSc projects:

- Achieving Carbon Neutral Communities: A Feasibility Study at Malhamdale
- Channel capacity estimation
- Developing a PARM simulator to explore how online tools can improve understanding of flood risk
- Characterising and Design of Runoff Attenuation Features
- Rewilding in the English landscape: Appraising the benefits

We also support the dissemination and publication of the students' research.

Poster summaries of the MSc projects are available on our <u>MSc Research</u> webpages.





The British Hydrological Society, JBA Trust and Environment Agency Studentship Awards

In 2019-20 we continued our partnership with the British Hydrological Society (BHS) and the Environment Agency to support students working towards MSc qualifications in hydrology, water resources, catchment management and other related subjects. Twelve bursaries of £1,500 were awarded and we have now supported 77 students since 2011.



Applications for these bursaries were managed using the web-based system that we developed in 2014 and have maintained since. This continued to work well and enabled us to coordinate the assessment process with the BHS and Environment Agency effectively.

Flood and Coastal Risk Management Scholarships

The challenges of more frequent extreme weather and new flood risk responsibilities mean that there is a growing need for skilled water and environmental risk management professionals. This year we continued to provide support through our scholarships to fully fund the tuition fees for Lancaster University's Flood and Coastal Risk Management Postgraduate Certificate course.

Congratulations to Daniel Turner, a Project Officer at the Yorkshire Dales Rivers Trust, who successfully completed his PGCert this year. Recipients of the scholarship since 2014 are:

- Will Barber, Flood Risk Engineering & Strategy Officer, Coventry City Council
- Michelle Fitzpatrick, engineer at the Vale of Glamorgan Council
- Vikki Teasdale, Senior SuDS Officer at Buckinghamshire County Council
- Allison Chapman, Flood Risk Engineer at Wirral Council
- Daniel Turner, Project Officer at the Yorkshire Dales Rivers Trust
- Peter Burrows, Development Engineer (SuDS) at Gateshead Council
- Faye Tomalin, Engineering Assistant in Flood and Coastal Risk Management at the Vale of Glamorgan Council
- Robin Gray, Pennine Prospects
- Stuart Edwards, North Yorkshire County Council



5 Building our reach and enabling knowledge exchange

Website

Our website enables people to easily access all our publications and educational resources, as well as find information about the Trust and our research projects. Our present website (<u>www.jbatrust.org</u>) launched in April 2016. It continues to help us deliver our charitable objectives of sharing best practice and supporting training and education.

Over 10,000 users visited the website in 2019-20 and we received an average of between one and two enquiries a week through the website about research support, our physical models, bursaries and scholarships and support for educational activities and events.

Social media

We use <u>Twitter</u> to publicise research outputs, new resources, publications or scholarships and awards. The number of **@JBATrust** followers is steadily growing and by the end of 2019-20 we had 777 followers. This year we also started a new Twitter account **@JBATrustWeather** that we use to share updates from our weather station based at Broughton Park.

YouTube channel

JBA Trust's <u>YouTube channel</u> hosts all our video resources. Since January 2020, the number of subscribers has increased from 12.5k to 37.1k. This year we uploaded new videos of the hydraulic flume with a comprehensive commentary on how engineered structures affect flow in rivers. The full-length flume video had nearly 2 million views in 2019-20.

We also uploaded a time-lapse of the new weather station, a video of the Skipton PARM and a new AR sandbox video.

To coincide with the first Central American World Bank/GFDRR "Understanding Risk" conference in Costa Rica, we created Spanish versions of the new videos, with translation subtitles for the flume, wave tank, PARM and sandbox videos.





In 2019-20 we started to create a series of short careers videos to help inspire young people and to provide an insight into environmental science and engineering career opportunities. The first in our series of 'Careers for our Future Climate' videos was posted in October 2020 and will be of particular use for online career fairs.

The wave tank video continues to be very popular with over 6.9 million views since it was posted in November 2016. We have received feedback that it is being used as a resource to support the Geography GCSE AQA curriculum. The original hydraulic flume video has also proved popular with over 230,00 views since 2016.

Global reach

This year we responded to over 54 requests from around the world for support and assistance from people who, having seen our physical model and weather station resources, would like to build their own or set up their own educational project. The contacts came through social media or our website <u>contact us</u> pages.

By sharing factsheets and detailed specifications for our models, we aim to enable people to create their own educational resources to support their communities and raise awareness of flood risk management. In some cases, we have established an on-going dialogue with people who have approached us to help them with their own projects. We have helped high school and college students, university researchers, teachers and private individuals. The number of contacts relating to our physical models and weather station are shown below.



We were also able to track the impact of some of our published research outputs, including a paper on <u>'Vulnerability of bridges to scour: insights from an international expert elicitation workshop</u>' published in 2017. Globally, the paper has been viewed 2,062 times, with 996 views in the United States of America, 196 in Germany, 172 in the UK and 160 in China and 76 in Canada. The paper has been referenced in published research 13 times.

6 Directors and trustees

The Trustees serving during the year were as follows:

Trustees Rob Lamb, JBA (Managing Director of JBA Trust) Jeremy Benn, JBA Jim Hall, Oxford University Keith Beven, Lancaster University Nick Russell, Independent financial consultant Secretary Craig Robson

7 Structure, governance and management

JBA Trust is a company limited by guarantee and is governed by its Memorandum and Articles of Association. It was incorporated on 9 November 2011.

The trustees review the activities of JBA Trust every six months to ensure that they are focussed on supporting the purpose of the charity. The review also considers the strategic direction of the charity and considers how planned activities will contribute to public benefit.

We have referred to the guidance contained in the Charity Commission's general guidance on public benefit when reviewing our aims and objectives and in planning our future activities.

Appointment of trustees

On incorporation of the JBA Trust, the Board of Trustees was appointed by invitation.

To preserve independence of the JBA Trust from JBA Group companies, which provide part of its core funding, the JBA Trust's Articles of Association stipulate that the number of trustees connected to or employed by JBA Group shall always be less than half of the total number of trustees appointed at any given time.

The trustees are not remunerated (other than payment to cover travel and accommodation costs where required for JBA Trust business).

Trustee induction and training

Periodically, the trustees meet and are briefed on their legal obligations under charity and company law, updates to the Charity Commission's guidance on public benefit, the content of the Memorandum and Articles of Association and the JBA Trust business plan.

Organisation

The Board of Trustees meets every six months and is responsible for the strategic direction and policy of the charity. A Managing Director is appointed by the trustees to manage the day-to day operations of the charity and is supported by a Programme Manager.



Risk management

The trustees have a risk management strategy which comprises:

- An annual review of the risks the charity may face
- Policies and procedures in place to mitigate those risks
- Plans in place to minimise the impact of the risks should they materialise.

The principal risk to JBA Trust is financial sustainability. This is mitigated by having a robust reserves policy and a clear financial plan which is reviewed and subsequently approved by the trustees at the start of the financial year.

JBA Trust adopts policies and procedures from our host, the JBA Group, which are externally validated where applicable. These include policies on: Health and Safety; Energy Use; Environment; Sustainability; Social Responsibility; Equality and Diversity.

8 Financial review

The principal funding source for JBA Trust is JBA Group dividends. JBA Trust also aims to leverage funding for research projects by supporting partners in applying for funding from external organisations, for example Innovate UK or Research Councils. We also generate a small amount of additional income from hiring out our physical models to commercial organisations (no charges are made for educational or charitable activities). Personal donations are processed through an online giving platform that enables Gift Aid to be claimed efficiently.

Reserves Policy

Reserves are required to minimise the financial risks associated with the unlikely event of unplanned or unforeseen expenditure. The JBA Trust maintains sufficient reserves to cover all contractually committed expenditure or liabilities and operating costs for one year.

Plan for future periods

JBA Trust anticipates continued long-term funding from JBA Group. To ensure that the charity maximises the value of its income in carrying out its activities, the strategic plan focuses on continuing to seek match funding for research projects from funding bodies, including Universities and Research Councils. In the future JBA Trust may also wish to generate an income by licensing datasets, results or models generated by research.

The trustees declare that they have approved the Trustees Report above.

On behalf of the trustees Rob Lamb, Managing Director of JBA Trust

April 2021