



UK Centre for
Ecology & Hydrology

Annual Report & Accounts

1 December 2019 to 31 December 2020

The year in numbers

These numbers indicate the size, scale and excellence of the science we deliver in support of a world where people and nature prosper

1,000+
datasets are now freely available via the Environmental Information Data Centre



Over **3/4 million** updates were made to the data in the National River Flow Archive




4
UKCEH scientists were named on the Highly Cited Researchers 2020 list



Our researchers published over **400** papers



1.77 million records were received by the Biological Records Centre from over **20,000** contributors covering over **24,000** species



Our scientists jointly supervised **170** doctoral researchers



3/4 of our outputs were rated world-leading or internationally excellent



We won **36** bids across **22** countries*



We won **148** bids worth **£18.9 million***

*These numbers refer to bids submitted in this accounting period, where we are aware of the outcome, calculated on 25.5.21

Administrative details

Our legal status

The UK Centre for Ecology & Hydrology is a registered Charity in England & Wales (number 1185618) and in Scotland (number SC049849), and a registered Company Limited by Guarantee in England & Wales (number 11314957).

The Centre owns a registered trading subsidiary, the UK Centre for Ecology & Hydrology Enterprise, a Company Limited by Shares (number 12251749), which supports our charitable purpose.

The registered office of the UK Centre for Ecology & Hydrology is at the Maclean Building, Benson Lane, Crowmarsh Gifford, Wallingford, Oxfordshire, OX10 8BB, UK.

The scope of this report

In 2019, the Centre for Ecology & Hydrology became independent from the Natural Environment Research Council (NERC) and its parent organisation UK Research and Innovation (UKRI), and was

re-named the UK Centre for Ecology & Hydrology (UKCEH). This set of Annual Report and Accounts covers the 13-month period since UKCEH became independent, from 1 December 2019 to 31 December 2020. The Trustees' Report includes the Strategic Report and the Directors' Report and has been prepared in accordance with applicable legal requirements.

Our relationship with UK Research and Innovation

UKCEH acts as a strategic delivery partner for NERC, part of UKRI. Through our National Capability programmes, funded by UKRI-NERC, we enable the UK research community to stay at the forefront of environmental science globally, and we meet national strategic needs, informing government and business decision-making on environmental issues. Victoria McMyn, Chief Operating Officer for NERC, attends our Board of Trustees meeting as an Observer.

Trustee Directors

Professor Mark Bailey
Ewen Cameron, Lord Cameron of Dillington (Chair)
Lynette Eastman
Will Galgey
Professor Iain Gillespie
Linda Naylor
Benet Northcote
Neil Scragg
Alexia Tye

Key management personnel

Executive Board

Professor Mark Bailey
Professor Alan Jenkins
Dr Nick Wells
Jaqui Dingle (replaced by Gill Lay in April 2021)
Kathleen Parsons (until December 2020, replaced by Sam Bullen in April 2021)

Science Board

Dr Eleanor Blyth
Professor Bridget Emmett
Professor Alan Jenkins
Professor Richard Pywell
Dr Gwyn Rees
Professor Stefan Reis
Nick Reynard
Dr Claus Svendsen
Dr Nick Wells

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LORD CAMERON OF DILLINGTON, CHAIR

Having worked with the UK Centre for Ecology & Hydrology (UKCEH) for some years and become its first Chair in 2018, I have been consistently impressed by the organisation's focus on delivering world-class science which has an impact on the world's major environmental challenges. In this Annual Report, you will see numerous examples of how UKCEH has furthered knowledge, informed policy, and supported innovation around the world, not least through its contributions towards realising 11 of the 17 UN Sustainable Development Goals.

Of course 2020 has been dominated by the global pandemic and the many challenges this created. I am pleased to report that, despite the many difficulties, the Centre succeeded in delivering against its Strategy 2025, adapting rapidly to changing circumstances and finding new ways to work, while caring for the safety of staff, partners and the public. The Centre's

Foreword by the Chair of Trustees

directors and staff deserve huge credit for the extra effort they put in throughout the year to achieve this.

I was particularly proud that UKCEH was able to contribute proactively to the UK's emergency response to COVID-19. Our scientists led national work to detect the virus SARS-CoV-2 in wastewater, they lent their modelling expertise to efforts to identify optimum strategies for easing lockdowns, and they maintained national air pollution monitoring networks throughout the pandemic, providing vital information on emissions. The organisation provided thousands of pairs of gloves, suits, aprons, and other essential equipment to key workers based near our sites in Bangor, Edinburgh, Lancaster and Wallingford, and lent a DNA sequencing machine for use at a COVID-19 diagnostic testing centre in Milton Keynes.

The Board of Trustees has seen some changes during the course of the year. We regretfully said goodbye to Fiona Evans, formerly HR Director of ZSL, and Professor Paul Leinster CBE, formerly Chief Executive of

the Environment Agency. I am very grateful to Fiona and Paul for their valuable contribution to the governance of UKCEH during difficult times, as well as to the remaining Trustees for their diligence.

We look forward with optimism, knowing that the organisation has survived this challenging year, and is in a strong position to thrive in 2021, while enabling governments, NGOs and businesses to "build back better". After all, the pandemic has also shown us that real change is possible when there is the will to achieve it.

"We really cannot thank you enough for helping protect our crew during these unprecedented times. This PPE does not just mean that our crew are better protected, it also reduces the risks of transmission of the virus to the patients we are treating, as well as the families of crew, who they return home to."

**Samantha Collier,
Corporate Partnerships
Manager at Thames
Valley Air Ambulance**



PROF MARK J BAILEY, EXECUTIVE DIRECTOR

Foreword by the Executive Director

This Report marks the completion of my first full year as Executive Director of the newly independent UK Centre for Ecology & Hydrology. We always knew that our first year of independence from UK Research and Innovation (UKRI) would be demanding, but in practice, it has been difficult in ways we could never have dreamt at the outset. But, while the pandemic has presented us with numerous challenges, I firmly believe we have emerged from the year more flexible and more focused.

With staff based across four sites, working with partners all around the world, involved in extensive laboratory and field work, adapting to the restrictions of the pandemic was hugely complex. That we not only maintained much of our normal service, but also delivered the impressive range of achievements set out in this document, is due largely to the extraordinary efforts of our staff and the flexibility of our funders and partners, to all of whom I

am immensely grateful. We were also fortunate to be in a strong enough financial position to be able to retain all our staff on full pay throughout the year.

In April, we published our Strategy 2025, setting out our direction as an independent organisation for the next five years. And throughout the pandemic, we have continued to deliver against this strategy. This Annual Report gives you a flavour of the holistic approach that UKCEH takes to tackling environmental challenges, integrating different disciplines within and beyond environmental science, and balancing environmental needs with economic and social needs.

We were terribly saddened this year to lose Professor Richard Shore, who died suddenly in July. Richard joined the Institute of Terrestrial Ecology, a forerunner of UKCEH, in 1988, and had been with us ever since, most recently as Science Area Head for Pollution and Head of Site for UKCEH Lancaster. He

made a huge contribution to pollution and wildlife science worldwide, and we miss his humour, kindness and wisdom greatly.

Throughout all the ups and downs of this strange year, I have been constantly impressed by the commitment and flexibility of UKCEH's leadership team, Board and, of course, our staff. I am humbled by their dedication.

We remain a strategic delivery partner for the Natural Environment Research Council, part of UKRI, and much appreciate their funding of our National Capability Awards and research grants that make up a major proportion of our annual income.

2020 has been a challenging but productive year, and for 2021, working with our collaborators, we will continue to demonstrate that our science makes a difference.

Who we are

The UK Centre for Ecology & Hydrology is an independent, not-for-profit research institute carrying out excellent environmental science with impact.

Our 500+ staff work to understand the environment, how it sustains life, and the human impact on it. We provide

the data and insights that governments, businesses and researchers need to create a productive, resilient and healthy environment.

This Annual Review covers the 13-month period since the UK Centre for Ecology & Hydrology became independent from UK Research and Innovation.

How we work

Underpinning UKCEH's research and innovation are large research infrastructures and our capabilities in monitoring, measuring and observation, experimentation, data science and modelling.

Monitoring, measuring and observation

We provide flexible, long-term, large-scale monitoring and surveillance networks essential to allow us to identify and measure environmental change, and determine the factors that drive that change.

Experimental platforms and research facilities

Our research facilities enable us to test the role of different drivers of environmental change and the outcomes of novel

interventions to manage the environment. We provide and operate experimental platforms and research infrastructures supporting national and international collaborations.

Data science and modelling

We have developed models to forecast and predict aspects of the environment at different spatial and temporal scales. They include models of national and international importance for assessing air quality; GHG emissions inventories; land use and environmental impact modelling; the UK's sole land surface model; nationwide, real-time flood forecasting; and water resource outlooks.

Our ambition

We seek to understand the environment, how it sustains life, and the human impact on it – so that together, people and nature can prosper.



Our charitable objects

- To carry out pure and applied scientific research in terrestrial and aquatic environments, including their interactions with the atmosphere.
- To deliver scientific expertise in terrestrial and aquatic environments, including their interactions with the atmosphere.
- To advance education in the environment and environmental sciences, and sustainable development.
- To promote sustainable development for the benefit of the public by promoting the preservation, conservation, protection and improvement of the environment and the prudent use of natural resources.
- To promote sustainable means of achieving economic growth and regeneration.

Our strategy

In April 2020, we published Our Strategy 2025: Research and Innovation. Our strategy sets out the role of UKCEH in addressing three major environmental and societal challenges:



1 Creating and enhancing sustainable ecosystems

2 Reducing and preventing pollution

3 Mitigating and building resilience to climate and environmental change

Our specific contribution to these challenges focuses on ten integrated issues:

Biodiversity

Chemical risks

Clean air

Climate and land

Ecosystem restoration and resilience

Flood and drought impacts

Net-zero greenhouse gas emissions

Soil health

Sustainable agriculture

Water quality and resources

Biodiversity



The challenge

Biodiversity is under threat with species declining at the fastest rate ever recorded. The biggest threats include habitat loss and fragmentation, climate change, pollution, invasive species and pathogens.



Our commitment

- To better understand the response and interactions between biodiversity and environmental change.
- To define the impact of the many drivers of change, including climate, land use, invasive species and globalisation.
- To develop effective, evidence-based mitigation strategies that inform and improve biosecurity preparedness, and halt and reverse the decline in biodiversity.

Examples of progress in 2020

Supported by National Capability funding, our Biological Records Centre received 1.77 million records from over 20,000 contributors covering over 24,000 species. Our analysis of species trends contributed to the publication of annual UK Biodiversity Indicators, led by the JNCC (Joint Nature Conservation Committee). These indicators inform policy and form a major part of the UK's international reporting on biodiversity. www.brc.ac.uk

We worked with Network Rail on a Biodiversity Action Plan, which supports the organisation's goal to increase biodiversity across its estate, which covers 52,000 hectares and comprises 20,000 miles of track.

Nitrogen pollution from agriculture, industry and road traffic is a major driver of

biodiversity loss in the UK. A UKCEH-led project for the JNCC showed that habitats threatened by nitrogen pollution are best protected by targeted local measures. The modelling study indicated that while national measures have an important role to play in reducing background pollution levels that can harm sensitive habitats, it is also important to implement local mitigation measures to protect sites close to pollution sources.

"Collaborating with UKCEH on the development of its new biodiversity action plan has enabled Network Rail to work with experts in the fields of biodiversity and remote sensing. This work will help Network Rail to become recognised as leaders in land management and to achieve ambitious targets of biodiversity net gain by 2035."

Dr Neil Strong,
Biodiversity Strategy Manager,
Network Rail

Photo: Lucy Hulmes, UKCEH

A 'tool-box' approach where you can choose the most effective measures for a particular area will not just maximise benefit to each site, but also be most cost-effective.

1,200 beekeepers signed up for our National Honey Monitoring Scheme in 2020, and 800 samples were processed. Our Analytical Chemistry Group developed methods for detecting up to 100 pesticide compounds in a single extraction. This citizen science programme uses plant eDNA to tell us what bees are feeding on in different parts of the country and at different times of year, helping to identify possible threats to the habitat of pollinating insects. <https://honey-monitoring.ac.uk>

Our annual survey of Windermere indicated the continued presence of a non-native fish species, the ruffe, first detected by our monitoring last year. Arctic charr were also observed – a species in dramatic decline and with great cultural importance locally.

Professor Helen Roy MBE led the IPBES (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services) thematic assessment on Invasive Alien Species (IAS), which defines the impact of the drivers of IAS, including climate, land use, invasive species, and globalisation. A first order draft was circulated for review in September 2020.



1,200 beekeepers signed up for our National Honey Monitoring Scheme in 2020, and 800 samples were processed.

Photo: UKCEH



Forward look for 2021

- Welsh Government uses a set of national indicators to monitor and assess progress against their well-being goals. We will lead work in 2021 to define, agree and calculate a biodiversity indicator, taking account of the need for reliable, repeatable data, the meaning of the indicator to society, and its relevance as a measure of biodiversity.
- We will scope the incorporation of data from the National Honey Monitoring Scheme into Defra's indicator for 'chemicals in the environment', by which the UK Government will measure progress against its 25-year Environment Plan.
- As part of a UKRI Insect Declines Highlight Topic project, we will undertake a comprehensive analysis to identify how different drivers of declines in the diversity and abundance of insects interact across the UK, including habitat loss, climate change, pollution and disease.
- Under the NERC ERCITE project ChemPop, we will identify the most important chemical and landscape drivers of aquatic biodiversity in rivers over the past 30 years, and review the impact of agriculture over time on populations of different groups of aquatic and terrestrial invertebrates.

Chemical risks

The challenge

Chemicals are integral to human life and generate billions of pounds for national economies. However, chemicals released during production, use and the waste process can degrade the environment, affecting the health of humans and wildlife.



Our commitment

- To advance the measurement and assessment of chemical hazard pathways across water, land and air.
- To develop novel emissions-fate-transfer models that deliver explicit descriptions and predictions of environmental chemical exposure in space and time.
- To make a major contribution to sustainable chemical use through an enhanced understanding of environmental exposure and effects.

Examples of progress in 2020

We carried out work for Defra and the Environment Agency to help develop an indicator which will be used to track exposure to and the adverse effects of chemicals on wildlife in the environment. This indicator will form part of the metrics for Defra's 25-year Environment Plan.

A major EU project led by UKCEH is enabling researchers and regulators to better assess the potential risks that man-made nanomaterials may pose to the environment and humans. The research, published in *Nature Nanotechnology* in August, sets out ten key principles for improving predictions of how nanomaterials transform and dissolve as they pass through air, water, soil and living organisms.

We modelled changes in zooplankton species

richness across a series of lakes in Ontario, Canada that are recovering from past acidification and metal inputs. We used a state-of-the-art modelling approach to understand the impacts of chemical mixtures and bioavailability together. The results demonstrate that, in the long term, such an approach may be highly valuable in site-specific risk assessment of metal contamination.



Photos: Shutterstock



Forward look for 2021

- We are planning a major update of the ERICA Tool, a radiological environmental assessment model, used by regulators and industry worldwide.
- We will develop the NanoFASE spatio-temporal model for predicting the fate and exposure of nanomaterials in the environment further as part of an ongoing project which will inform sustainable product development.
- With UK Water Industry Research funding, we will collect data on the fate and behaviour of different microplastic polymers in a range of different wastewater treatment plants, and develop new methodology to identify whether nanoplastics are present in tap water.
- Our modelling expertise will be applied to predict the impact of rodenticides on sparrowhawks at a population level.



Supporting the safe use of rat poisons across the UK through policy and a stewardship scheme

Controlling rats is essential to protect food quality, human health and infrastructure. Second-generation anticoagulant rodenticides (SGAR) are very effective rat poisons but present a significant risk to other wildlife. Through its Predatory Bird Monitoring Scheme (PBMS), UKCEH has underpinned the development of voluntary SGAR initiatives by UK industry, as well as national and international SGAR regulations. Under these regulations, a UK-wide rodenticide stewardship scheme has been introduced, with monitoring provided by PBMS. This scheme will prevent potential damage costing hundreds of millions of pounds.

"PBMS is the best example of wildlife monitoring and exposure that measures changes to the environment as a result of policy intervention. It's hard to think of an alternative that gives a measure of chemicals in the environment. Because we have PBMS, we have evidence-based decision making based on outcomes."

Principal Specialist,
Natural England

Photo: Shutterstock

Clean air

The challenge

Air pollution is a major risk to human and environmental health. Around the globe, the adverse health effects of air pollutants are most prominent in urban areas, notably in African and Asian megacities. Air pollutants also contribute to ecosystem damage and biodiversity loss, and impact food security by reducing crop yields.



Our commitment

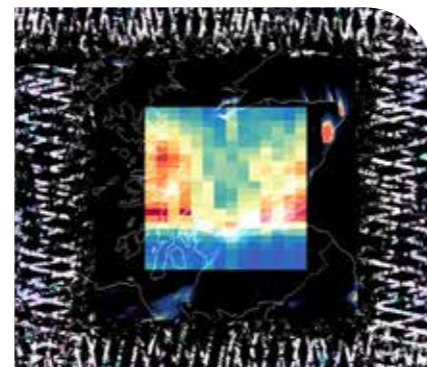
- To quantify emissions, atmospheric dispersion and chemical transformation, and assess ecological and human health impacts.
- To improve the way we assess the contribution of nature-based solutions and ecosystem services to improving air quality.
- To provide the evidence and solutions required for effective clean air policy actions.

Examples of progress in 2020

During the pandemic, we put in place plans, with the support of Defra and the Environment Agency, to maintain the operation of our UK air quality monitoring sites because of the potential impact of air pollution on respiratory illnesses. This included investing in new equipment to maintain our operation of the BT Tower Atmospheric Observatory in order to quantify CO₂ emissions in London.

The South Asian Nitrogen Hub, led by UKCEH, informed the UN Environment Assembly's first ever Resolution on Sustainable Nitrogen Management. This involved close collaboration among all eight countries of South Asia through our partners, the South Asia Cooperative Environment Programme (SACEP).

New guidance developed by UKCEH and adopted by UNECE in December will give governments and farmers the evidence needed to reduce nitrogen losses that pollute air and water. The guidance includes 76 detailed measures for reducing agricultural-based emissions of ammonia, nitrogen oxides, nitrous oxide to air, plus nitrate and other leaching to water.



Air quality data from between March and May 2020 was used in a digital artwork which visualised changes in nitrogen dioxide concentration in Scotland.

Photo: UKCEH



Forward look for 2021

- In 2021, we will continue to build the first UK Community Emission Modelling System as part of the UKRI Strategic Priorities Fund on Clean Air with the UK Met Office and several UK academic and research partners.
- We will quantify the contribution of agricultural emissions to UK air quality and public health impacts as part of a National Institute for Health Research funded study, and identify the role of future changes in emissions and diets on reducing such impacts.



Establishing sustainable nitrogen management globally in support of multiple Sustainable Development Goals

About 80 per cent of manufactured nitrogen compounds, worth about US\$200 billion, are lost to the environment each year, causing damage to the environment and making a large contribution to climate change. UKCEH work on nitrogen emissions and effects has underpinned United Nations conventions and resulted in the adoption of national emission level ceilings. The UKCEH-led European Nitrogen Assessment has inspired other countries by providing an exemplar assessment framework. UKCEH leads the establishment of the International Nitrogen Management System. The resulting insights have formed the basis

for the UN Environment Assembly Resolution (UNEP/EA4/Res14) and for 14 countries to agree the Colombo Declaration, which aims to halve nitrogen waste by 2030 offering a saving of US\$100 billion per annum globally.

“The whole campaign is informed by science. You have managed to mobilise through your networks not only the scientific data but the scientists as a network to support the global launch.”

Deputy Executive Director of the UN Environment Programme

Photo: Shutterstock

Climate and land

The challenge

Changes in climate, involving interactions of physical, chemical, and biological processes of the atmosphere, ocean, and land surface, are having widespread impacts on societies and ecosystems.



Our commitment

- To improve forecasting of extreme weather events, enabling society to better prepare and respond.
- To advance land surface models, by improving representation of groundwater, irrigation, evaporation, large-scale fires, and the nitrogen cycle.
- To better represent the Arctic system in land surface modelling, given the rapid climate-driven changes in this ecosystem, and understand its role in exacerbating change.

Examples of progress in 2020

The COSMOS-UK Soil Moisture Monitoring Network acquired over 240 million new in situ hydro-meteorological and soil moisture observations. Five years of observational data are now freely available for public download from the Environmental Information Data Centre, advancing weather and climate science with a wide range of applications.

We delivered a major report to the Climate Change Committee on non-linear responses of ecosystems and society to climate change. The report provides evidence of climate risks in the natural environment that do not follow linear patterns of change. It calculates the resulting environmental, societal and economic impacts, identifies key risks, and assesses

the extent to which current and future adaptation strategies could address these risks. This is one of several research reports which underlie the UK Government's 3rd Climate Change Risk Assessment, due to be published in 2022.



The COSMOS-UK Soil Moisture Monitoring Network acquired over 240 million new in situ hydro-meteorological and soil moisture observations.

Photos: UKCEH



Forward look for 2021

- We will assess the vulnerability of water resources in Brazil to climate extremes, including floods and droughts, using a version of the JULES land surface model that has been extended to represent human management of water through dams, reservoirs and other infrastructure.
- Through the ULYSSES project, we will develop a multi-model hydrological seasonal prediction system using state-of-the-art hydrological models at a spatial resolution of 0.1° globally.

Photo: Shutterstock

CASE STUDY

Mitigating the impacts of climate change in West Africa

Over the last 30 years, UKCEH research has produced fundamental new understanding of land surface atmosphere interactions in West Africa which has strengthened understanding of climate change among policymakers. The work has enabled the governments of Burkina Faso and Senegal to reshape policy on agriculture and flooding. It has improved the evidence base of National Adaptation Plans and built capacity within those countries. Estimates of resulting potential savings are in the hundreds of millions of US dollars.

"It was very challenging for our project to get good data on climate change, specifically high quality of projection and impacts for a local level. Now, AMMA's output [a project led by UKCEH] has been used at national level: Senegalese National Adaptation Plan process, climate policies, and sectoral (coastal zone, agriculture, water resources) strategies or plans and at local level, integrated in local development plans."

Climate analytics adaptation expert coordinating PAS-PNA in Senegal

Ecosystem restoration and resilience

The challenge

The UN Decade of Ecosystem Restoration to 2030 recognises that ecosystem degradation undermines the well-being of 3.2 billion people. The resultant loss of species and ecosystem services across the world equates to a 10 per cent annual reduction in gross productivity.



Our commitment

- To focus on solutions that allow species to thrive or re-establish where their numbers have been depleted.
- To model the impact of climate and land-use change on genetic diversity and provide early warning signs of ecosystems in danger of collapse.
- To create accurate habitat maps, land-use projections and decision-support tools to inform landscape-scale restoration for biodiversity net gain, water and soil security, and poverty alleviation.

Examples of progress in 2020

Under the UN Convention on Biological Diversity, nations are required to safeguard their genetic diversity (Aichi Target 13). We co-developed a world-leading approach to achieving this target in practice. The approach was developed for Scotland and won the Nature of Scotland Innovation Award 2020. We expect to adapt the approach for other countries in future.

We developed a new tool for exploring the genome of the Scots pine, more quickly, cheaply and in greater depth than ever before. We established 16 new Genetic Conservation Units for six UK native tree species - silver

birch, ash, Scots pine, rowan and the oaks; and we delivered a pan-European database of trait data (measurements of all parts of the tree including stem cores, and genetic data) for 3,600 trees across 12 tree species.

July saw the start of the Woodland Survey of Great Britain. Despite the pandemic, 18 sites were safely surveyed. This is the third such survey, the baseline having been recorded in 1971, with a repeat in 2002. The results will contribute to the Woodland Trust's report assessing the state of Britain's woodlands and trees.

Photo: Shutterstock



Forward look for 2021

- We will produce national maps showing the potential for restoring all terrestrial Priority Habitats to support the delivery of the Nature Recovery Network, a major commitment in the UK Government's 25 Year Environment Plan.
- We will carry out a major survey of restored habitats across Great Britain, which will inform future restoration priorities.
- We will create a prioritised list of sites suitable for new populations of the rare plant Slender Naiad (*Majas flexilis*) and for translocation of threatened populations.

CASE STUDY

Informing decision-making by mapping how land is used across the UK

Land Cover Maps (LCM) are maps of the physical coverage of the Earth's surface, derived from satellite data. With National Capability funding, UKCEH has produced Land Cover Maps of Great Britain since 1990, and the LCM family includes products incorporating other data sets such as crops and pesticides. These maps have a wide range of applications across business, policy and infrastructure. Specific case studies across sectors show that LCM has been used to save millions of pounds in costs as well as helping to protect protected species habitats.

“Land Cover Map underpins all the Natural Capital accounting in the UK... because it gives universal, standard coverage across the UK at the appropriate scale. All this allows the UK to make better, more informed decisions for our long-term management of the environment.”

Head of Natural Capital,
Office for National Statistics

Photo: Loch Druidibeg by Gordon Hatton (CC BY-SA 2.0)

Flood and drought impacts



The challenge

Floods and droughts have the potential for immense destruction of homes, crops, wildlife and infrastructures. Since 2017, water crises and extreme weather events have been consistently identified in the World Economic Forum's top five global risks by impact.



Our commitment

- To better predict and evaluate the risks and impacts of floods and drought.
- To improve models in support of hydrological research and thereby underpin a range of climate and meteorological projections and forecasts.
- To predict hydrological conditions over near and decadal timescales in order to mitigate and reduce the economic and social impacts of extreme weather events.

Examples of progress in 2020

The Surface Water Flooding Hazard Impact Model, developed by UKCEH, the Health and Safety Laboratory, Environment Agency and Met Office under the Natural Hazards Partnership (NHP), was launched as an operational service across England and Wales by the Flood Forecasting Centre (FFC) in April 2020. The model forecasts hazard, impact and risk information based on predictions of likely rainfall.

The National River Flow Archive released an update to its Peak Flow Dataset (version 9), which provides improved data for flood estimation anywhere in the UK. The dataset provides flood data for 935 river flow gauging stations around the UK, and has been shown to provide net economic benefits of almost £5.4 million per year in terms of

costs saved by environmental consultants and regulators.

UKCEH collaborated with the World Meteorological Organization (WMO) to develop a demonstration portal, trialling integration of diverse hydrological information as part of the HydroSOS project.

"During spring 2020, the Surface Water Flooding Hazard Impact Model was fully implemented operationally at the Flood Forecasting Centre. This was the culmination of many years of hard work and strong collaborative working between UKCEH, the Health & Safety Executive, ourselves and others through the Natural Hazards Partnership."

**Robert Cowling,
Senior Hydrometeorologist,
Flood Forecasting Centre**

Photo: © Simon Butterworth

When implemented, HydroSOS will be the first global operational system to integrate hydrological status assessments and outlooks from and for National Meteorological and Hydrological Services (NMHSs) and will enable them to develop targeted information products for their users including the agricultural, industry, energy and water supply sectors, as well as the general public.

We developed a new drought declarations explorer app in collaboration with the Indian National Institute of Hydrology, as part of the National Capability SUNRISE

programme. The app will allow decision-makers to understand the likely influence of their decisions on drought declarations.

We delivered a new rainfall and flood risk nowcasting tool to ANACIM, the national Meteorological Agency of Senegal, along with training for forecasters. The tool was co-developed with in-country partners and used by forecasters to predict rainfall and flood risk during the September 2020 floods, which affected 17,000 people.



Forward look for 2021

- Through a wide consultation we will identify and prioritise community requirements, providing UKRI and NERC with the evidence they need to develop a full business case for an investment in a transformative Flood and Drought Research Infrastructure (FDRI).
- In partnership with the Open University, we will carry out work for Defra, the Environment Agency and the Welsh Government to review current approaches to communicating drought risk and to develop and test alternative approaches.
- We will deliver Good Practice Guidance for nations to report on progress towards the UNCCD's Strategic Objective 3 "to mitigate, adapt to, and manage the effects of drought in order to enhance resilience of vulnerable populations and ecosystems".
- The new nowcasting system for predicting extreme rainfall over Senegal and flood risk in Dakar (see above) will be trialled through the full 2021 rainy season ahead of intended future operationalisation.



Photo: Shutterstock

Net-zero greenhouse gas emissions

The challenge

Many countries, including the UK, have committed to a net-zero emissions economy. To find solutions to reduce or minimise carbon and other greenhouse gas (GHG) emissions, it is essential that sources are identified and the processes and biogeochemical cycles involved are fully understood.



Our commitment

- To improve the quantification of GHG fluxes across the UK and identify drivers of change.
- To develop and test practical approaches for enhanced soil carbon sequestration.
- To address a range of questions from the role of bio-fuels in mitigating climate change to the risks of large releases of carbon from permafrost, informing policy at national and international scales.

Examples of progress in 2020

We modelled land-use mitigation options and their impact on GHG emissions, agricultural land availability, and timber and bioenergy crop production for the Climate Change Committee (CCC). This modelling underpinned CCC advice to UK Government for the 6th Carbon Budget published in December 2020.

With partners, we published a series of reports that together make up the National Forest Evidence Review for the Welsh Government. This comprehensive review of the scientific evidence relating

to the impacts, benefits and disbenefits of forestry and afforestation in Wales offers expert evidence to inform the National Forest for Wales programme.

As part of the ASSIST National Capability programme, we are investigating options to mitigate agricultural GHG. Through new experimental data and evaluation of past literature, we found compelling evidence that soil nitrous oxide emission can follow diurnal patterns. Our findings have profound implications for agricultural GHG reporting.

Photo: iStock.com

“The National Forest Evidence Review is an astonishing achievement which demonstrated the value of cross-organisational collaboration. The first class evidence displayed in the Evidence Review has been instrumental in the development of the National Forest for Wales strategy.”

Lloyd Harris,
Forestry Evidence Lead,
Welsh Government



Forward look for 2021

- Through observation and modelling we will quantify the benefits of improved hydrological management of agricultural peatlands to realise the maximum GHG mitigation potential.
- We will enable emissions from organic soils to be included in the UK’s GHG inventory, making the UK one of the first countries in the world to report emissions and removals arising from wetland drainage and rewetting.

CASE STUDY

Reducing greenhouse gas emissions from peatlands

UKCEH-led research has shown the UK’s peatlands emit over 20 Mt CO₂-equivalent of GHGs per annum, mostly from agriculturally drained systems, which equates to around 4 per cent of the UK’s entire GHG emissions. Our work on peatlands has contributed to national Kyoto Protocol emissions reporting, the development of emissions mitigation strategies embedded in Defra’s 25-year Environment Plan, and UK government net-zero emissions planning. Our work has underpinned £10s of millions of public and private sector investment in peat restoration, both in the UK and internationally, notably in Indonesia where degraded peatlands are major contributors to global climate change.

“UKCEH’s work has enabled a realistic perspective on peatland emissions and their mitigation potential on the pathway to net-zero.”

Head of Land Use and Bioenergy Science,
Department for Business, Energy and Industrial Strategy,
UK Government

Peatland forest in Parupuk village, Katingan, Central Kalimantan. Photo by Nanang Sujana/CIFOR. (CC BY-NC-ND 2.0).

Soil health



The challenge

Healthy soils and peatlands are critical for life. They produce 95 per cent of our food and are the source of many of our antibiotics. They store more carbon than the world's forests, mitigate climate change, recycle nutrients and waste, and clean our water. Yet they are vulnerable to pollution, unsustainable exploitation and erosion.

Examples of progress in 2020

Despite the pandemic, we were able to continue the UKCEH Countryside Survey soil health monitoring programme, the only soil monitoring programme for Great Britain. The Survey provides an ongoing record of soil health data going back to 1978 and is contributing to the development of new free global soil products such as soilgrids. www.isric.org/explore/soilgrids

In September, the EU Mission Board launched a Proposal for a Soil Health Mission: Caring for Soil is Caring for Life. Professor Bridget Emmett was one of the 15 Mission Board members who made a significant contribution to this Proposal, which recommends that countries adopt national soil monitoring programmes such as UKCEH's Countryside Survey programme.

Photo: Shutterstock



Photo: UKCEH



Our commitment

- To determine the status, trends and drivers of change in soil health, including change of biodiversity and carbon stocks in British soils and peats.
- To develop a new generation of soil system models that accurately represent biogeochemical cycling and soil function from local to global scales.
- To ensure these new models can predict the impact of land use and climate change on soils at the landscape scale.

To facilitate citizen engagement with the issue, UKCEH led the launch of a new online community initiative 'uksoils' to inspire us all to learn more about soil. <https://uksoils.org>

We contributed to global soil erosion studies that showed that climate change will increase soil erosion by water; moreover, that soil erosion by water will

contribute to 50 per cent of total soil phosphorus depletion. Africa, South America and Eastern Europe were found to be at greatest risk with high costs of chemical fertiliser and inefficient organic phosphorus management.

More than a third of soil's organic matter is made up of dead microbes and the residues of these organisms, called

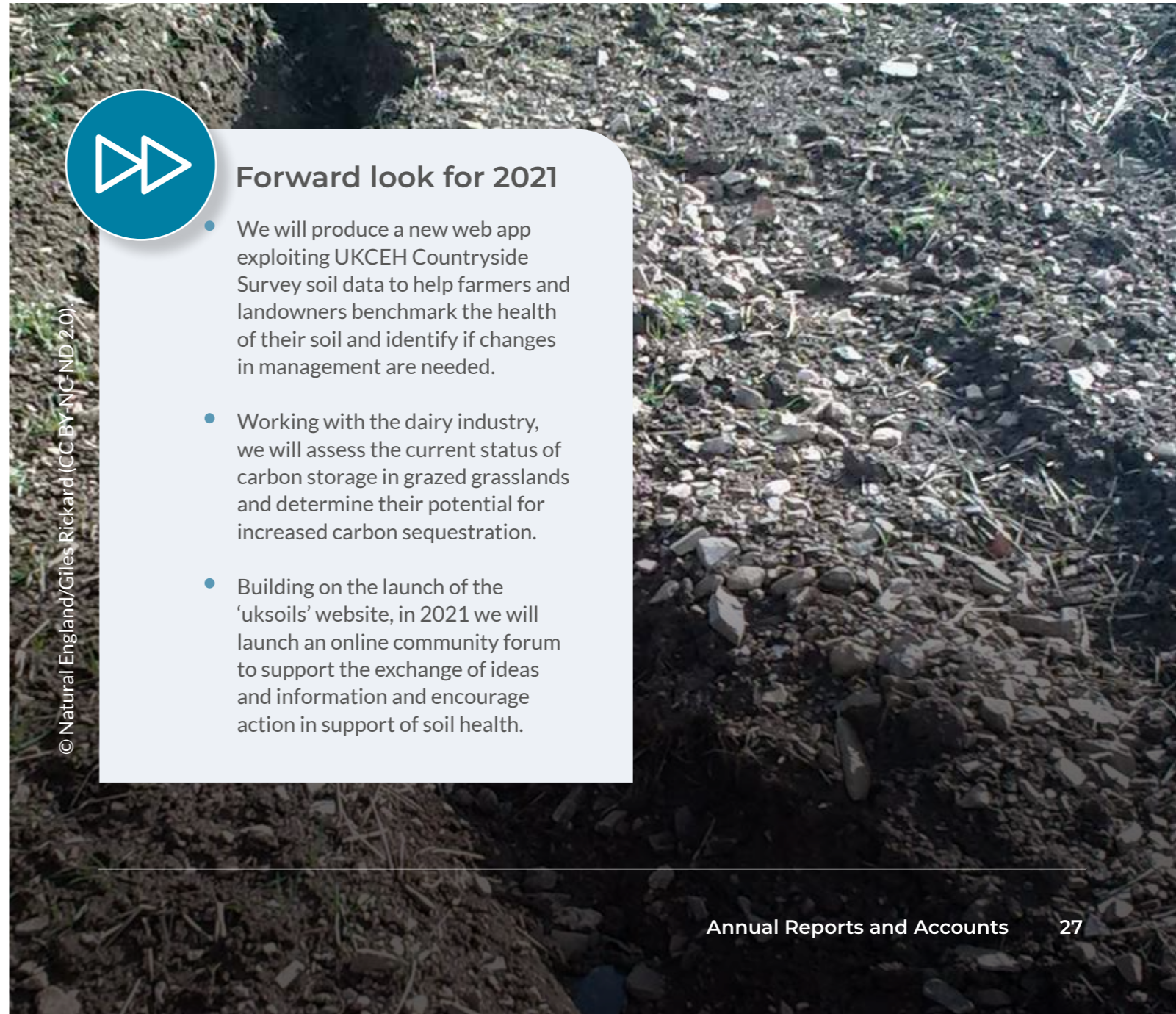
necromass. In work funded by NERC, a team of soil scientists from UKCEH and collaborators studied soil microbial necromass and its importance in soil nutrient cycling and carbon storage. In 2020, this resulted in the publication of a series of research papers explaining the central role the microbial necromass has in soil carbon cycling.



Forward look for 2021

- We will produce a new web app exploiting UKCEH Countryside Survey soil data to help farmers and landowners benchmark the health of their soil and identify if changes in management are needed.
- Working with the dairy industry, we will assess the current status of carbon storage in grazed grasslands and determine their potential for increased carbon sequestration.
- Building on the launch of the 'uksoils' website, in 2021 we will launch an online community forum to support the exchange of ideas and information and encourage action in support of soil health.

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Sustainable agriculture



Our commitment

- To work with the farming industry to test innovative, regenerative agricultural systems that are productive and resilient to future environmental shocks.
- To provide tools and data for planning future land use that optimise benefits to food production while minimising conflicts with provision of other ecosystem services.
- To provide the evidence-base for the design of resilient environmental and management policies and practices, nationally and internationally.

The challenge

Meeting the need for increased food production and nutrition without degrading our environment, is one of the greatest challenges facing society today.

Examples of progress in 2020

As part of the ASSIST National Capability programme, we developed a free web-based environmental planning tool to enable farmers across Great Britain to deliver environmental improvements to their land. The new E-Planner helps farmers to decide which agri-environmental options to introduce and where, and will support the implementation of national schemes to replace the Common Agricultural Policy (CAP).

<https://assist.ceh.ac.uk/e-planner>

We used a rapid modelling approach to quantify the potential effects of Brexit trade deals on the pig and poultry sector for jobs and the environment in Wales. The small

sectors report was circulated throughout Welsh Government and the results were used in joint Brexit planning meetings of the four UK nations.

New satellite-derived Land Cover Maps for 2017, 2018 and 2019 for the UK were launched in July 2020, as well as a change product, which revealed changes in the British landscape over 25 years (1990-2015). Knowing what we have on our land surface is crucial when it comes to planning developments and environmental improvements, and our maps are valuable tools for government agencies, water companies, land managers, NGOs and researchers.

Photo: © Simon Butterworth



Forward look for 2021

- In 2021, we plan to release a new and improved version of the E-Planner for farmers in Great Britain, with enhanced functionality, including the potential for wet grassland creation and the facility for users to access their own rural payment data.
- We will release a complementary E-Surveyor, a mobile app backed by the latest AI, which will enable farmers to easily assess the quality of wildlife habitats on their land and learn more about the biodiversity these habitats support.

Image from ASSIST E-Planner, UKCEH. E-Planner contains third party data, © their respective licensors. Background mapping © OpenStreetMap and contributors



Supporting agricultural and environmental policy in Wales

The Welsh Government has enshrined the UN Sustainable Development Goals into policies to support a more sustainable, resilient and ethical future for Wales. To support the evaluation of these policies, the Welsh Government commissioned UKCEH to implement a series of environmental monitoring and modelling research activities. The outputs of this work have led to policy developments including support for EU Exit preparations and an evidence base for the new Welsh Sustainable Farm Scheme.

“The UKCEH-led GMEP and ERAMMP projects represent a significant and central evidence programme for Welsh Government. The return on this investment is a rich and highly valued evidence base. It is robust, wide reaching and insightful.”

Head of Environmental Modelling and Monitoring, EU Exit and Strategy Division, Department of Environment and Rural Affairs, Welsh Government



UKCEH

Water quality and resources



Our commitment

- To advance our understanding of catchments, rivers, wetlands and lakes by integrating technical innovations for near real-time large-scale monitoring and reporting.
- To develop our Hydrological Summary and Outlook through model improvement, providing information for improved water management across all sectors.
- To support the restoration of over-exploited freshwater resources and ecosystems, underpinning social and economic development for local communities.

The challenge

Water is a resource on which all life depends. Yet, across the planet, 30 per cent of people do not have access to reliable supplies of clean water. Efficient management of water is critical to addressing the competing demands of industry, agriculture and energy production while sustaining flows and quality for natural ecosystems.

Examples of progress in 2020

In March, we launched the UK Water Resources Portal – an interactive web portal which provides the most up-to-date available data on river flows, rainfall, soil moisture and groundwater levels, for users to interrogate via an interactive map. The portal is designed for use by government agencies, water companies, farmers, river trusts, local interest groups, local authorities, and researchers to help predict imminent floods and droughts and compare them to similar events over the past 50 years.

We developed The Freshwater Data Explorer, a portal created in collaboration with Earthwatch. Citizens can interrogate data via an interactive map and then work with the Environment Agency and with one another to protect and improve the environment. The portal contains data about pressures on the environment as well as the way wildlife is responding to those pressures.

Pioneering research led by the UKECH devised the first global lake temperature classification system, which categorises lakes

Photo: Shutterstock

into one of nine thermal regions. Combining satellite data of more than 700 lakes with climate change models, our scientists predict that by the year 2100, for the most extreme climate change scenario, average lake temperature will be around four degrees Celsius warmer. Even small changes in temperature can have a significant impact on aquatic wildlife, including important fish species.

Through the FREEDOM-BCCR project, our scientists have worked with water industry partners to determine the threats posed to the quality and treatability of water sources from climate change, and the options open to the industry to adapt to or mitigate these threats, through catchment, reservoir or water treatment management.

Our data analysts integrated data on water quality, weather and algal blooms to determine the key environmental thresholds that trigger algal blooms in the Thames. This enables us to predict the impact of various inter-basin water transfer options being considered by Thames Water, supporting future water security for London and the south east of England.



Forward look for 2021

- We will assess the technical and commercial feasibility of the Floating Weed Manager – a satellite-based service for monitoring invasive floating aquatic plants – for the European Space Agency.
- We will develop a Climate Service that will help the water sector manage and plan the UK's water resources to be resilient to drought under climate change, drawing on a high-quality enhanced dataset on future river flows, groundwater levels and recharge.

Algal bloom. Photo: UKCEH

Our future plans

In 2020, we launched our five-year Strategy 2025: Research and Innovation. In 2021, we will work towards implementing this strategy. Specifically, we will:

- Continue to deliver on our commitment to tackling three global science challenges: creating and enhancing sustainable ecosystems; reducing and preventing pollution; and mitigating and building resilience to climate and environmental change.
- Develop and integrate our core capabilities: environmental monitoring, measurement and observation; experimental platforms and research facilities; data science for analytics, forecasting and projection.
- Increase the economic, societal and environmental impact of our science, building relationships with new partners and funders, and increasing engagement with the higher education community to inform our National Capability work.

- Achieve our budget plan, planning investments effectively for scientific sustainability, ensuring effective and accurate project costing, and managing the ongoing financial impacts of the pandemic.
- Diversify our income by reviewing and revising our business development strategy and international strategy; and promoting our services to specific target sectors.

Investment in people and skills

To support the delivery of our Strategy 2025, in 2021 we will invest in new science posts and skills, including in data science, modelling, air pollution and biological risks for human health, molecular expertise including bioinformatics, quantitative ecology, Earth observation expertise, analytical chemistry with specialisms in organic analysis, and project management. We will also create opportunities for skilled engineers, mathematicians, statisticians and physicists as we seek to expand our

existing technical capability in environmental data collection and analysis.

Environmental sustainability

In 2020, UKCEH renewed its Environmental Policy and set strategic objectives to ensure our future planning and operations will support biodiversity, enhance ecosystem services, prevent pollution, procure sustainably and achieve net zero by 2040. For 2021, we will further develop and implement the supporting action plans to ensure our estate and operations achieve these objectives.

Our response to coronavirus

Just before we launched our Strategy 2025, the world was hit by the coronavirus pandemic. While the pandemic initially caused some delays in delivering our science projects, we were able to make up these delays during the year and still anticipate achieving the commitments set out in our Strategy 2025 as planned.

For more information on our future plans, see pages 42-45.

Principal risks and uncertainties

The Trustees and Executive Board routinely review a corporate risk register, including current control mechanisms and planned mitigations. This risk-based approach is supported by an organisation-wide audit schedule, approved by the Executive Board and Trustees, wherein audit findings support a culture of continuous improvement. UKCEH's risk management approach is defined within the Quality Management System, certified to the ISO 9001 standard.



The principal risks and uncertainties, and associated mitigating actions for UKCEH relate to:

- The level of future funding, exemplified by UKRI National Capability funding: UKCEH maintains a three-year business plan with defined strategic objectives relating to income consolidation, growth and diversification. The Executive and Science Boards and Trustees routinely review progress against budget and variance to historic norms.

- The delivery of science excellence with impact during the coronavirus pandemic: health and safety assessments, not least interventions to support employee welfare, were instigated at the outset of the pandemic enabling key site and field work to be maintained and/or resumed. In addition, staff were enabled to work remotely following increased IT equipment investment and continued maintenance of UKCEH's secure collaborative network.
- Following independence from UKRI, we are focusing

on continuous improvement of our new business management systems to support efficient and effective decision making. We are investing in new technical solutions and additional competences, supported through an appropriate governance and project framework.

The Board of Trustees considers that the systems, processes and controls that we have in place are appropriate for the management of the charity's exposures to the major risks identified, including those related to coronavirus.

Our finances

UKCEH was incorporated on 17 April 2018. There was no activity in the period to 30 November 2019 and dormant accounts were prepared for this period. UKCEH commenced activities on 1 December 2019 with a one off capital grant of £6.4m to fund the transfer of moveable assets from UKRI-NERC to UKCEH as well as a £2m contribution to reserves from UKRI-NERC. The income relating to the transferred assets has been moved to an unrestricted designated reserve from which future depreciation of these assets will be met.

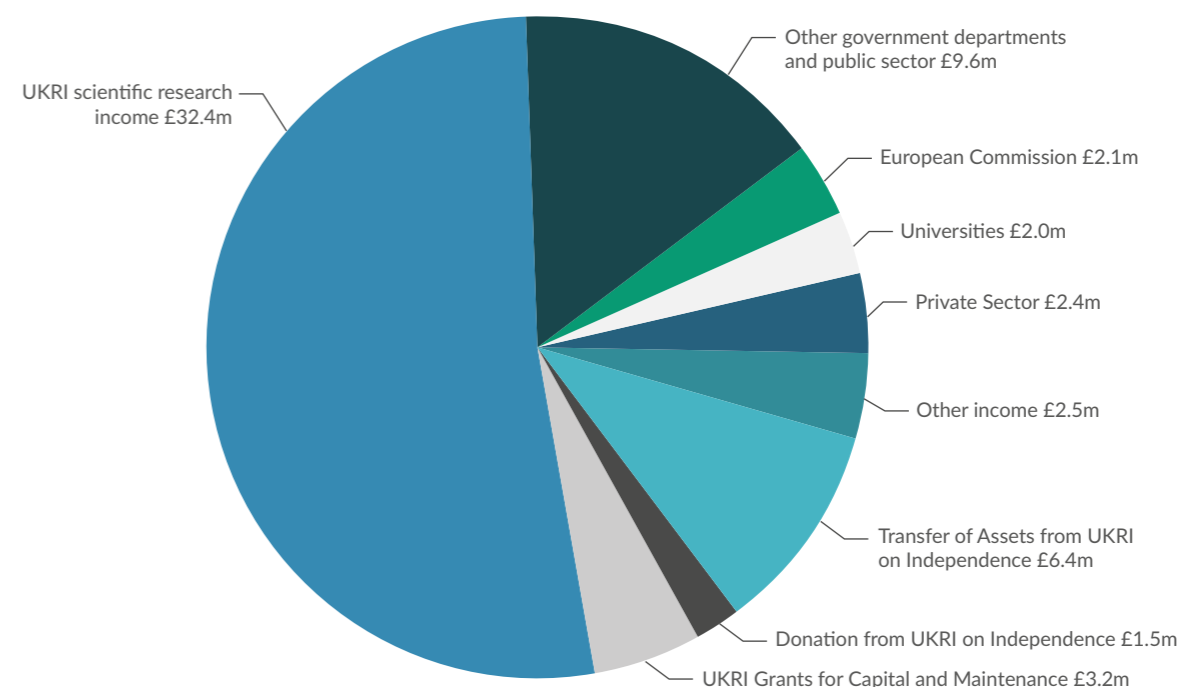
The statement of financial activities for the 13-month period ended 31 December 2020 are contained in this report and show that the organisation had a surplus for the period of £11.4m. The initial transactions on independence, described above, form part of the overall income for the period. In addition, we plan to spend some income recognised in this accounting period in future periods. The amount of this income is significant and includes capital grants of £3.2m.

Principal funding sources and income

UKCEH's total income for the 13-month period was £62.1m. The majority of income came from UKRI in the form of awards and grants for scientific research activities of £32.4m, which is the core part of the organisation's activities. Significant funding was also received from UKRI on independence, namely £6.4m in respect of the transfer of assets on independence, and a £1.5m start up donation, which represents the £2m contribution to reserves less £0.5m of initial liabilities. Grants for capital and maintenance of £3.2m were received from UKRI during the period. Other government departments and the public sector accounted for a further £9.6m of research income, while £2.1m was received in EU grants.

Income from other trading activities derives principally from UKCEH'S trading subsidiary UKCEH Enterprise and from rental income.

Income



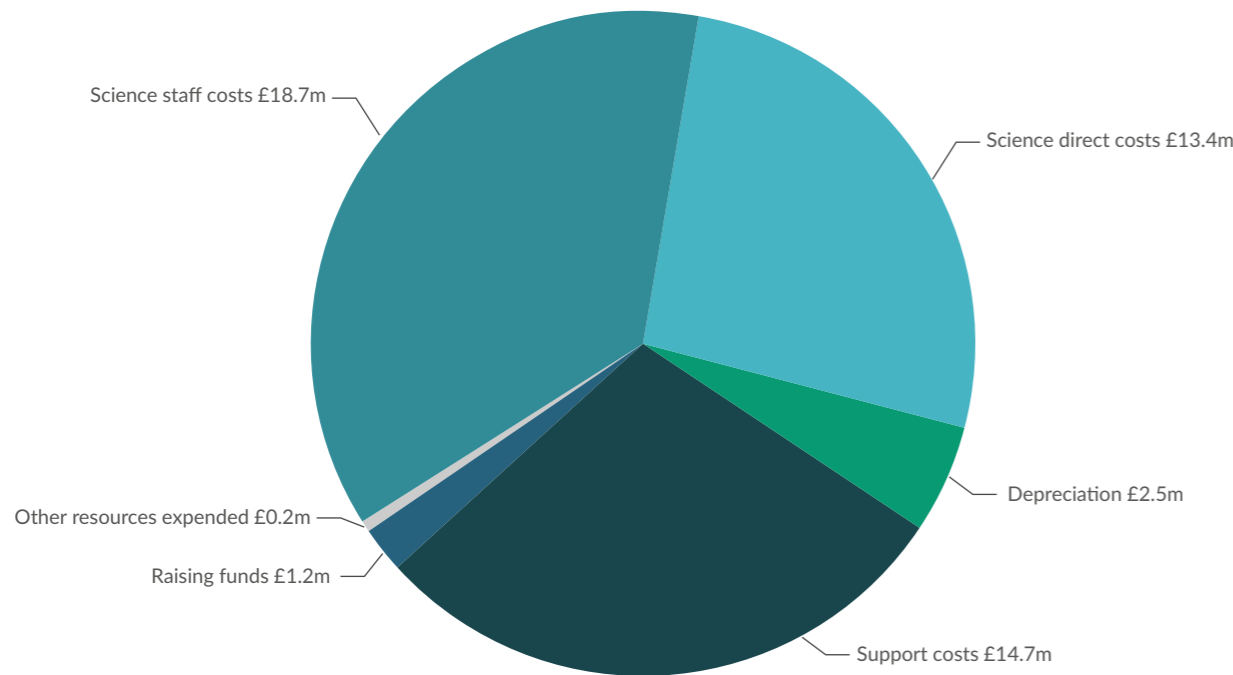
Income £m	
Transfer of assets from UKRI on independence	6.4
Donation from UKRI on independence	1.5
UKRI grants for capital and maintenance	3.2
UKRI scientific research income	32.4
Other government departments and public sector	9.6
European commission	2.1
Universities	2.0
Private sector	2.4
Other income	2.5
Total income	62.1

Expenditure

The principal cost to the organisation is the remuneration and related staff costs of the scientific research staff, which accounted for £18.7m of the costs in the period. Science direct costs of £13.4m include the subcontracted costs of our partners, where work is delivered in partnership with other institutions.

Support costs include the pay and related costs of the infrastructure teams as well as the premises, information technology, professional costs and administrative costs of running the organisation.

Expenditure £m	
Science staff cost	18.7
Science direct costs	13.4
Depreciation	2.5
Support costs	14.7
Raising funds	1.2
Other resources expended	0.2
Total expenditure	50.7



Reserves policy

As part of UKRI, CEH was not able to build or hold a reserve. It relied on direct funding to enable change, and on applications for extra funding to invest in new capability or deal with unexpected events. Since UKCEH was formed as an independent research institute with charitable status, it has created several types of reserve.

The trustees have created an unrestricted designated capital funding reserve. The balance at the end of the period was £4.7m. It arises from the transfer of assets from UKRI-NERC on independence and internal investment of capital. It will be used at the discretion of the trustees for future capital expenditure.

The restricted capital fund had a balance of £3.1m at the period end and it represents funding the organisation has received where the use is capital in nature but has been specified by the donor, and from which existing capital commitments of £1.5m will be met.

The restricted fund had a balance of £0.2m at the period end and this represents research project funding received in advance of costs in respect of specific research projects.

The unrestricted reserve had a balance of £3.4m at the period end and represents the funds which are available for use at the discretion of the trustees in furtherance of the general charitable objectives of the organisation.

At the end of the period UKCEH had free reserves of £3.4m, being total funds of £11.4m, less restricted funds of £3.3m and less designated funds of £4.7m.

On the formation of UKCEH, the Trustees considered that the initial reserve of £2m, contributed by UKRI, was the level of reserve required in order to manage the internal and external risks facing the organisation during the first period of operation. UKCEH undertakes annual strategic and operational planning, including multi-year annual financial

planning and, as part of this, the Board and the Finance and Audit Sub-committee review the level of reserves required.

Trading subsidiary

UKCEH has a wholly owned trading subsidiary UKCEH Enterprise Limited, a company limited by shares. In the 13-month period, the trading subsidiary reported a profit before tax of £0.3m. The trading subsidiary's significant areas of activity include intellectual property and the delivery of research contracts and commercial services. The Chair of UKCEH Enterprise Limited is also a member of the UKCEH Board of Trustees. The Finance and Audit Sub Committee regularly reviews the financial results of the subsidiary.

Fundraising

The organisation does not carry out any fundraising activities with the general public and no donations are sought from the public. The charity had no fundraising activities requiring disclosure under S162A of the Charities Act 2011.

Going concern and the impact of Covid-19

The Trustees of UKCEH consider the organisation to be a vibrant going concern. UKCEH commenced activities on the 1 December 2019 as a not-for-profit research institute, a company limited by guarantee with charitable status. A starting reserve of £2.0m was established on formation as described above.

The impact of COVID-19 measures in 2020 has had an adverse impact on the income generated in the period to 31 December 2020. However, the management team identified a number of mitigating actions throughout the period in order to reduce the impact. This included interventions on pay reviews and the deferral of budgeted but not essential maintenance and repairs. With most staff homeworking, the organisation also managed to make some significant savings in utility costs; and significant budgeted travel and subsistence costs were saved, as meetings were held virtually.

The Board reviewed the 2021 UKCEH budget on 2 December 2020. As of May 2021, UKCEH had secured in excess of 100% of its required income for 2021, 82% for 2022 and 60% for 2023.

This was based on the assumption that we are able to undertake the activities and draw down the income through the retention and recruitment of key people and skills.

Although the outcomes of the Government Spending Review are not yet known, some changes to the Official Development Assistance (ODA) funding have been communicated. At the time of writing, we are in the process of planning for any necessary changes due to the reduction in UKRI-ODA income. The Directors are confident that they will be able to manage the short-term impact of reduced ODA funding as other income sources remain strong. The long-term future of the organisation remains secure.

UKCEH continues to provide critical National Capability for the terrestrial, freshwater and near atmosphere science community. As such, it remained well supported by UKRI during the COVID-19 pandemic, enabling capacity to be maintained throughout and major research objectives to be delivered, although some activity was delayed or transferred to 2021. COVID funding was also received from UKRI in order to

support specific impacted areas or to provide special leave to those individuals affected by COVID-19.

Due to the above, we believe that there are no known measureable material uncertainties that could call into doubt the ability of UKCEH to continue as a going concern.

How we are organised and governed

The Centre for Ecology & Hydrology was formed in 2000 through a merger of four Natural Environment Research Council terrestrial and freshwater research institutes. In 2019, the Centre became independent from the Natural Environment Research Council and its parent organisation UK Research and Innovation, and was re-named the UK Centre for Ecology & Hydrology. The UK Centre for Ecology & Hydrology (UKCEH) is a registered Charity in England & Wales and in Scotland, and a registered Company Limited by Guarantee in England & Wales. The liability of members is limited to a maximum of £1 each.

Our Board of Trustees

Our Board of Trustees is responsible for:

- Ensuring that UKCEH has a long-term strategy to address its objectives, and supporting strategic and business plans.
- Reviewing performance in the light of the strategy, objectives, business plans and budgets and ensuring that any necessary corrective action is taken.
- Ensuring UKCEH's financial stability and that there is a sound framework of financial controls.
- Ensuring that UKCEH complies with charity and other law, and with the requirements of regulators.
- Ensuring that UKCEH complies with its charitable objects.
- Ensuring there is an effective risk management and internal control framework.
- Ensuring an appropriate health and safety management framework is in place and operating effectively, through review of quarterly reports by the Board.
- Ensuring appropriate safeguarding measures are in place and operating effectively with review of risk and assurance reports by the Board.

UKCEH adheres to the principles of the charity governance code to underpin its governance framework and support high standards of governance

Our Trustees:

Directors

Professor Mark Bailey, Executive Director (appointed 17 April 2018)

Ewen Cameron, Lord Cameron of Dillington, Chair (appointed 17 April 2018)

Lynette Eastman (appointed 11 January 2021)

Will Galgey (appointed 1 December 2019)

Professor Iain Gillespie (appointed 17 April 2018)

Linda Naylor (appointed 1 December 2019)

Benet Northcote (appointed 10 July 2018)

Neill Scragg (appointed 10 July 2018)

Alexia Tye (appointed 1 December 2019)

Fiona Evans (appointed 17 October 2018 and resigned 30 September 2020)

Professor Paul Leinster (appointed 17 April 2018 and resigned 30 April 2020)

During the reporting period, the Company Secretary was Kathleen Parsons (appointed 17 April 2018, resigned 31 December 2020). Sam Bullen was appointed Company Secretary on 19 April 2021.

Board meetings

The Board met six times during this accounting period, with attendance as follows:

	11/12/19	26/02/20	03/06/20	22/07/20	23/09/20	02/12/20
Ewen Cameron, Lord Cameron of Dillington	✓	✓	✓	✓	✓	✓
Professor Mark Bailey	✓	✓	✓	✓	✓	✓
Fiona Evans (Resigned 30/09/20)	✓	✓	✓	Apologies	✓	
Will Galgey	Apologies	✓	✓	✓	✓	✓
Professor Iain Gillespie	✓	✓	✓	✓	✓	✓
Professor Paul Leinster (Resigned 30/04/20)	✓	✓				
Linda Naylor	✓	✓	✓	✓	✓	✓
Benet Northcote	✓	✓	✓	✓	✓	✓
Neil Scragg	✓	✓	✓	✓	✓	✓
Alexia Tye	✓	✓	✓	✓	✓	✓

Sub-committees of the Board

The Board delegates some areas of its work to sub-committees. These are:

- **The Finance and Audit Sub-committee**, which oversees and review all financial aspects and advises the Board accordingly, and evaluates the budget before Board approval. The committee met six times during this accounting period.
- **The Remuneration and Appointments Sub-committee**, which reviews the levels of and rationale for any remuneration for Trustee Directors, recommends a level of remuneration of the Executive Director to the Board, taking account of performance reviews, and ensures that payments are set at a level reasonable for the work being carried out. The Sub-committee also oversees the recruitment and selection of new Trustees and the Executive Director, and oversees performance evaluation of the Trustees and Executive Director, and UKCEH employees more broadly.

The Trustees delegate the day-to-day leadership and operations of UKCEH to the Executive Board, made up of five individuals led by the Executive Director. The Executive Board meet formally four times a year to review operational matters, science progress, finances, risk assessment, and health and safety, as well as staffing and resource needs. In addition, the Executive Board meet once a week for informal discussions and to deal with matters arising from day to day operations. The Science Board also hold quarterly formal meetings and regular updates with the Science Director as required.

Appointment and induction of Trustees

Trustee vacancies are openly advertised and managed by the Remuneration and Appointment Sub Committee. Recent trustee recruitment exercises have been managed by Cadence Partners, with a focus on increasing diversity.

An induction programme was delivered to the founding Trustees by an external facilitator. New Trustee Directors are provided with an induction, including:

- Information on their responsibilities as Trustee Director, the Delegation Framework, and the operation of the Board and its Sub-committees.
- Meeting with the Chair.
- Briefings from members of the Executive Board to learn more about the organisation and identify opportunities to be involved with UKCEH's work.
- Regular presentations from UKCEH's scientists included in the Board meetings.
- Opportunities to visit the four sites to meet with staff (held virtually in 2020 during the coronavirus pandemic).

Key management personnel

The key management personnel of the organisation comprise the Executive Board and Science Board.

The members of the Executive Board are:

Professor Mark Bailey

Professor Alan Jenkins

Dr Nick Wells

Jaqui Dingle (replaced by Gill Lay in April 2021)

Kathleen Parsons (until December 2020, replaced by Sam Bullen in April 2021)

The members of the Science Board are:

Dr Eleanor Blyth

Professor Bridget Emmett

Professor Alan Jenkins

Professor Richard Pywell

Dr Gwyn Rees

Professor Stefan Reis

Nick Reynard

Dr Claus Svendsen

Dr Nick Wells

Remuneration for key management personnel

As described in the Board Sub-committees section above, the Remuneration and Appointments Sub-committee recommends the level of remuneration for the Executive Director. Remuneration for the remaining key management staff is reviewed by the Executive Director with the oversight of the Board. As for all staff, benchmarking data from comparable organisations is used when reviewing and setting pay levels.

Subsidiaries

UKCEH has one wholly owned registered trading subsidiary, the UK Centre for Ecology & Hydrology Enterprise, a Company Limited by Shares (number 12251749), which supports our charitable purpose. The registered office of the UK Centre for Ecology & Hydrology Enterprise is at the Maclean Building, Benson Lane, Crowmarsh Gifford, Wallingford, Oxfordshire, OX10 8BB, UK.

The principal activity of UKCEH Enterprise is the commercialisation of UKCEH intellectual property and the delivery of research contracts and commercial services in

support of UKCEH's ambition and charitable purpose.

UKCEH's investment in UKCEH Enterprise Limited is £50,000, being the whole of the issued share capital of that company. The subsidiary covenants that it will donate all profits earned to the charity. The financial statements of UKCEH Enterprise are audited and filed at Companies House.

UKCEH Enterprise Directors and Officers

The Directors and Officers of UKCEH Enterprise, our trading subsidiary, are:

Linda Naylor, Chair and Non-Executive Director

Dr Nick Wells, Managing Director

Professor Alan Jenkins, Executive Director

Ian Reid, Non-Executive Director

During the reporting period, the Company Secretary was Kathleen Parsons (appointed 17 April 2018, resigned 31 December 2020). Sam Bullen was appointed Company Secretary on 19 April 2021.

Section 172 statement

The UKCEH Board of Trustees have acted in the way they consider to be in good faith, would be most likely to promote the success of the company for the benefit of its members as a whole, and in doing so have regard to the matters set out in s172(1)(a-f) of the Companies Act 2006. During the year, the Trustees have considered the long-term consequences of their decisions. For example, a focus of this reporting period was the development and implementation of the organisation's five-year Strategy 2025: Research and Innovation, and during this period, different financial scenarios were modelled and considered to assist with long-term planning.

How we deliver public benefit

The trustees confirm that they have complied with the duty in section 17 of the Charities Act 2011 to have regard to the Charity Commission's general guidance on public benefit, "Charities and Public Benefit".

Our charitable objects and the ways in which we have met our charitable objects are set out in the Strategic Report, starting on page 10. In addition, over this accounting period, our scientists

published 690 publications, of which 70 per cent currently have publicly available full-text. We made over 1,000 datasets freely available for researchers and others to use via the Environmental Information Data Centre.

How we work with stakeholders

We engage key stakeholders through a range of mechanisms, including:

- We invite participation from researchers in Higher Education Institutes across the UK to engage with the design and delivery of our National Capability programmes, including via face to face and virtual events.
- We hold regular bilateral meetings with specific stakeholders, for example government chief scientists.
- We provide regular communications to our key stakeholders, including via regular and one-off email newsletters.
- During the pandemic, we communicated regularly with our stakeholders, including by posting operational updates on our corporate website and promoting them via social media.

How we work with suppliers

We are committed to obtaining value for money for all our procurement activities whilst working towards our commercial and charitable objects, complying with all relevant legislative requirements, and fulfilling our obligations under the Purchasing Contracts Regulations 2015 (in place as of December 2019).

Our Procurement Policy is to use preferred and framework suppliers through an open and transparent competitive process. Using preferred and framework suppliers provides a secure, cost-effective and efficient route to purchasing as well as providing additional risk mitigation and assurances and achieving best value outcomes. Selection of preferred suppliers is carried out in line with the Purchasing Contracts Regulations 2015.

How we engage the public

We are committed to fostering public engagement with our research in a way that is mutually beneficial to our research ambitions, our researchers and our public. In 2020, we completed a project to embed excellent public engagement with research (PER) across the organisation. Through this UKRI-NERC funded project, we clarified the purpose of PER at UKCEH, extended the excellence, scale and scope of our public engagement activities, and established formal governance of PER. For the future, we will develop our expertise in three specific areas of public engagement: citizen science, community engagement and public dialogue.

Our volunteers

Our volunteers focus primarily on citizen science. The Biological Records Centre at the UK Centre for Ecology & Hydrology has been supporting expert volunteers to contribute records of wildlife for over 50 years. Other volunteers have been involved in monitoring environmental changes as part of a range of schemes including but not limited to the National Plant Monitoring Scheme, the National Honey Monitoring Scheme, the Pollinator Monitoring Scheme, and the Predatory Bird Monitoring Scheme.

Our staff

Fostering good workplace relations and employee engagement mechanisms is key to our consultative approach. We continue to consult staff regularly via our People and Communication Team (PACT) and formal union meetings of the Joint Consultation and Negotiation Committee (JCNC).

UKCEH management supports trade union membership, and recognises the following trade union bodies as the employee representative with which it will consult and negotiate, and the body representing its employees for the purposes of information and consulting the workforce:

- Prospect for employees on legacy terms and as the sole recognised trade union for new Company Limited by Guarantee terms
- PCS for employees on legacy terms only

Professor Mark Bailey presents quarterly updates to staff simultaneously across all four sites, and has provided these, and more regular updates, virtually to all staff during the coronavirus pandemic. These cover scientific and funding achievements, information on new policies and procedures, and address organisational issues.

Our approach to remuneration is designed to ensure we can attract and retain the high quality researchers and professionals we need to create a vibrant, dynamic and intellectually nurturing environment for scientific discovery. We aim to pay competitively, within the context of affordability, and benchmark our salaries and benefits against other similar organisations.

During the coronavirus pandemic, additional measures have been put in place to support staff engagement, including creating additional digital communications channels and instigating regular operational updates relating specifically to business continuity. We were fortunate to be able to retain all our staff on full pay.

Equality, diversity and inclusivity

We recognise the value of a diverse workforce and believe that a fair and equitable working environment is key to both a productive workforce and delivery of UKCEH strategy.

We are committed to achieving equality, diversity and inclusivity, and support this commitment through our participation in the Investors in People and Athena SWAN accreditation schemes, seeking feedback from our staff consultation group (PACT).

UKCEH culture embraces the principles of flexibility that provide for family-friendly working practices, while at the same time demonstrating a commitment to career advancement for all employees.

We aim to promote equality of opportunity and equitable treatment for all employees, job or studentship applicants, and other stakeholders, and not to discriminate on grounds of legally protected characteristics.

UKCEH believes it is the responsibility of all our employees in their daily actions, decisions and behaviour to endeavour to promote this ethos and to implement the Equality, Diversity and Inclusivity policy and principles in their day-to-day dealings with each other, customers, partners and collaborators outside the organisation.

UKCEH has appropriate procedures in place should staff have concerns that the standards set out in the Equality, Diversity and Inclusivity

policy have been breached. This includes the Grievance, Whistleblowing and Harassment and Bullying procedures.

In 2020, UKCEH published a Black Lives Matter response statement, provided mandatory EDI e-learning to all staff and students, and carried out an EDI consultation through our staff representative panel to inform our new EDI action plan. We attained Disability Confident Employer status renewal and added EDI questions to our Investors in People staff survey and annual postgraduate student survey.



Investors in People

UKCEH participates in the Investors in People programme as part of our commitment to excellence in people management. In 2020, we were accredited with the Investors in People Silver Award, in recognition of the priority we give to leading, supporting and developing our people. The feedback we received will inform improvements to our working culture for the future.



Postgraduate and early career researchers

Over the past year, more than 100 of our scientists have been involved in supervising 170 postgraduate researchers, who benefit from access to our laboratory facilities, field sites and data centres. Postgraduate training and development has been carried out in partnership with 16 NERC-funded Doctoral Training Partnerships and Centres for Doctoral Training. UKCEH has also supported 61 Research Associates in specialist posts where around 10 per cent of their time is dedicated to individual professional and career development. Looking forward, we are one of the institutes that will be involved in a new ecotoxicology PhD programme.

Safety, health and environmental report

UKCEH operates within certified safety and environmental management systems. During 2020, preparations continued to migrate the Safety Management System from OHSAS 18001 to meet the ISO 45001 Standard requirements, and the Environmental Management System was successfully re-certified to ISO 14001 in April 2020. Extensive consultation was undertaken with employee representatives and managers to develop new UKCEH Safety & Environmental Policies, and supporting objectives, to drive forward continual organisational improvement.

New safety objectives

1. Migrate the UKCEH Safety Management System from OHSAS 18001 to ISO 45001 with external certification by March 2021, with ongoing maintenance to retain certification long-term.
2. Ensure health & safety is recognised by all UKCEH people as a core value and a proactive safety culture is consistently in place, through the delivery of senior management led safety communication programmes, by the end of 2021.

3. Develop and implement an overarching Mental Health and Wellbeing Strategy for UKCEH by December 2021.
4. Reduce the number of reported DSE issues on the AINM system year on year as a proportion of headcount staff numbers from January 2021 onwards.
5. Enable active participation of overseas workers with the International SOS system through training and engagement campaigns by six months after travel resumes.

New environmental objectives

1. Reduce UKCEH reliance on fossil fuels and achieve net-zero greenhouse gas emissions for directly controlled activities by 2040.
2. Implement improvement measures across UKCEH sites to support biodiversity, enhance ecosystems services and prevent pollution.
3. Demonstrate efficient use of resources and seek to reduce direct environmental impacts associated with UKCEH activities.
4. Embed sustainability considerations within UKCEH decision making and procurement processes.
5. Establish a sustainability implementation and engagement plan for UKCEH.



Accident reporting

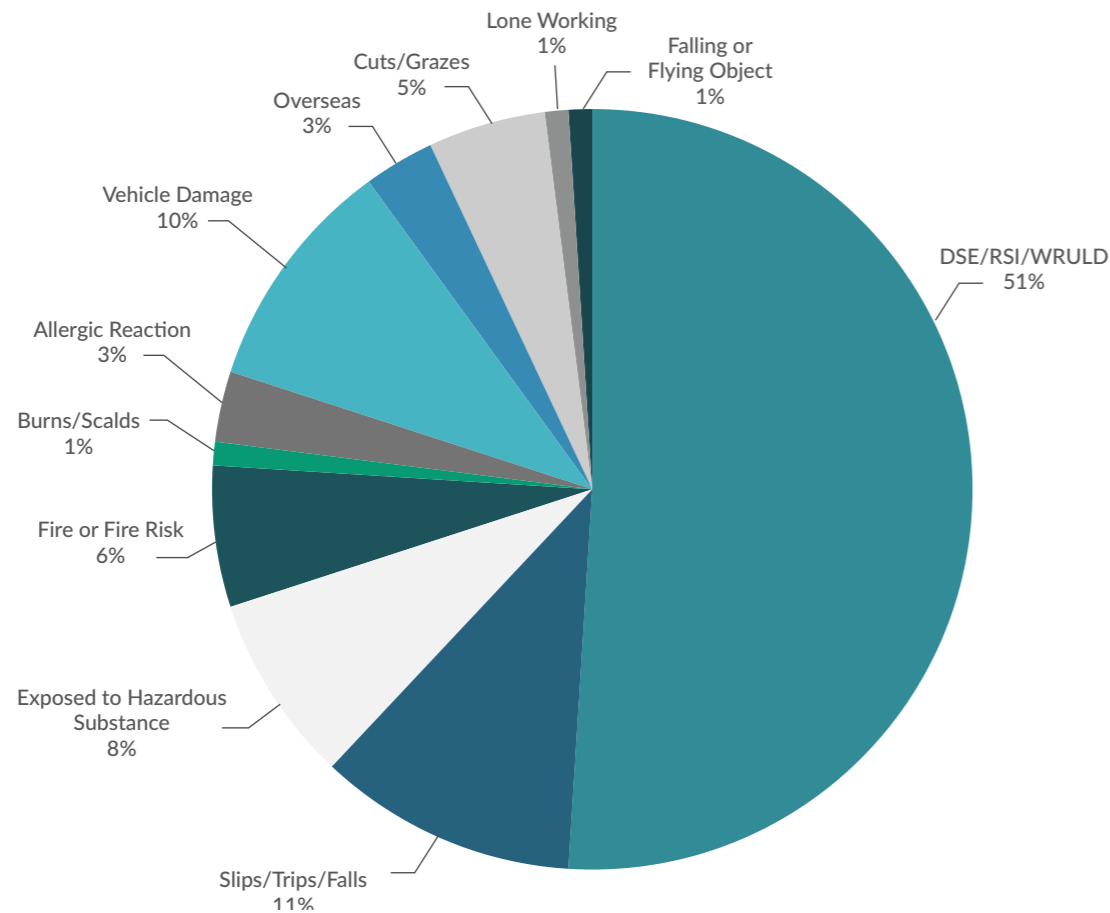
Over the 13-month period there were 51 Accidents, 8 Incidents and 18 Near Misses reported across UKCEH. There were no RIDDOR reportable accidents or incidents or COVID-19 reportable incidents. Notably whilst 61 'potential' COVID-19 exposures were recorded on UKCEH sites (staff identifying with symptoms after visiting

sites) none of these were confirmed to be COVID-19.

Throughout the COVID-19 pandemic, health surveillance has continued across UKCEH drawing on remote support from Occupational Health providers.

The figure below shows the breakdown of AINMs reported by type.

In 2021, the focus will be on making substantial progress towards the new safety, health, and environment objectives, and achieving those with a 2021 deadline, along with improving worker access to relevant safety, health, and environment information and training resources, and implementing a new cross-site internal auditing programme.



Energy and carbon reporting

UKCEH sets high organisational standards to reduce direct environmental impacts associated with our activities, which are underpinned by our ISO14001:2015 certified Environmental Management System. In 2020, UKCEH renewed its Environmental Policy and set strategic objectives to ensure our future planning and operations will support biodiversity, enhance ecosystem services, prevent pollution, procure sustainably and ultimately achieve net zero by 2040. To achieve this, we are

seeking new ways to reduce our reliance on energy derived from fossil fuels and investigating alternatives to business travel to mitigate our emissions.

UKCEH is uniquely placed to understand the direct impacts our organisational activities may have on local communities and the surrounding environment whilst also undertaking cutting-edge research to help address those impacts on a global scale.

We utilise fully renewable electricity tariffs on our main controlled sites and supplement this with on-site photovoltaic arrays. No specific new energy efficiency measures have been

implemented on UKCEH sites in 2020, beyond those already in place, due to the COVID-19 pandemic and requirement for the majority of staff to work from home. Where appropriate to do so, equipment and areas on sites have been shut down during this time which has had a knock-on effect on the on-site kWh consumption in 2020.

UK Government Greenhouse Gas Conversion Factors for 2019 and 2020 have been utilised to calculate the data presented below, in line with the UK Government Environmental Reporting Guidance.

Overall UKCEH energy use and associated GHG emissions	13-month reporting period (1 December 2019 - 31 December 2020)	Calendar year (1 January 2020 - 31 December 2020)
UK energy use ¹ (kWh)	7,015,225	6,309,790
Associated GHG emissions ² (tonnes CO ₂ e)	911.88 (1549.71)	813.68 (1394.90)
Intensity ratio energy use (kWh) per £ '000 turnover (62,076)	113.01	101.65
Intensity ratio emissions (tonnes CO ₂ e) per £ '000 turnover (62,076)	0.02 (0.01)	0.02 (0.01)
Intensity ratio energy use (kWh) per m ² floor area (23538)	298.04	268.07
Intensity ratio emissions (tonnes CO ₂ e) per m ² floor area (23538)	0.04 (0.07)	0.03 (0.06)
Intensity ratio energy use (kWh) per average staff number (537)	13,063	11,750
Intensity ratio emissions (tonnes CO ₂ e) per Average Staff number (537)	1.7 (2.89)	1.52 (2.6)

Table 1: Summary energy use and associated greenhouse gas (GHG) emissions for the 13-month reporting period 1 December 2019 – 31 December 2020, and for the calendar year 2020.

Breakdown data contributing to Table 1 figures	13-month reporting period (1 December 2019 - 31 December 2020)	Calendar year (1 January 2020 - 31st December 2020)
UK gas use (kWh)	3,652,153	3,221,157
UK electricity use ³ (kWh)	3,102,646	2,854,649
UK energy use associated with transport kWh) ⁴	260,426	233,984
Scope 1 GHG energy emissions ⁵ (tonnes CO2e)	777.75	691.26
Scope 2 GHG energy emissions ⁶ (tonnes CO2e)	73.27 (711.09)	66.55 (647.77)
Scope 3 T+D emissions ⁷ (tonnes CO2e)	60.86	55.87

Table 2: Supporting data, which contribute to overall figures presented in Table 1 above.

Methodology and limitations

- UK energy use includes electricity and gas use across UKCEH Wallingford, Edinburgh and Lancaster office sites along with mains supplied electricity use on our UK field sites. Some usage is estimated for leased sites based on previous years use whilst we await actual usage information from our landlord. Data on electricity use for our leased premises at Bangor University is included but is based on historic 2015 data as we do not currently have access to actual usage data.
- UKCEH uses a renewable tariff with a zero GHG emissions factor at sites where we have control over the provider and a 'blue tariff' (70g CO2e/kWh) at our Lancaster site. Figures in brackets are calculated using mains grid conversion factors for best practice comparative purposes. GHG associated with December 2019 energy use and personal km travelled have been calculated using UK Government 2019 Conversion Factors. GHG associated with January to December 2020 energy use and personal km travelled have been calculated using UK Government 2020 Conversion Factors. Transport emissions relating to fleet vehicles are calculated from km travelled and individual vehicle emission intensity ratios. These have been uplifted in line with [UK government environmental reporting guidance](#). The breakdown of Scope 1, Scope 2 and Scope 3 emissions forming part of this overall calculation are detailed further in Table 2.
- UK electricity use includes electricity generated by solar PV arrays installed on UKCEH sites.

- Government conversion factors include metrics to convert 'miles travelled' and 'fuel litres used' into kWh to simplify reporting requirements for SECR. This includes miles travelled kWh calculation for the Bangor electric van which is charged at the main Bangor site, for which actual electrical kWh usage is not known.
- Scope 1 emissions includes mains supplied gas use, fugitive refrigerant emissions, fleet, hire car and personal vehicle km travelled and fuel purchased.
- Scope 2 emissions have been calculated using emissions factors specified by utility providers. For best practice comparative purposes Scope 2 emissions calculated using mains grid conversion factors as specified by the UK Government are included in brackets.
- Scope 3 transmission and distribution emissions relating to mains electricity use, including for the Bangor electric van, are presented voluntarily.

Research integrity

UKCEH operates to UKRI's Policy and Guidelines on the Governance of Good Research Conduct and, as an independent organisation, has affirmed commitment to this Concordat, and has a Code of Ethics, extending to all aspects of governance, policy, operations and administration. In 2020, no claims of scientific misconduct were received or investigated.

Information governance and the cyber landscape

We constantly review risks within the cyber landscape, and our approach and resilience to cyber threats. All staff undertake annual mandatory courses in GDPR and cyber security awareness, and we maintain ongoing advice and communications on these issues. All project audits and UKCEH risk assessments have a standing item to look at how personal data are managed.

In addition, we regularly monitor and review the effectiveness of our technological defences, reporting and recovery capabilities, and take proactive actions to keep our risk

exposure to an acceptable level. We have invested in equipment and software to ensure that staff who are working from home can do so securely, including the review and introduction of improved information security controls such as encryption and multi-factor authentication.

In 2020, UKCEH maintained its Cyber Essentials accreditation and had no ICO reportable data breaches.

Complaints and feedback

We have a policy and processes in place for both external complaints and customer satisfaction, supporting the requirements of ISO9001 2015. A customer satisfaction review is undertaken twice a year for pertinent completed projects, and we also ask for feedback from customers for long-term projects every eighteen months. This feedback is reviewed by the Executive Board. The Board also review any external complaints received.

Statement of Trustees' responsibilities

The Trustees, who are also directors of the UK Centre for Ecology & Hydrology for the purposes of company law, are responsible for preparing the Trustees' annual report and the financial statements in accordance with applicable law and United Kingdom Accounting Standards (United Kingdom Generally Accepted Accounting Practice).

Company law requires the Trustees to prepare financial statements for each financial year. Under that 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 charitable company and the group and of the incoming resources and application of resources, including the income and expenditure, of the charitable group for that period.

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

- Select suitable accounting policies and then apply them consistently

- Observe the methods and principles in the Charities Statement of Recommended Practice (SORP)
- Make judgments and 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
- State whether FRS 102 "The Financial Reporting Standard applicable in the UK and Republic of Ireland" has 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 charitable company will continue in business.

The Board of Trustees is responsible for keeping adequate accounting records that are sufficient to show and explain the charitable company's transactions, disclose (with reasonable accuracy) at any time the financial position of the charitable company and enable them to ensure that the financial statements comply with the Companies Act 2006, the Charities and Trustee Investment (Scotland) Act 55 Contents 2005, the Charities Accounts (Scotland) Regulations

2006 (as amended) and the provisions of the charity's constitution. They are also responsible for safeguarding the assets of the charity and the group and for taking reasonable steps for the prevention and detection of fraud and other irregularities.

Insofar as each of the Trustees is aware:

- There is no relevant audit information of which the charitable company's auditor is unaware
- The Trustees have taken all steps that they ought to have taken as Trustees to make themselves aware of any relevant audit information and to establish that the auditor is aware of that information.

The Trustees are responsible for the maintenance and integrity of the corporate and financial information included on the company's website. Legislation in the United Kingdom governing the preparation and dissemination of financial statements may differ from legislation in other jurisdictions.

Approved by the Board of Trustees of the UK Centre for Ecology & Hydrology on 9 June 2021 including in their capacity as company directors, the strategic report contained therein, and signed on its behalf by:



Ewen Cameron, Lord Cameron of Dillington



Independent Auditor's Report to the Trustees of the UK Centre for Ecology & Hydrology

Opinion

We have audited the financial statements of the UK Centre for Ecology & Hydrology ('the charity') and its subsidiaries ('the group') for the 13-months ended 31 December 2020 which comprise Consolidated Statement of Financial Activities, Consolidated Balance Sheet, Consolidated Statement of Cash Flows, Charity Statement of Cash Flows and notes to the financial statements, including 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).

In our opinion the financial statements:

- give a true and fair view of the state of the group's and the parent charity's affairs as at period ended 31 December 2020 and of the group's income and expenditure, for the period 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 and Regulations 6 and 8 of the Charities Accounts (Scotland) Regulations 2006 (amended).

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 are independent of the group in accordance with the ethical requirements that

are 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. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Conclusions relating to going concern

In auditing the financial statements, we have concluded that the trustee's 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 charity's or the group'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 contained within the annual report. 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 this gives rise to 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 and the Charities Accounts (Scotland) Regulations 2006 requires us to report to you if, in our opinion:

- the information given in the financial statements is inconsistent in any material respect with the Trustees' report; or
- sufficient and proper accounting records have not been kept by the parent charity; or
- the 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 set out on page 52, 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 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 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 151 of the Charities Act 2011, and section 44(1)(c) of the Charities and Trustee Investment (Scotland) Act 2005 and report

in accordance with the Acts 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.

Details of the extent to which the audit was considered capable of detecting irregularities, including fraud and non-compliance with laws and regulations are set out below.

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

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

Irregularities, including fraud, are instances of non-compliance with laws and regulations. We identified and assessed the risks of material misstatement of the financial statements from irregularities, whether due to fraud or error, and discussed these between our audit team members including internal specialists. We then designed and performed audit procedures responsive to those risks, including obtaining audit evidence sufficient and appropriate to provide a basis for our opinion.

We obtained an understanding of the legal and regulatory frameworks within which the charity and group operates, focusing on those laws and regulations that have a direct effect on the determination of material amounts and disclosures in the financial statements. The laws and regulations we considered in this context were the Charities Act 2011 together with the Charities SORP (FRS 102) and the Charities Accounts (Scotland) Regulations 2006. We assessed the required compliance with these laws and regulations as part of our audit procedures on the related financial statement items.

In addition, we considered provisions of other laws and regulations that do not have a direct effect on the financial statements but compliance with which might be fundamental to the charity's and the group's ability to operate or to avoid a material penalty. We also considered the opportunities and incentives that may exist within the charity and the group for fraud.

Auditing standards limit the required audit procedures to identify non-compliance with these laws and regulations to enquiry of the Trustees and other management and inspection of regulatory and legal correspondence, if any.

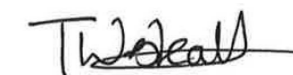
We identified the greatest risk of material impact on the financial statements from irregularities, including fraud, to be within income recognition and the override of controls by management. Our audit procedures to respond to these risks included enquiries of management and the Finance and Audit Sub-Committee about their own identification and assessment of the risks of irregularities, designing and performing audit procedures over income, sample testing on the posting of journals, reviewing accounting estimates for biases, reviewing regulatory correspondence with the Charity Commission, and reading minutes of meetings of those charged with governance.

Owing to the inherent limitations of an audit, there is an unavoidable risk that we may not have detected some material misstatements in the financial statements, even though we have properly planned and performed our audit in accordance with auditing standards. For example, the further removed non-compliance with laws and regulations (irregularities) is from the events and transactions reflected in the financial statements, the less likely the inherently limited procedures required by auditing standards would identify it. In addition, as with any audit, there remained a higher risk of non-detection of irregularities, as these may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal controls. We are not responsible for preventing non-compliance and cannot be expected to detect non-compliance with all laws and regulations.

Use of our report

This report is made solely to the charity's Trustees, as a body, in accordance with Part 4 of the Charities (Accounts and Reports) Regulations 2008 and Regulation 10 of the Charities Accounts (Scotland) Regulations 2006. 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.



Tara Westcott
Senior Statutory Auditor
For and on behalf of
Crowe U.K. LLP
Statutory Auditor
Cheltenham

9 June 2021

Crowe U.K. 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.

Crowe U.K. LLP is eligible for appointment as auditor of the charity under regulation 10(2) of the Charities Accounts (Scotland) Regulations by virtue of its eligibility under section 1212 of the Companies Act 2006.

Financial statements

Consolidated statement of financial activities for the 13-month period ending 31 December 2020, incorporating an income and expenditure account

		Unrestricted funds	Restricted funds	Unrestricted designated capital funds	Restricted capital funds	Total 2020
	Note	£000	£000	£000	£000	£000
Income						
Donations						
Other donations		1,500	-	-	-	1,500
Assets transferred from UKRI		6,442	-	-	-	6,442
Income from charitable activities						
Scientific research		9,132	39,410	-	-	48,542
Education and training		-	-	-	3,200	3,200
Capital and maintenance grants		-	567	-	-	567
Income from other trading activities						
Trading income		732	-	-	-	732
Other income		462	631	-	-	1,093
Total income	2	18,268	40,608	-	3,200	62,076
Expenditure						
Charitable Activities		9,434	25,121	-	68	34,623
Raising funds			1,233			1,233
Other		810	14,056			14,866
Total expenditure	3	10,244	40,410	-	68	50,722
Net income for period before transfers		8,024	198	-	3,132	11,354
Transfer between funds		(4,679)		4,679		-
Net movement in funds in period		3,345	198	4,679	3,132	11,354
Fund balances at 31 Dec 2020	14	3,345	198	4,679	3,132	11,354

All income and expenditure derives from continuing activities

Results of the charitable company for the 13-month period were total income £61,958k and surplus £11,354k.

Consolidated balance sheet at 31 December 2020

	Note	Company £000 2020	Group £000 2020
Fixed assets			
Tangible assets	7	5,597	5,597
Investments	8	50	-
Total fixed assets		5,647	5,597
Current assets			
Debtors	9	9,084	8,733
Cash at bank and in hand	10	16,216	16,695
Current liabilities			
Creditors falling due in one year	11	19,593	19,671
Net current assets		5,707	5,757
Net assets		11,354	11,354
The funds of the charity			
Unrestricted funds			
Unrestricted funds		3,345	3,345
Unrestricted designated capital funds		4,679	4,679
Total unrestricted funds		8,024	8,024
Restricted funds			
Restricted funds		198	198
Restricted capital funds		3,132	3,132
Total restricted funds		3,330	3,330
Total charity funds	14	11,354	11,354

The financial statements were approved and authorised for issue by the Trustees on and signed by their behalf by:



Ewen Cameron, Lord Cameron of Dillington
Chairman
9 June 2021

The notes on pages 61-75 form part of these financial statements

Consolidated statement of cash flows

	Company	Group
	£000	£000
	2020	2020
Net income and net movement in funds for the year	11,354	11,354
interest receivable	(6)	(6)
Interest payable	3	3
Depreciation	2,503	2,503
Capital grants receivable	(9,642)	(9,642)
Increase in debtors	(9,084)	(8,733)
Increase in creditors	19,593	19,671
Net cash provided by operating activities	14,721	15,150
Cash flows from investing activities		
Interest received	6	6
Investment in subsidiary	(50)	-
Purchase of tangible assets	(1,658)	(1,658)
Capital grants received	3,200	3,200
Net cash provided by investing activities	1,498	1,548
Cash flows from financing activities		
Interest payable	(3)	(3)
Net cash used in financing activities	(3)	(3)
Cash and cash equivalents at the beginning of the period	-	-
Change in cash and cash equivalents due to exchange rate movements	-	-
Total cash and cash equivalents at the end of the year	16,216	16,695

The notes on pages 61-75 form part of these financial statements.

Notes to the consolidated financial statements for the 13-month period ended 31 December 2020

1. Accounting policies

UK Centre for Ecology and Hydrology (UKCEH) ("the Charity") is a private company limited by guarantee, domiciled and incorporated in England and Wales on 17th April 2018. The Company is registered as a charity in England and Wales and Scotland. The registered trading address and company and charity numbers are on page 4. The Charity began trading on 1st December 2019, this is the first period of trading and as such there is no comparative information available. The charity is a public benefit entity as defined by FRS102 and part of a public benefit group. Monetary amounts in these financial statements are rounded to the nearest whole £1,000, except where otherwise indicated. Sterling is the Group's functional and presentational currency.

a. Basis of preparation

The group accounts have been prepared under the historical cost convention with items recognised at cost or transaction value unless otherwise stated in the relevant note/s to those accounts. The accounts have been prepared in accordance with the accounting and reporting by Charities; Statement of Recommended Practice applicable to charities preparing their accounts in accordance with the Financial Reporting Standard applicable in the UK and Republic of Ireland (FRS102).

The principal accounting policies adopted in these financial statements, which have been consistently applied, are as follows:

b. Basis of consolidation

The consolidated financial statements incorporate the financial statements of UKCEH and its subsidiary undertaking in accordance with Financial Reporting Standard ("FRS") 102 "Accounting for Subsidiary Undertakings". The results of the subsidiary are consolidated on a line by line basis. The financial statements of all group undertakings and associates are made up to 31 December 2020. A separate income and expenditure account has not been presented for UKCEH as this is exempted by Section 408 of the Companies Act 2006. The surplus of UKCEH was £11,354,000

UKCEH has one wholly owned subsidiary undertaking, UK Centre for Ecology & Hydrology Enterprise Limited (Company registration number: 12251749). The principal activity of the subsidiary is the commercialisation of UKCEH intellectual property and the delivery of research contracts and commercial services. The registered office of the subsidiary is Maclean Building, Crowmarsh Gifford, Wallingford, Oxfordshire, OX10 8BB.

1. Accounting policies cont.

The Trustees have reviewed whether it is still appropriate for the financial statements to be prepared on a going concern basis. A key assumption when assessing the going concern is the agreements in place with key funders. UKCEH receive a significant majority of funding from UKRI-NERC through long term research agreements.

c. Going concern

The Group undertake a detailed annual Business Planning and budgeting exercise where income, expenditure and cashflow are forecast for the following 3 years, which include the level of secured income. The Trustees have reviewed the going concern status of the Group and the Charity and their assessment based on these forecasts is that the Charity and the Group can continue as a going concern for the foreseeable future and no material uncertainty exists.

Grant income is recognised in the statement of financial activities when received or when the charity becomes entitled to receipt. Grants that have been received will be treated as deferred income where there are specific requirements in the terms of the grant that the income recognition is dependent on certain activities being completed in a future accounting period.

d. Income

Investment income relates to interests receivable from bank accounts. The interest is recognised in the year that it is earned.

Other income includes property rental income, training income, data licencing income and miscellaneous income. Revenue is recognised when the obligation is fulfilled. Capital grants and Institutional Funding are recognised in the consolidated statement of financial activities ("SoFA") when entitlement passes.

e. Expenditure

Charitable activity expenditure represents the full cost of the research performed. It includes the cost of direct staff, consumable and indirect costs apportioned on the basis of use. Raising funds represents the cost of business development and communications. Governance costs represent the necessary cost of compliance with statutory and constitutional requirements. Support costs have been allocated to charitable activity expenditure, costs of generating funds and governance costs on a basis consistent with the use of resources.

f. Restricted funds

Where research at UKCEH is funded by grants with conditions attached to them, these are shown as restricted. Capital grants received and receivable together with other restricted funds received and receivable and used to purchase tangible assets are included within restricted funds. A restricted capital reserve has been established representing the net book value of fixed assets purchased from capital grants.

g. Unrestricted funds

Research grants that do not contain conditions for the final receipt of funds have been treated as unrestricted. Funds received for non-specified purposes have also been included as unrestricted. A fixed assets reserve has been established within unrestricted reserves representing the net book value of fixed assets funded from unrestricted reserves. Unrestricted reserves that have been designated by the Trustees for specific purposes are shown in separate designated reserves.

h. Tangible assets and depreciation

Tangible assets are shown at cost or valuation less accumulated depreciation. The cost of tangible assets is their purchase cost, together with any incidental costs of acquisition. Items over £5,000 are capitalised. Depreciation is calculated using the straight line method to write off the cost or valuation of assets, less any estimated residual value, over their estimated useful lives at the following rates:

- Plant and machinery-8 to 10 years
- Fixtures and fittings-8 to 10 years
- Major equipment-8 years
- Motor vehicles-5 years
- IT Equipment-3 years

Assets under the course of construction are included at cost, and will be depreciated to their estimated residual values over their expected useful lives on a straight-line basis once the asset is available for use. An assessment is made at each reporting date of whether there are any indications that a fixed asset may be impaired or that an impairment loss previously recognised has fully or partially reversed.

i. Debtors

Debtors are non-interest bearing and are stated at their nominal value, as reduced by appropriate allowances for estimated irrecoverable amounts.

j. Trade creditors

Trade creditors are non-interest bearing and are stated at their nominal value.

1. Accounting policies cont.

k. Staff and pensions	UKCEH staff that joined before 1 December 2019 were employed by UKRI-NERC up to 1 December 2019, when they transferred employment to the Institute under TUPE. Transferred employees retain their membership of the Research Councils Pension Scheme (RCPS), where applicable, with UKCEH becoming an admitted employer in the scheme. The RCPS is a defined benefit scheme funded from annual grant-in-aid on a pay-as-you-go basis. The RCPS Pension Scheme is a multi-employer scheme and UKCEH is unable to identify its share of the underlying assets and liabilities. UKCEH therefore accounts for the scheme as if it were a wholly defined contribution scheme. As a result, the amount charged to the income and expenditure account represents the contributions payable to the scheme in respect of the accounting period. Liabilities for the payment of future benefits are the responsibility of the RCPS and accordingly are not included in these Financial Statements. UKCEH has recruited all new staff from December 2019 on its own terms and conditions, covering basic pay and allowances, contractual payments, tax, NI, and liabilities for pension contributions and redundancy. Such staff are eligible to join a defined contribution scheme.
l. Operating leases	Rental costs are charged to the statement of financial activities on a straight line basis over the life of the lease.
m. Foreign currency transactions	The functional and reporting currency is pounds sterling. Transactions in foreign currencies are recorded at the rate of exchange ruling at the date of the transaction. Assets and liabilities denominated in foreign currencies are translated at year end exchange rates. All gains and losses are taken to the statement of financial activities in the year to which they relate.
n. Judgements in applying accounting policies and key sources of estimation	Preparation of the financial statements require management to make significant judgements and estimates. The items in the financial statements where these judgements and estimates have been made include: - Depreciation, which has been charged in line with the accounting policy above. The amount of depreciation charged and net book value of the assets is included in Note 7 on page 68. - Grant income is estimated based on future payment profiles and expenditure incurred to date.
o. Donated goods, services and facilities	These are included at the value to the charity where this can be quantified. In accordance with the Charities SORP (FRS 102), no amounts are included in the financial statements for services donated by volunteers.

2. Analysis of incoming resources

	Research activities	Education and training activities	Other activities	Total
	£000	£000	£000	£000
Donations				
Other donations	-	-	1,500	1,500
Transfer of assets from UKRI-NERC	6,442	-	-	6,442
Total donations	6,442	-	1,500	7,942
Income from charitable activities				
Grant and contract income				
UKRI	31,862	490	-	32,352
Other government departments and public sector	9,638	-	-	9,638
European Commission	2,105	-	-	2,105
Universities	1,891	77	-	1,968
Charities	665	-	-	665
Private Sector	2,381	-	-	2,381
Total grant income	48,542	567	-	49,109
Capital and maintenance grants				
UKRI				
Repairs and maintenance	827	-	-	827
Capital expenditure	2,373	-	-	2,373
Total capital grants	3,200	-	-	3,200
Total income from charitable activities	51,742	567	-	52,309
Income from other trading activities				
Trading income			732	732
Rental income			217	217
Training income		111		111
Other income			760	760
Investment income			5	5
Total income from other trading activities	-	111	1,714	1,825
Total income	58,184	678	3,214	62,076

Grant income includes £2,136k of Institutional Funding from UKRI, classified as unrestricted funds, which will be utilised in the 2021 financial year.

3. Analysis of expenditure

	Research activities	Education and training activities	Other activities	Total
	£000	£000	£000	£000
Analysis of resources expended				
Direct charitable expenditure:				
Science staff cost	18,724	-	-	18,724
Science direct costs	13,302	91	-	13,393
Depreciation	2,506	-	-	2,506
Expenditure on charitable activities	34,532	91	0	34,623
Governance costs	-	-	35	35
Support costs	14,591	122	-	14,713
Raising funds	-	-	1,233	1,233
Trading expenditure	-	-	118	118
Expenditure on other activities	14,591	122	1,386	16,099
Total expenditure	49,123	213	1,386	50,722

Allocation of support costs, governance and raising funds	Research activities	Education and training activities	Raising funds	Governance costs	Total	Basis of allocation
	£000	£000	£000	£000	£000	
Senior management	2,054	13	-	35	2,102	Chargeable hours
Facilities	5,603	36	-	-	5,639	Chargeable hours
Business development and engagement	-	29	1,233	-	1,262	Activity
Finance and procurement	1,580	10	-	-	1,590	Chargeable hours
IT	2,665	17	-	-	2,682	Chargeable hours
People and skills	1,069	7	-	-	1,076	Chargeable hours
Research contracts, licensing and info services	1,332	8	-	-	1,340	Chargeable hours
Science support	288	2	-	-	290	Chargeable hours
Total support costs	14,591	122	1,233	35	15,981	

3. Analysis of expenditure cont.

Analysis of governance costs	Total
	£000
Audit fees	
Audit of the financial statements	15
Other assurance services	6
Trustees remuneration and expenses	14
	35

4. Employee information

The monthly average number of persons employed by the group and charitable company during the year, analysed by category, was as follows:

Group and charitable company	2020
	Number
Science	379
Infrastructure	158
Total	537

The aggregate payroll costs of these persons were:

Group and charitable company	2020
	£000
Wages and salaries	19,372
Social security costs	2,045
Pension costs	4,769
Total	26,186

An analysis of the number of staff who fall within staff cost bands (excluding pension cost) from £60,000 upwards is provided below

Group and charitable company	2020
£60,000 - £69,999	13
£70,000 - £79,999	7
£80,000 - £89,999	2
£100,000 - £109,999	1
£140,000 - £149,999	1 *
Total	24

* Executive director's remuneration package includes an additional allowance on top of base salary instead of an employer's pension contribution.

Staff that joined prior to 1 December 2019 were employed by UKRI-NERC, when these employees transferred employment to the charity under TUPE.

Transferred employees retain their membership of the Research Councils Pension Scheme, where applicable, with UKCEH becoming an admitted employer in the scheme.

Staff that joined after 1 December 2019 are employed under UK Centre for Ecology & Hydrology terms and conditions.

The key management personnel of the group comprise of the Executive Board and Science Board.

The employment costs (salaries, social security costs and pension costs) of the key management personnel for the group and charitable company were £1,461,404.

5. Remuneration of Trustees

	£000
Salary	13
Expenses	1
Total	14

Lord Cameron of Dillington received remuneration of £13,000, covering work completed as Chair of the Board of Trustees. The remuneration was agreed and provided under a provision in the governing document of the Charity. Remuneration was provided due to the Trustee's role as the Chair of the Trustees, which requires a range of knowledge and experience and has a remit in terms of the role that the Trustee is required to provide. The Trustee did not receive any employee benefits or pension contribution.

UK Centre for Ecology & Hydrology articles of association provide legal authority for this payment to be made.

The total reimbursement of travelling and subsistence expenses incurred by 3 Trustees amounted to £1,047.

6. Taxation

UK Centre for Ecology & Hydrology (UKCEH) is an exempt charity within the meaning of the Charities Act 2011 and as such is a charity within the meaning of section 506(1) of the Income and Corporation Taxes Act 1988 and is not subject to corporation tax in respect of its charitable activities.

The trading activities of the subsidiary company are subject to corporation tax; however profits in the year are gifted to the charitable company resulting in a £nil tax charge payable.

7. Assets

Tangible assets

Group and charitable company	Improvements to buildings	Plant equipment	Fixture and fittings	IT equipment	Transport	Assets under construction	Total
Cost							
As at beginning of period	-	-	-	-	-	-	-
Addition	637	539	-	222	-	266	1,664
Disposal	-	(6)	-	-	-	-	(6)
Transfer	2	4,661	226	1,366	187	-	6,442
As at 31 December 2020	639	5,194	226	1,588	187	266	8,100
Depreciation							
As at beginning of period	-	-	-	-	-	-	-
Charged in the period	4	1,678	52	653	119	-	2,506
Disposals	-	(3)	-	-	-	-	(3)
As at 31 December 2020	4	1,675	52	653	119	-	2,503
Net book value							
As at 31 December 2020	635	3,519	174	935	68	266	5,597
As at beginning of period	-	-	-	-	-	-	-

On 1 December 2019 all moveable assets, being plant, equipment (including IT equipment), vehicles and fixtures and fittings, were transferred to the charity by way of a capital grant from UKRI totalling £6,442k.

8. Investments

The Charitable Company has an interest in the following operating subsidiary:

Subsidiary undertaking	Registration number	Country of registration	Principal activity	Class and percentage of share held
UK Centre for Ecology & Hydrology Enterprise Limited	12251749	England	Management of intellectual property	100%

Investments - charitable company

The movement in the value of investments during the year was as follows:

	2020
	£000
	Charity
Valuation	
At beginning of period	-
Acquisition	50
At 31st December 2020	50

The registered office of the subsidiary is Maclean Building, Crowmarsh Gifford, Wallingford, Oxfordshire, OX10 8BB

The results of UK Centre for Ecology & Hydrology Enterprise Limited (company no 12251749) for the period ended 31st December 2020, which are included in the consolidated financial statements, are set out below:

	2020
	£000
Turnover	732
Expenditure	(405)
	327
Gift aid distribution	(327)
	-
Net assets at beginning of period	-
Net assets at 31 December 2020	50
Being:	
Current assets	547
Current liabilities	497
Net assets at 31 December 2020	50

UK Centre for Ecology & Hydrology Enterprise Limited's principal activity during the period was commercialisation of UK Centre for Ecology & Hydrology (UKCEH) intellectual property and the delivery of research contracts and commercial services in support of UKCEH's ambition and charitable purpose.

9. Debtors

	2020	2020
	£000	£000
	Charity	Group
Trade debtors	2,971	2,973
Amounts owed from subsidiary undertaking	419	-
Prepayments and accrued income	4,051	4,117
Other debtors	1,643	1,643
Total	9,084	8,733

10. Cash at bank

Cash and cash equivalents	2020	2020
	£000	£000
	Charity	Group
Cash at bank	16,216	16,695
Total	16,216	16,695

11. Creditors

	2020	2020
	£000	£000
	Charity	Group
Trade creditors	1,052	1,056
Accruals and deferred income	18,241	18,291
Taxation (VAT payable)	300	324
Total	19,593	19,671

12. Deferred income

	2020	2020
	£000	£000
	Charity	Group
Amounts deferred in year	16,196	16,196
Carried forward	16,196	16,196

Deferred income relates to grant income, including research grants, which are received in advance of specific conditions being met. The income is shown as deferred until those conditions are fully satisfied.

13. Capital commitments

	2020
	£000
	Total
Group and charitable company	
Contracted capital commitments at 31 December 2020 not otherwise included in these accounts	1,482

14. Analysis of funds

	Unrestricted funds	Restricted funds	Unrestricted designated capital funds	Restricted capital funds	Total
	£000	£000	£000	£000	£000
Analysis of net assets between funds					
UKCEH Charity					
Fixed assets	-	3	4,004	1,590	5,597
Current assets	3,923	19,288	675	1,542	25,428
Current liabilities	(578)	(19,093)	-	-	(19,671)
At 31 December 2020	3,345	198	4,679	3,132	11,354

	Unrestricted funds	Restricted funds	Unrestricted designated capital funds	Restricted capital funds	Total
	£000	£000	£000	£000	£000
Analysis of funds movements					
At beginning of period	-	-	-	-	-
Total income and expenditure for the year	8,024	198	-	3,132	11,354
Designated capital transfers	(4,679)	-	4,679	-	-
At 31 December 2020	3,345	198	4,679	3,132	11,354

Unrestricted funds are available for use at the discretion of the Trustees in furtherance of the general objectives of the Group and which have not been designated for other purposes.

Designated funds comprise unrestricted funds that have been set aside by the Trustees following the transfer of assets from UKRI-NERC on independence and internal investment in capital.

Restricted funds are funds which are to be used in accordance with specific restrictions imposed by donors or which have been raised by the Group for particular purposes. The costs of raising and administering such funds are charged against the specific fund.

Restricted capital funds are funds provided from UKRI-NERC for sole use of purchasing capital items. The expenditure is the subsequent depreciation of these assets.

15. Pension schemes

UKCEH staff that joined before 1 December 2019 were employed by UKRI-NERC up to 30th November 2019, when they transferred employment to the Institute under TUPE.

Transferred employees retain their membership of the Research Council Pension Scheme (RCPS), which is administered by the Joint Superannuation Services (JSS).

The RCPS Pension Scheme is a multi-employer scheme and UKCEH is unable to identify its share of the underlying assets and liabilities. UKCEH therefore accounts for the scheme as if it were a wholly defined contribution scheme. As a result, the amount charged to the income and expenditure account represents the contributions payable to the scheme in respect of the accounting period. Liabilities for the payment of future benefits are the responsibility of the RCPS and accordingly are not included in these Financial Statements. The employer contribution rate during the year was 26%.

UKCEH employees that joined after 30th November 2019 are eligible to join a defined contribution scheme. The total pension charge for the year was £4,768,694 with no outstanding contributions at the year end.

16. Related parties

Related party transactions

UK Centre for Ecology & Hydrology's subsidiaries for the period were as follows:

- UK Centre for Ecology & Hydrology Enterprise Limited

UK Centre for Ecology & Hydrology Enterprise Limited

UK Centre for Ecology & Hydrology Enterprise Limited is wholly owned by UK Centre for Ecology & Hydrology (UKCEH). The following transactions took place during the period:

Paid to UKCEH:	£000
Management charge to cover licencing staff costs and intellectual property charge	288
Science staff cost for research project	7
Gift aid donation	327
	622

At 31st December 2020 UK Centre for Ecology & Hydrology Enterprise Limited owed UKCEH £418,752.

UKRI (NERC)

UKCEH is strategically funded, by UKRI-NERC. UKRI-NERC supports UKCEH via strategic funding programmes, competitively won project grants and capital funding for infrastructure and technology investments. .

Funding for the 13-months was £32,352k as shown in note 2. At 31 December 2020 UKRI owed UKCEH £2,406k.

17. Leases

	2020
	£000
Operating lease obligations	
Less than 1 year	1,585
1-5 year	7,864
more than 5 year	27,106
	36,555
Lease expenditure in the period	
Hire of equipment	24
Rent of land and buildings	1,703
	1,727

18. Acquisitions

On 1st December 2019, UKCEH acquired the trading business of Centre for Ecology & Hydrology for no cash consideration.

This transaction has been accounted for by the acquisition method of accounting as applied to a Public Benefit Entity combination.

In accordance with FRS 102 assets have been brought in at fair value resulting in an uplift in the value of fixed assets of £ 6,442,000.

The assets and liabilities of the Centre for Ecology & Hydrology transferred to UKCEH were:

	£000
Fixed assets	6,442
Cash donation	2,000
Accruals	(500)
Fair value of assets transferred	7,942



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