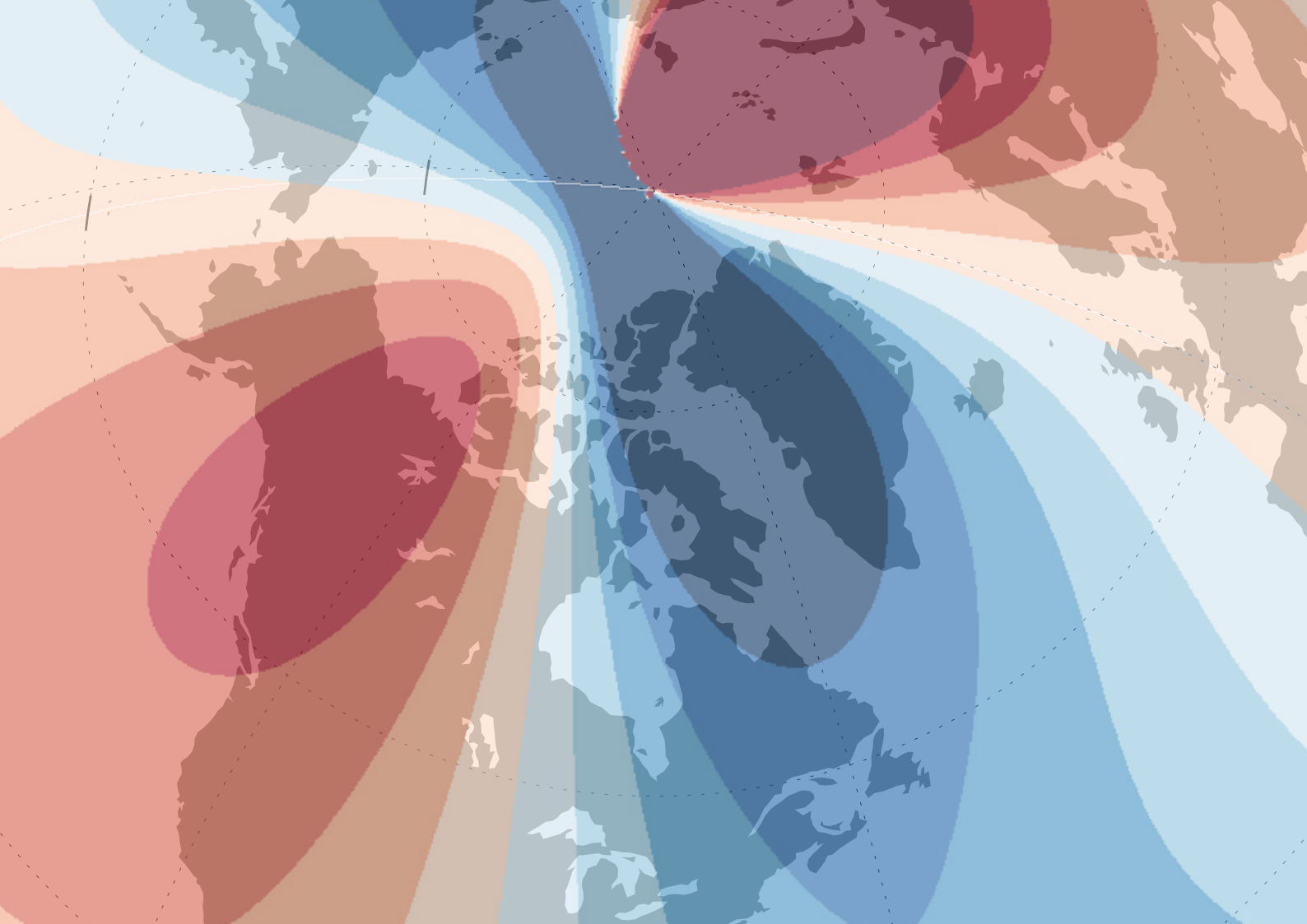




BRITISH GEOLOGICAL SURVEY

Annual Report 2024 to 2025



British
Geological
Survey

Front cover image:

Magnetic declination (the angle between magnetic and geographical north) in 2025 according to the 2025 World Magnetic Model (WMM). Red is magnetic north to the east of geographical north; blue is to the west. BGS © UKRI and © Wessel, P, and Smith, W H F. 1996. A global, self-consistent, hierarchical, high-resolution shoreline database. Journal of Geophysical Research, Vol. 101 (B4), 8741–8743. DOI: <http://doi.org/10.1029/96JB00104>. (v2.3.6)

The WMM is a series of magnetic field maps that help underpin commercial navigation systems including those used by devices such as mobile phones. The model is updated every five years and is a collaboration between BGS and the US National Oceanic and Atmospheric Administration, with the 2025 to 2030 version being released in December 2024.

The maps require periodic updates because the Earth's main magnetic field changes slowly over time, which is caused by flow of the liquid iron in the outer core that generates the field. Measurements of the magnetic field are made at land-based geomagnetic observatories, such as the nine operated by BGS, and by specialist satellites that orbit around 500 km above the surface. With these measurements, we construct a complex model of the various sources of Earth's magnetic field and its time variations.

BGS provides ground observatory measurements, facilitates the collection and distribution of high-quality measurements globally through its position in INTERMAGNET and operation of the World Data Centre for Geomagnetism, Edinburgh, and provides its expertise to support the European Space Agency Swarm mission. BGS has a unique expertise globally, in all aspects from observatory operation to through to the applied science of navigation.





British
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Survey

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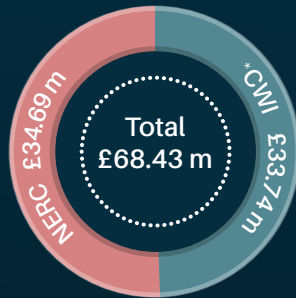
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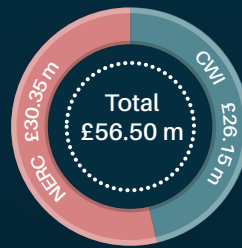
Our year in numbers

Income

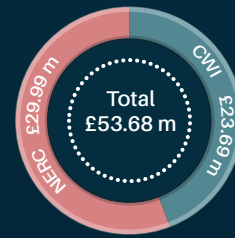


2024 to 2025

*Competitively won income



2023 to 2024

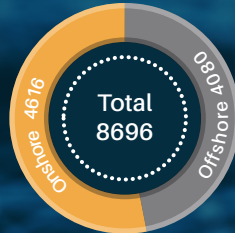


2022 to 2023

Core boxes curated



2024 to 2025



2023 to 2024



2022 to 2023

Data deposits



Corporate newsletter subscribers



2025



2024



2023

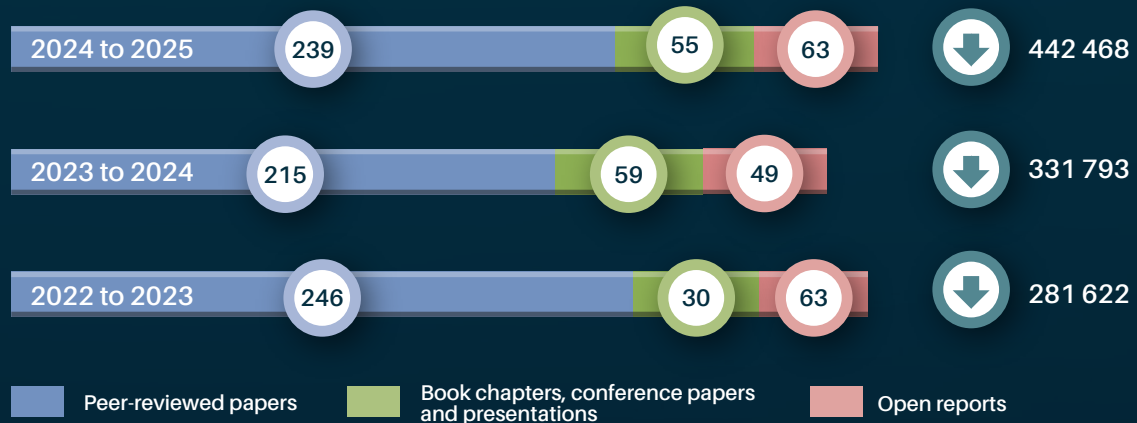
Social media pieces



Events (face to face engagement)



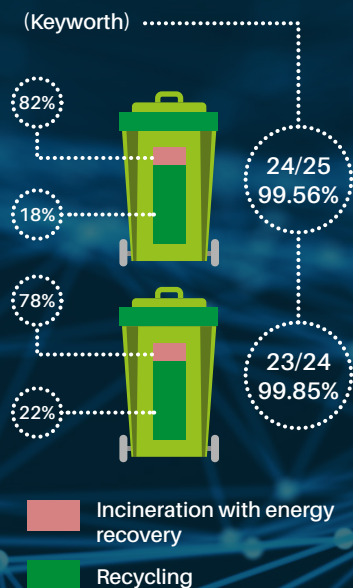
Outputs and downloads



Government consultations and enquiries



Landfill diversion rate



Highlights

First national-scale groundwater model



April 24

Cyber Essentials recertification



June 24

NERC showcase in Cardiff



October 24

Publication of UK Criticality Assessment



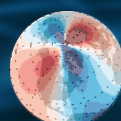
November 24

Athena Swan silver award achieved



December 24

Release of World Magnetic Model



December 24

Managers trained in mental health awareness

Total
136



2024 to 2025



BGS Board Chair's welcome

It is my pleasure to welcome you to the BGS Annual Report for the financial year 2024 to 2025. It has been a successful 12 months for the national survey in relation to its science delivery, provision of pioneering geoscientific services and generation of additional external income.

In a world with increasingly interlinked dependencies, opportunities and vulnerabilities, effectively anticipating future needs has never been more vital for scientific research organisations. Over 2024 and into 2025, BGS made good progress in its ongoing evaluation of the impact and value of the products and services that sit at the centre of BGS and its activities. It is these assessments that will empower the prioritisation that will 'futureproof' the organisation and ensure we can continue to deliver excellence for the benefit of both domestic and international

stakeholders. Amid a plethora of uncertainties, BGS can look forward to a future underpinned by a solid demand for its expertise.

This will be a future that I must watch unfold as an observer, with this being my last year as Chair of the BGS Board. It has been a privilege to help guide a marvellous organisation over nearly eight years and to see it increasingly deliver on behalf of the UK taxpayer, whilst also readying itself for the challenges posed by the next phase of the country's needs and

international interests. The board I will leave is as full of expertise and passion as the one I joined all those years ago, one I am confident will continue to play an active role in the direction of an organisation at the cutting edge of all manner of exciting projects.

To all those colleagues who I have had the pleasure of working alongside and those I have sadly not had the chance to meet face to face: it has been an honour.

Sir Keith O’Nions
Chair of the BGS Board

Figure 1 Subhorizontal beds of granofelsic psammite (Grampian Group) in stream bank. BGS © UKRI.





Director's foreword

This has been a year defined by strategy delivery and a year of consolidation and optimisation across all aspects of our work. As we near the halfway point of the BGS Strategy for 2023 to 2028, 'Understanding our Earth', we find ourselves increasingly well positioned in terms of strengthened relationships with key stakeholders, the breadth and depth of products and services we offer, and the quality of the research and data that underpin all that we do.

Delivering impact and value has been at the core of BGS's activities this year, which is evident in the way our stakeholders engage with us. Whilst last year marked another step change in the way we work with governmental departments such as the Foreign, Commonwealth & Development Office (FCDO) and the Department for Energy Security & Net Zero (DESNZ), and public sector organisations such as Nuclear Waste Services (NWS) and the Met Office, that change has been built on progress achieved over many years and even decades.

BGS's ability to contribute timely and essential geological data, expertise and monitoring is further giving visibility of our growing value amongst new stakeholders, as well as with the general public. This is exemplified by, for example, the emergency response to the gas explosion in Bedfordshire and the increased demand on our staff within the UK Critical Minerals Intelligence Centre (CMIC) to provide context to ever-shifting geopolitical events.



Figure 3 Layers of stratified whinstone rock on the Greymare or Saddle Rock, near Dunstanburgh, Embleton, Northumberland. © iStock.com/Francesca Leslie.

Recent BGS achievements have been realised within an increasingly challenging funding environment, driving the need to embed efficiency and optimisation into all our activities. This year marked a change in our income portfolio, with a decrease in core Natural Environment Research Council (NERC) funding and an increase in other, largely public, income streams. This shift has changed how we deliver our core services, which would not be possible without the skill and hard work of staff across all areas of BGS. The closure of our Wallingford operations was a particular example of this change and it came with the departure of several longstanding and valued members of our team. Through the skill and effort of many BGS personnel, we are on track with our commitment to ensure a strong future for the BGS Groundwater team.

We continue to welcome new people with new expertise into our organisation and with them come new opportunities to drive forward our work. We have prioritised our efforts in exploring machine learning

and artificial intelligence, stepping up our pursuit of new solutions for geoscience. These advances will allow BGS to strengthen how we can address challenges from local to global scales in areas such as decarbonisation and renewable energy technologies, mitigation of and adaptation to environmental change, and resilience to natural hazards.

Looking forward, our focus will be on continuing to deliver a national geological survey that is responsive, efficient and creates both value and impact. We will continue to find ways to utilise new techniques, new technology and new ideas that will deliver geoscience to inform and support the UK, and ensure that BGS is fit for the future.

It has been a strong year in our journey forward. Thank you to all staff and stakeholders who made it possible.

Dr Karen Hanghøj
BGS Director



Figure 4 Blackchurch
Rock on the North
Devon coast. © iStock.
com/oversnap.

Introduction

Welcome to the British Geological Survey (BGS)'s annual report, covering the financial year (FY) from 1 April 2024 to 30 March 2025. As part of UK Research and Innovation (UKRI) and as a research centre of NERC, we have around 580 full-time equivalent (FTE) staff based across the UK and our income from this FY was approximately £68 million.

BGS provides impartial and authoritative geological data and expertise that enable governing authorities, industry and the public to make geoscientifically informed decisions for managing the economy, the environment and our society. Our research focuses on addressing societal challenges as outlined in our current strategy:

- maps and models for the 21st century
- a more secure energy transition
- improved water security
- living with geological hazards

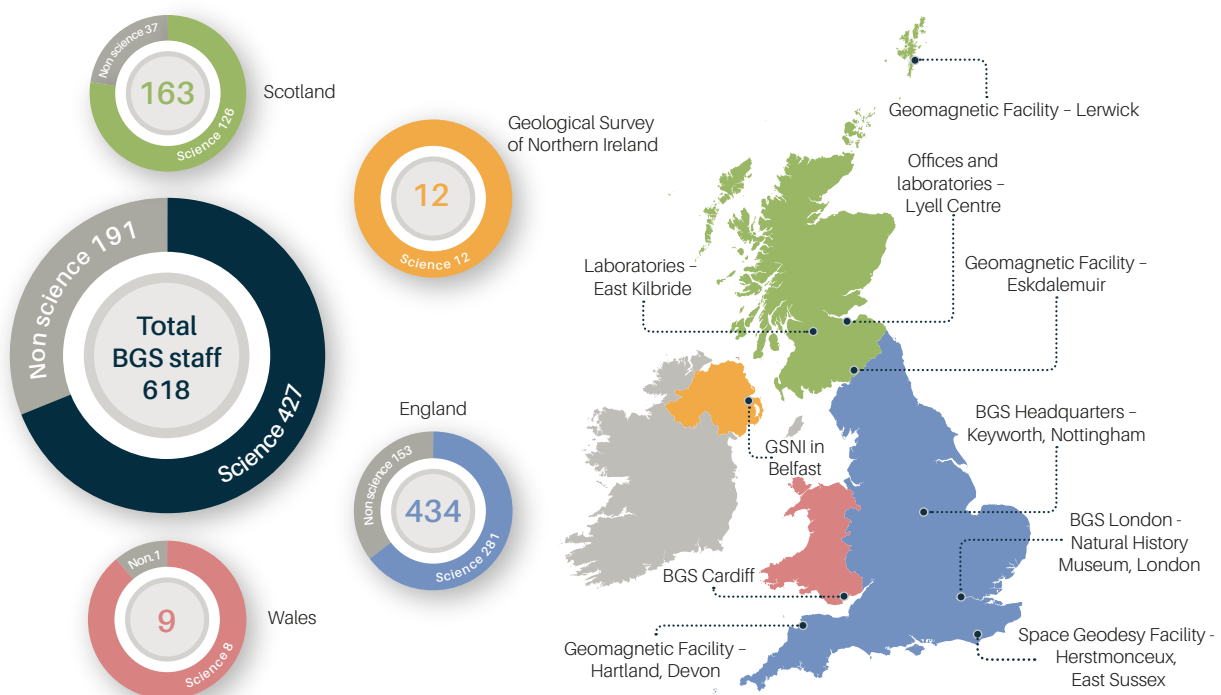


Figure 5 Staff numbers and their function in BGS offices, at end of financial year 2024 to 2025. BGS © UKRI 2025.

In late 2024, the UK Government revealed five missions to deliver a decade of national renewal:

- Kickstart economic growth
- An NHS fit for the future
- Safer streets
- Break down barriers to opportunity
- Make Britain a clean energy superpower

The announcement of these missions emphasise how BGS work aligns with government priorities. BGS has strategic importance in making Britain a clean energy superpower with its expertise in

sustainable minerals supply, use of the subsurface for hydrogen storage, geothermal energy and carbon capture and storage (CCS) and support for offshore wind industry. BGS’s contribution to kick-starting economic growth can be seen through work we are completing with the housing industry. With our student placement schemes and commitment to staff training, we are contributing to breaking down barriers to opportunity.

BGS’s research can be accessed via the [NERC Open Research Archive](#). This is complemented by a further series of dedicated science and policy highlights published on the [BGS corporate website](#).

Table 1 BGS top ten most-downloaded publications, April 2024 to March 2025.

Title	Downloads
Minerals in Britain: gemstones	4749
World mineral production 2017-21	4499
Engineering geology of British rocks and soils: mudstones of the Mercia Mudstone Group	3346
The great escape: South Georgia’s break-out from the Southern Andes	2106
Industrial mineral resources of Zambia	2073
Minerals in Afghanistan: gemstones of Afghanistan	2069
Engineering geology of British rocks and soils: Lias Group	1768
Gold in Britain: past, present and future	1652
The physical properties of major aquifers in England and Wales	1645
Cartographic standard geological symbol index, Version 3	1593

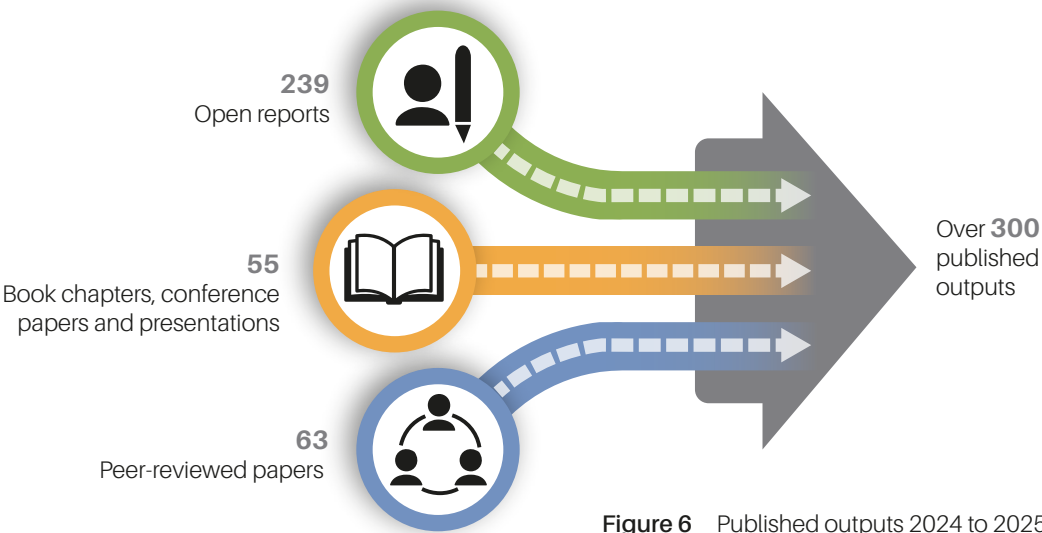
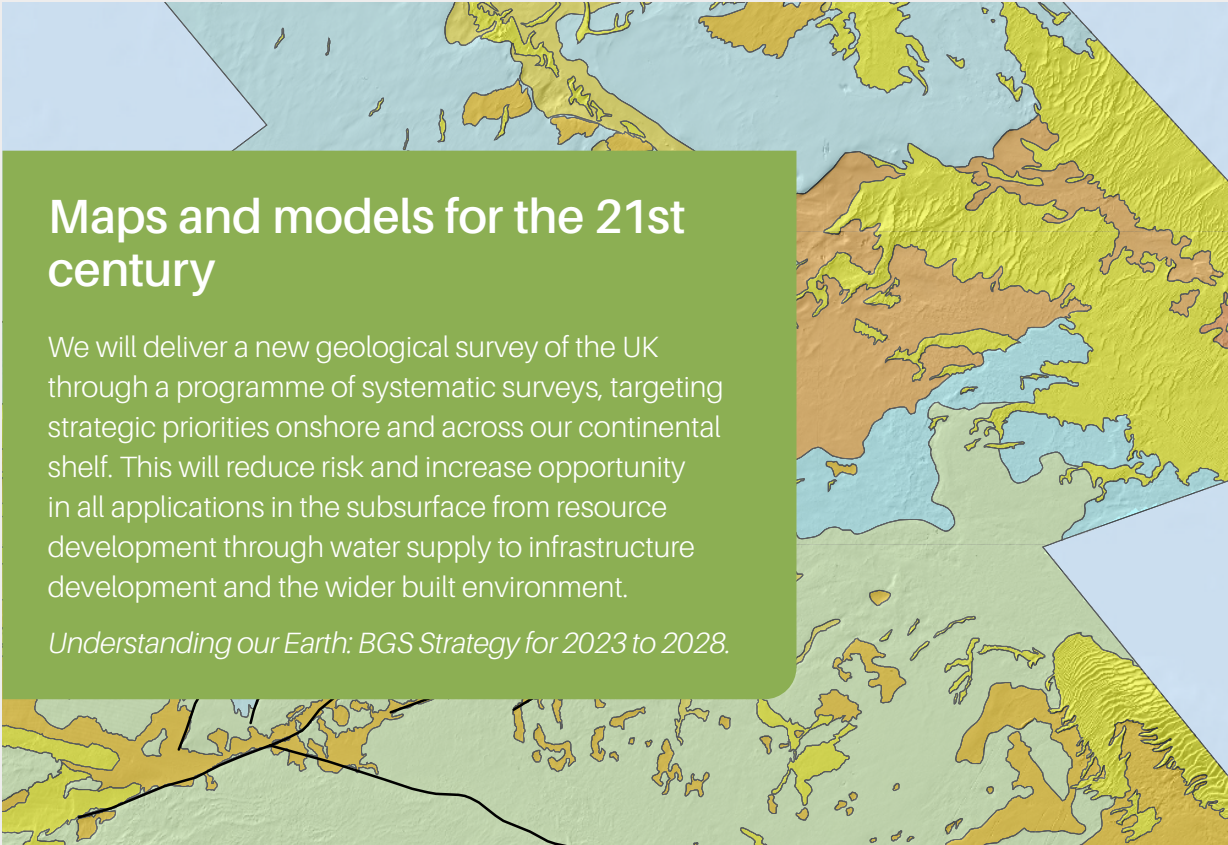


Figure 6 Published outputs 2024 to 2025. BGS © UKRI 2025.



Our impact and scientific contribution to society

As our science projects span multiple years, rather than summarise individual sections of work, we have highlighted several science stories which were completed, or have achieved significant milestones, in FY 2024 to 2025. They are organised in alignment with our science priorities and highlights some of the ongoing science for the public good that we continue to deliver.



Maps and models for the 21st century

We will deliver a new geological survey of the UK through a programme of systematic surveys, targeting strategic priorities onshore and across our continental shelf. This will reduce risk and increase opportunity in all applications in the subsurface from resource development through water supply to infrastructure development and the wider built environment.

Understanding our Earth: BGS Strategy for 2023 to 2028.

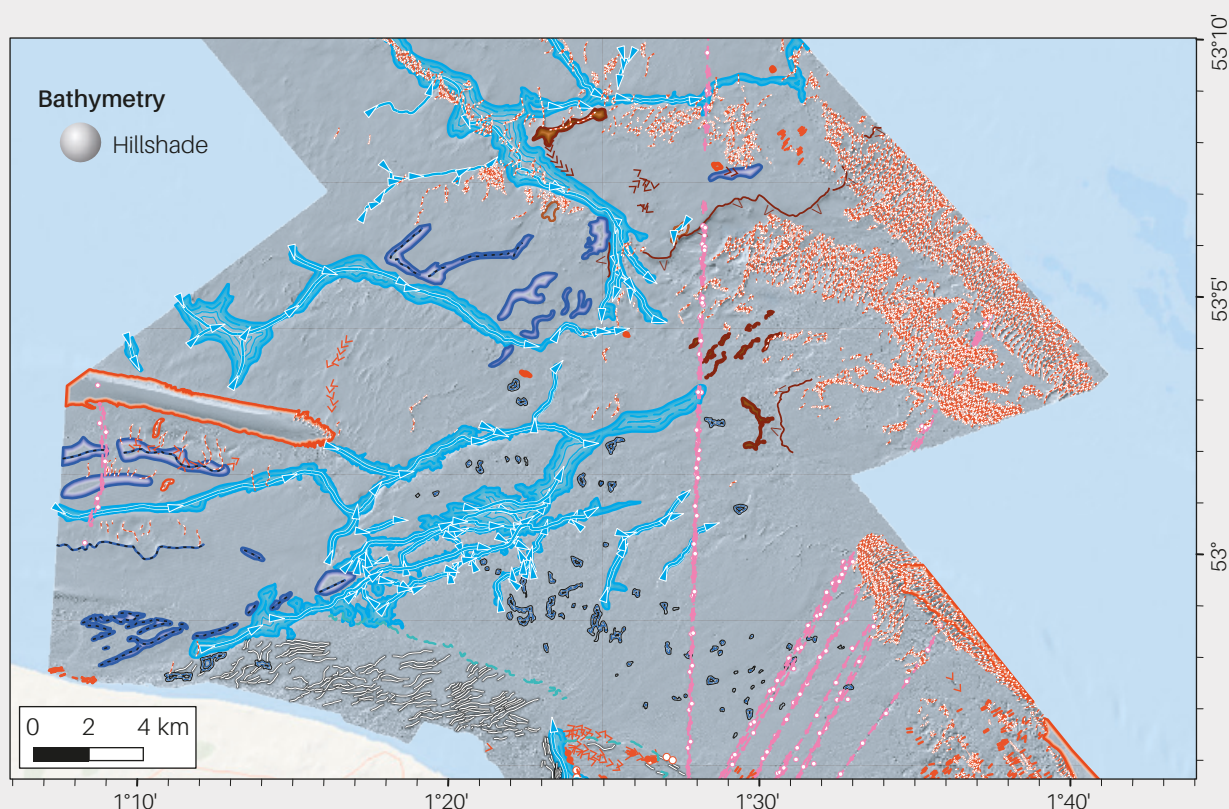


Figure 7 Seabed geomorphology from part of the central area of the offshore East Anglia seabed map. BGS © UKRI.

Offshore East Anglia: geological map reveals hidden landscapes beneath the waves

Geology has a fundamental influence on the physical properties of the seabed and its shallow subsurface. The offshore East Anglian geospatial dataset is one of a series of new seabed geology maps produced by BGS and was selected as the area is a focus for the development of offshore renewables and related infrastructure. The map area is also critical for marine conservation as it hosts Europe's longest (known) offshore chalk reef.

The new 1:10 000-scale map, released in July 2024, reveals the hidden geological features of the seabed around north-east Norfolk. It provides detailed insight into the geological evolution of the region, including the extent of the glaciations that affected the area during the geological past. The distribution of newly mapped ancient sedimentary rocks, recent mobile sediments and rockhead (including the rare chalk

reef) provides an overview of the variable materials at and below the seabed to support the protection of the marine environment and ensure the development of sustainable, renewable, offshore infrastructure.

The map provides a valuable resource to support:

- marine conservation: including benthic habitats, designation of marine protected areas and 'blue' carbon ecosystems
- aquaculture: such as fisheries
- the energy and industrial sectors and decarbonisation: for example, renewables, hydrogen storage and CCS
- telecommunications infrastructure
- mineral and resource activities

Understanding underground: a new engineering geology map for Belfast

The Geological Survey of Northern Ireland (GSNI) launched the new engineering geology map for Belfast, replacing the original that was produced in the 1970s. The map was developed after extensive engagement with the geotechnical community, civil and environmental engineers and city planners. There have been significant developments in geological mapping since the 1970s, particularly with regards to the availability of digital spatial information, which has been used to update and improve the original.

Belfast is Northern Ireland's largest urban area and the subsurface is therefore in great demand. The map provides information on the geological conditions beneath Belfast to help inform effective decisions

around planning, development and construction. It also raises awareness of the importance of knowledge of engineering geology, advising development in terms of where construction should take place and helping reduce risks associated with human interactions with the built environment.

The map provides an overview of the distribution of superficial deposits, underlying bedrock formations and depth to the base of estuarine deposits, bedrock and till across Belfast. Spatial layers are available alongside the map, including the thickness of the estuarine deposits (locally called 'sleech' and a particularly problematic layer when it comes to development), thickness of the superficial deposits and depth to bedrock.



Figure 8 GSNI staff at the launch of the Engineering Geology Map for Belfast at the Public Record Office of Northern Ireland. BGS © UKRI.

New field-based geological data-capture system for BGS survey activities

BGS is currently overhauling its geological mapping infrastructure, from the initial capture of observations, through geological data refinement to release. This covers the systems required and includes reviews, updates and, where necessary, specific new tools and processes.

The BGS System for Integrated Geoscience Mapping, or BGS-SIGMA, was retired in 2024 and this is the first stage of BGS's new field data-capture system. It includes a plugin, QGIS, that connects with the relevant BGS database tables and dictionaries upon project setup. The intuitive application then uses a series of custom forms to collect information in the field. The user can capture lithology types, structural measurements, photographs and other

media on a device (laptop, tablet or mobile phone), all of which is displayed in real time on the map. The plugin can also validate data and create field reports. This will improve the efficiency and accuracy of data collection as we begin our strategic update of UK geological maps.

The third-party [Mergin Maps software](#) lets users synchronise their observations with other users, ensuring precious survey data is backed up and enabling teams to work collaboratively on projects. Both QGIS and Mergin Maps are open source, so the scope for sharing our new system with overseas or academic collaborators is considerable. We will continue to increase efficiency and build systems to move newly captured field data to our corporate data stores, including links to physical sample collections.

Figure 9 BGS staff mapping landslide complex in glaciofluvial deposits near Wooler, Northumberland. BGS © UKRI.



New high-resolution geological map of the unique volcanic environment of Ascension Island

Ascension Island is the small, isolated, subaerial representation of a volcanic system that rises about 4 km from the sea floor around 1500 km west of the coast of Angola. BGS completed high-resolution geological linework for a new map of the island, which is part of the British Overseas Territory of St Helena, Ascension and Tristan da Cunha in the South Atlantic. BGS worked on the island in partnership with the Ascension Island Government, FCDO, the Ministry of Defence, the US Space Force, Durham University and Encompass Digital Media, which runs the relay station on the island.

The new, detailed mapping has identified the character, distribution and extent of individual volcanic eruptions, including several that occurred in historical times. The geological map is being used to explore the interdependencies of the unique biodiversity and varied volcanic geology of Ascension Island and to understand the implications of the natural hazards present. It also delivers geoscience for conservation and preservation on this remote island, in partnership with the Conservation Department of the Ascension Island Government.

Figure 10 Sisters Peak, located on the northern side of the island, has been the site of numerous basaltic eruptions including two of the three most recent eruptions, and an extensive cinder cone complex reflects this history. © iStock.com/mcdermp.



A more secure energy transition

We will provide new insight for our stakeholders as they optimise multiple geological decarbonisation technologies. This will enable the effective and responsible use of the subsurface to deliver net zero and resource security for the UK. With emphasis on a portfolio of subsurface technologies, we will improve the quality and timeliness of assisting decisions and risk assessments.

Understanding our Earth: BGS Strategy for 2023 to 2028.

Figure 11 Solar and wind turbine providing more secure energy.
© iStock.com/studio-fi.

Advising Government on sustainable critical minerals

Critical minerals have become a hot topic across the world and have been regularly discussed in the mainstream media over the last year. BGS advises the UK Government on sustainable supply chains through CMIC and builds partnerships on all aspects of critical minerals in the UK and internationally.

CMIC delivered the [2024 UK Criticality Assessment](#) in late November 2024, designating as critical 34 minerals covering a range of technologies and industrial sectors. CMIC also delivered 10 [foresight studies](#) that assessed the projected growth of decarbonisation technologies and produced an understanding of the future demand to 2050 for critical minerals such as lithium and the rare earth elements. These new reports form the foundation for the new strategies, policy and action being developed by the UK Government, including the broad industrial strategy and accompanying critical minerals strategy.

Unlike any other region of the UK, the mineral licensing regime in Northern Ireland is centrally managed and administered. Northern Ireland also has a diversity of geological resources that provide potential for government-supported exploration and research to identify critical mineral deposits in the region. Over the last year and supported by the Northern Ireland Department for the Economy, GSNI has been delivering research into the potential for Northern Irish geology to host graphite, antimony and vanadium, all highlighted by CMIC as critical to the UK. This research not only contributes to the UK-wide action in the critical minerals area but also supports the Northern Ireland government in reviewing and updating its minerals policy.

Internationally, funding from FCDO's [Growth Gateway](#) and [Green Cities and Infrastructure](#) programmes allowed us to carry out research and capacity-building projects related to critical minerals and other aspects of green growth in Africa and Asia. Working across these regions, we have helped

the [Zambian Geological Survey](#) to understand their critical mineral resources and manage associated data. We have also worked on data management and dissemination with geological surveys in Kazakhstan, Kyrgyzstan and Uzbekistan. Our work has also had a focus on environmental considerations and climate resilience in both the Philippines and Angola. This work allows us to better understand supply chains across the world, provide advice to governments and strengthen partnerships with critical-mineral-producing countries.

Major data releases underpin the energy transition

This FY, BGS contributed to achieving net zero by releasing large datasets covering two major areas: geothermal and CCS. Associated user guides and reports have also been produced to improve accessibility and appropriate use of these datasets.

We released the first digital version of the [UK Digital Geothermal Catalogue](#), the UK catalogue of legacy geothermal subsurface temperature, rock thermal-conductivity measurements and heat-flow calculations. The digital release contains 11 821 data points derived from 743 sites, comprising 77 per cent of the legacy geothermal catalogue dataset held by BGS. Future data releases are planned that will increase coverage. These datasets will support the decarbonisation of heat by informing geothermal assessments.

The culmination of several years of research has led to publications and associated published datasets on the stratigraphy, structure, petrophysics and controls on fluid flow in target carbon dioxide (CO₂) storage formations in the Southern North Sea, with a focus on the [Bunter Sandstone Formation](#). The data will be of use to CO₂ storage developers as they undertake detailed site appraisals.

BGS maintains and updates the UK national database of storage opportunities ([CO₂Stored](#)). The CO₂ geodisposal team is also leading the development of new storage targets for the European Commission's

[Strategic Energy Technology Plan](#) for CCS, coordinating European industry, policy and research stakeholders to achieve consensus on targets in the context of the European Commission's [Industrial Carbon Management Strategy](#).

Research to inform the design of geological disposal facilities

After five years of extensive research within a major international collaboration, BGS completed the European Partnership on Radioactive Waste Management (EURAD) projects 'HITEC' and 'GAS'. HITEC focused on the feasibility of operating geological disposal facilities (GDFs) at elevated temperature conditions (above 100°C). These facilities are considered the primary solution for disposing of legacy radioactive waste in multiple countries across Europe, including the UK. GAS involved improving our understanding of gas movement in the subsurface throughout the lifetime of a GDF, which is crucial for ensuring long-term safety of radioactive waste.

As part of these projects, BGS Fluid and Rock Processes Laboratory staff ran multiple, technically

challenging, experimental programmes addressing these aspects in both natural rocks and engineered clay materials. Research included the development of novel 'synthetic' rocks for examining controls on key properties and a unique [stress-monitoring approach for imaging gas flow](#).

The project findings have direct implications for the design of GDFs and will inform radioactive waste management organisations in both the UK and Europe: for example, a major outcome was the observation that temperatures above 100°C cause long-term changes to key physical properties of engineered clays. The final outputs were well received by the EU and include multiple high-impact publications, as well as a substantial collection of EU reports. These [reports are now freely available to download](#) by stakeholders and the wider research community.

Figure 12 The surface infrastructure of the Large Scale Gas Injection Experiment (Lasgit), operated 800 m underground in the Äspö Hard Rock laboratory. BGS © UKRI.



Understanding the Great Glen Fault for the Coire Glas pumped hydro storage scheme

The proposed Coire Glas hydropower infrastructure project is the first large-scale, pumped hydro storage scheme undertaken in the UK in 30 years. It aims to provide 1.5 GW of pumped hydro storage capacity (with 30 GWh of energy storage), doubling the current capacity of the UK. This scheme will be enough to power the equivalent of three million homes for 24 hours. The final development will involve an underground power cavern, several major tunnels and the highest dam built in the UK.

BGS has provided geological expertise on the Great Glen through a series of site visits, laboratory work and 3D modelling, working in close collaboration with engineering geologists from SSE Renewables and its consultants. This work aimed to understand and characterise complex fault rocks within the Great Glen Fault zone, the geometry of any major structures across the site and microscale processes. The final report, delivered in March 2025, provided a regional geological understanding, giving context for the new ground investigation data to reduce engineering uncertainty. As part of the work, the fault core of the Great Glen Fault was captured in drill core, which has been stored at BGS for further study owing to its international significance.



Figure 13 The Coire Glas team including representative from SSE, Stantec, COWI, Strabag and BGS winning the 'Ground Investigation project of the year 2024' at the nation Ground Engineering Awards ceremony. BGS © UKRI.

The work has provided a new understanding of the geological history of the Great Glen Fault in terms of its long and complex deformation history and the fundamental processes that occur at depth within a major crustal fault zone. The collaboration has won several national ground-engineering awards, including Ground Engineering magazine's [Ground Investigation Project of the Year 2024](#).

Figure 14 Drill core from the Coire Glas study area. BGS © UKRI.



A close-up photograph of a person's hand cupped together, holding a small amount of water. The water is splashing upwards and outwards, creating numerous droplets and a misty spray. The background is a soft, out-of-focus green, suggesting foliage. The overall image conveys a sense of freshness, purity, and the preciousness of water.

Improved water security

We will optimise the sustainable use of groundwater resources and enhance their role in water security, climate change adaptation, human health and human livelihoods, by integrating groundwater into wider water security thinking and quantifying groundwater resource potential and resilience.

Understanding our Earth: BGS Strategy for 2023 to 2028.

Figure 15 Sustainable groundwater.
© iStock.com/rai.

First national-scale groundwater model in Great Britain developed

Although hidden beneath the land surface, groundwater represents an essential resource for public and private water supply both across the UK and globally. The evaluation of groundwater resources and effective management of them at regional and national scales often rely on computer models. The models simulate groundwater flow underground and aid understanding of temporal variations in groundwater levels when they are subjected to different climatic conditions and anthropogenic stresses.

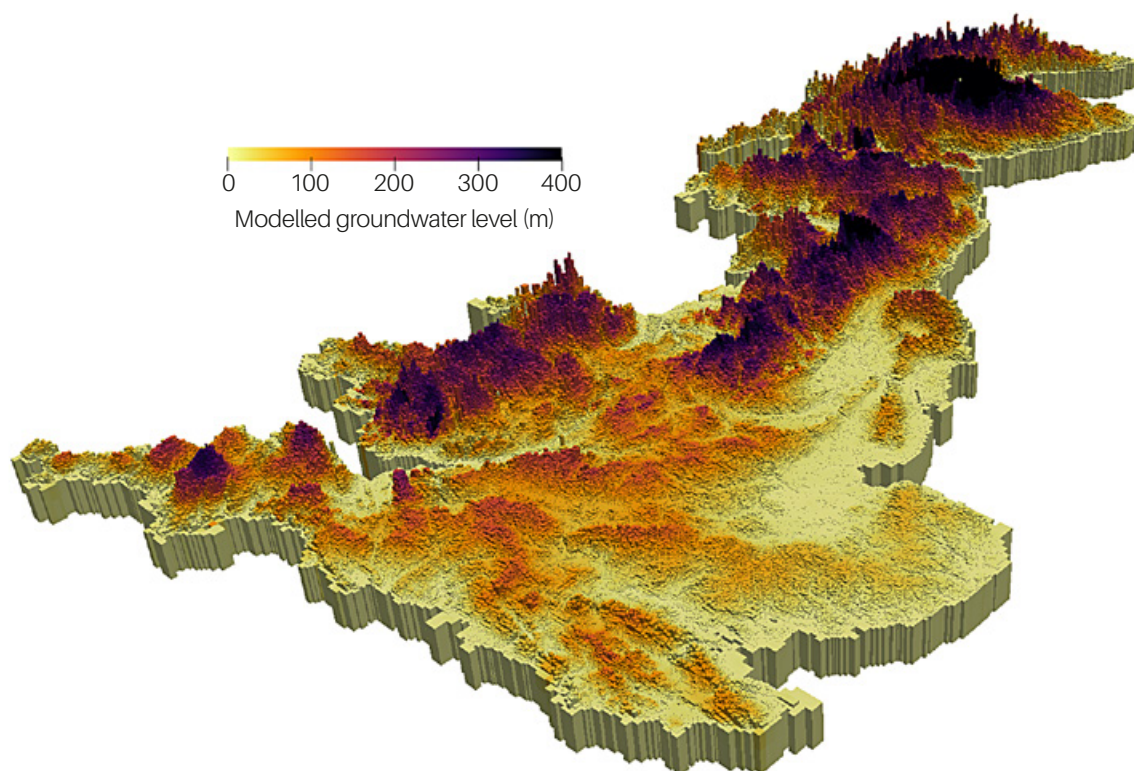
As part of the [Hydro-JULES project](#), BGS developed a new model, the BGS British Groundwater Model (BGWM), which is the first national-scale groundwater model covering Great Britain. The model uses the

MODFLOW 6 groundwater modelling code and includes 3D British geology. Model parameters were calibrated against both measured groundwater levels and estimated baseflows.

The BGWM enables an unprecedented digital visualisation of groundwater dynamics in British aquifers, providing unique, national-scale outputs to address a wide range of problems related to:

- conservation and management of groundwater resources
- groundwater flooding
- solute transport in groundwater

Figure 16 Simulated average groundwater levels in Great Britain. BGS © UKRI.



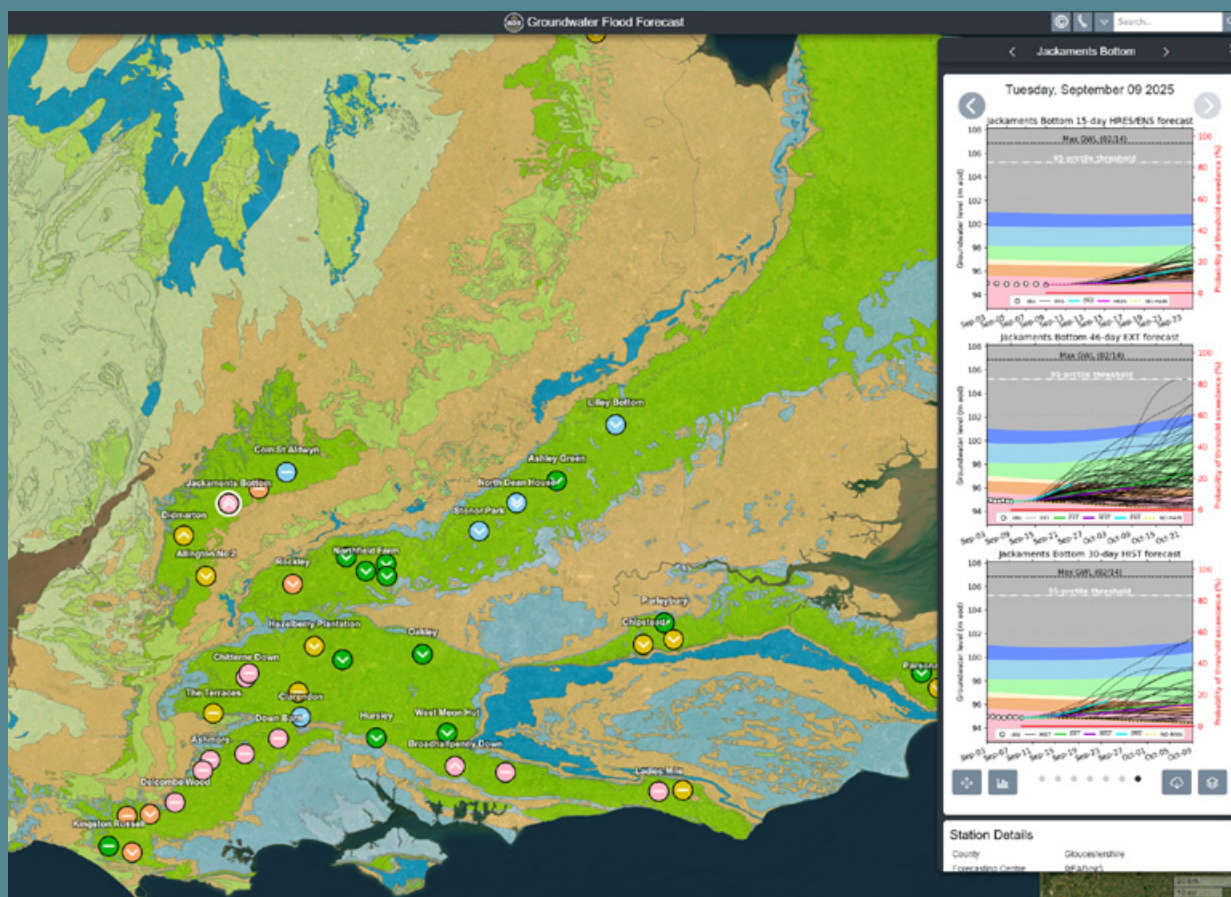


Figure 17 The national groundwater flood forecasting service app. The weather forecasts within this service are based on data and products of the European Centre for Medium-range Weather Forecasts. BGS @ UKRI.

Early warning services for groundwater flooding and drought

BGS research and long-term groundwater data underpin several key services to help the UK forecast and manage both groundwater floods and droughts. Every month, BGS develops long-range forecasts of groundwater levels across the UK's principal aquifers and delivers them through the [UK Hydrological Outlook](#). A summary of the status of UK groundwater is published at the same time and both outputs are relied on by the UK's environmental regulators and water companies to support drought planning. We also use our data and innovative modelling approaches to deliver a national groundwater-flood forecasting service to the [Flood Forecasting Centre](#), supporting regulators and emergency responders 365 days a year.

In an exciting new development in this FY, BGS is now providing groundwater forecasts to the world's first community-focussed early-warning app for groundwater flooding, [Groundwater Flood Warnings](#), funded by the Department for Environment, Food & Rural Affairs (Defra). The app provides flood forecasts and tailored action advice to nine flood-prone communities in England. Led by Buckinghamshire Council and developed in collaboration with Jacobs Solutions Inc and 3 SIDED CUBE Ltd, the app incorporates groundwater level forecasts underpinned by BGS groundwater science, data and modelling software. The early-warning service was highly commended at the Flood and Coast Excellence Awards 2025 and represents the latest advancement in groundwater forecasting capabilities.

Updating the geological map of the Yorkshire Wolds informs sustainable management of major aquifer

The **Chalk Group** forms a major aquifer in East Yorkshire that provides water for public supply, agriculture and industry. The aquifer is under several pressures, including:

- risk that a growing population will increase water demand
- nitrate contamination
- uncertainties around climate change

Some parts of the wolds were last mapped over 100 years ago, before modern geological understanding of the Chalk Group was developed and the effects of tectonic stresses were understood. This year is the culmination of five years work by BGS to re-survey of the bedrock and superficial geology of the area. We used many techniques to improve the mapping including:

- remote techniques (interpretation of seismic data, digital elevation models, aerial imagery and borehole records, amongst others)
- field-based observations
- palaeontological analyses

The result is more robust and accurate mapping and characterisation of the formations within the Chalk Group and the processes that affect these strata.

We have also developed a new structural framework of the Chalk Group aquifer, which is relevant as faults and fractures can have a significant effect on groundwater flow. Characterisation of the complex interactions within superficial deposits has provided insight into the hydraulic connectivity (or lack of it) in the different areas where the Chalk Group is concealed below these deposits. This new geological framework will be used by our project partners, the Environment Agency (EA) and Yorkshire Water Services Limited, to update and refine their hydrogeological models, leading to a more sustainable management of water resources.



Figure 18 BGS staff discussing the chalk mapping methodology with the Environment Agency and Yorkshire Water colleagues in a Yorkshire Wolds field. © Environment Agency.

Living with geological hazards

We will monitor, characterise and forecast earth hazard events, and their likely impacts by improving harmonisation in hazard and risk analysis, as well as focusing on hazardous climate change. We will analyse risk through the evaluation of vulnerability and exposure, determining the potential impacts of multiple hazards on communities, infrastructure and systems, the environment, and the economy.

Understanding our Earth: BGS Strategy for 2023 to 2028.

Figure 19 Coastline of Dorset.
©iStock.com/LeoPatrizi.



Figure 20 View along the Powderham Banks flood embankment on the Exe Estuary, Devon. This historic structure, now monitored by BGS's PRIME technology, plays a critical role in protecting key transport links and local communities from flooding. BGS © UKRI.

Ground stability monitoring for critical energy infrastructure

Alongside members of the shallow geohazards team at BGS, GSNI has been carrying out work to assess the ground stability of abandoned salt mines at Carrickfergus, including the implications they could potentially have on the Belfast Gas Transmission Pipeline. This was completed as part of GSNI's abandoned mine monitoring programme and is crucial for understanding and minimising the risk that ground instability resulting from unstable mine workings poses to critical energy infrastructure in Northern Ireland.

The resulting report incorporates InSAR satellite ground-motion assessments of the area around Carrickfergus, together with a desktop assessment of GSNI's geodetic site-monitoring data and historic abandoned mine information. A major outcome from the report is a long-term monitoring network across the area, which is currently being implemented by GSNI and is helping to ensure the long-term security of energy supply for Belfast.

Monitoring the invisible: PRIME technology for flood embankments

Commissioned by AtkinsRéalis and working on behalf of the EA, BGS's shallow geohazards and Earth observation teams successfully installed and

operated a geoelectrical monitoring observatory at [Powderham Banks](#), a critical but aging flood protection structure on the Exe estuary in Devon. The structure protects the main railway into Cornwall as well as local homes and businesses.

After a history of seepage and piping failures, the EA sought a non-intrusive, near-real-time method of monitoring internal deterioration of the structure before a longer-term solution can be implemented. [BGS's PRIME technology](#) uses buried electrodes to measure ground resistivity, which is a proxy for changes in moisture and salinity. Areas of increasing conductivity can indicate the development of seepage pathways before they become visible at the surface of the structure.

Within months, PRIME successfully identified several areas of concern, enabling low-cost and targeted estuary-face repairs. These early interventions reduced the risk of larger structural failures and costly emergency works.

Operating autonomously and powered by solar energy, the system provides timely insights, helping to guide data-driven, active maintenance decisions. This project highlights how geophysical innovation helps strengthen the resilience of vital UK infrastructure.

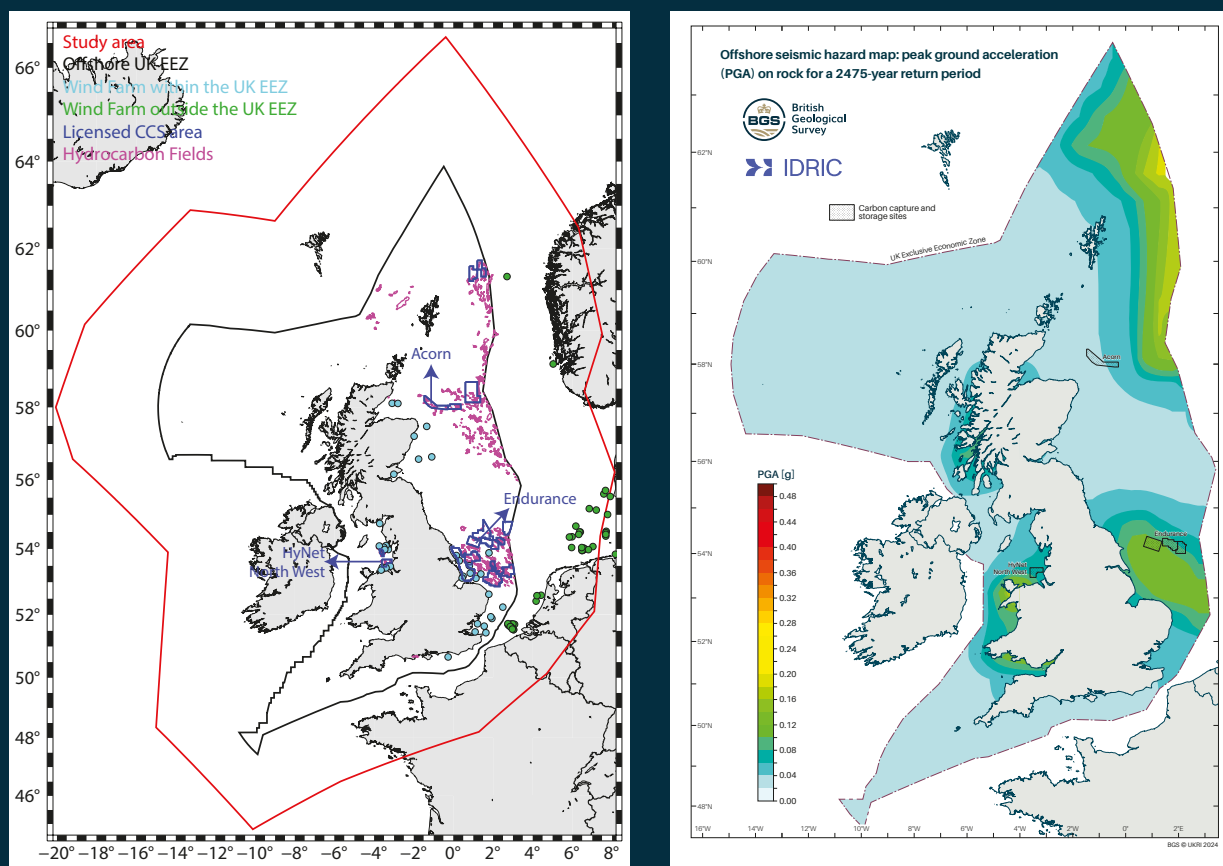


Figure 21 Map of the current UK offshore Exclusive Economic Zone (EEZ; inner polygon), the study area for this project (outer polygon) and the locations of the gas and oil hydrocarbon fields wind farms, and licensing offshore CCS sites as reported by the North Sea Transition Authority. BGS © UKRI.

Offshore seismic hazard model for the UK Exclusive Economic Zone

Using the [most recent advances in seismic hazard assessment](#), the BGS Seismology team has developed a new seismic hazard model, along with accompanying [seismic hazard maps](#), for the Exclusive Economic Zone in the waters surrounding the UK. The project was undertaken with the support of the Industrial Decarbonisation Research and Innovation Centre and with project partner Storegga, an independent company involved in CO₂ storage projects in the North Sea.

The new maps are the first UK offshore seismic-hazard maps in over 20 years and were developed to bolster the UK's offshore renewable energy infrastructure as well as support its net zero commitments. They provide a robust indication of the level of seismic hazard for offshore structures, such as wind farms and CCS sites, so that high-consequence offshore structures can be designed appropriately to reduce risks to people and the environment. They are also a baseline model for tectonic seismic activity in UK waters, which can be used to help discriminate any seismicity induced by operations, such as CCS, if it occurs.

Figure 22 Visitors core sampling in the Core Store. BGS © UKRI.



Geoscience for the public good

Our mission is to use our knowledge of geology to address societal challenges. Much of this is directed towards ongoing activities that continue to contribute to society or rapid responses to requests for technical support and advice.

National Geoscience Data Centre

The National Geoscience Data Centre (NGDC) continued to provide professional stewardship of BGS's digital and physical data assets this FY and it remains an evidence base of UK geoscience research. It enables future research, driving impact for the UK through its diverse users and communities.

Our digital and physical geological data assets continued to be extensively consulted, subsampled, analysed and cited throughout the year, supporting economic growth and academic research. During the FY, 782 data deposits were made to the NGDC and 67 data digital object identifiers or DOIs were issued. The National Geological Repository (NGR) (physical assets) curated 10 851 coreboxes¹ of material, making these available to the geoscience community as a national resource.

This year, we focused on engagement, alignment and integration with broader initiatives and projects, such as the NERC/UKRI Environmental Data Service and the Government Digital Service (previously the Geospatial Commission), working towards unlocking and delivering the 'Q-FAIR' principles, ensuring the quality of our data that it is findable, accessible, interoperable and re-usable.

BGS Informatics Research

BGS Informatics Research continued to champion trustworthy artificial intelligence (AI). We encouraged the use of open-source algorithms and data science techniques within a geoscience context, whilst also encouraging publications to demonstrate our track record in this specialism and promoting delivery of AI-ready datasets. We used machine learning and natural language programming to extract digital research data from the wealth of legacy documents and physical materials that BGS holds and continued to produce policy and guidance to support the appropriate adoption and use of AI within BGS.

¹ corebox would typically contain either 1 m of drill core or a series of cutting samples covering a depth range of 400 m

UK Natural Hazards Partnership

BGS is a key partner in the UK Natural Hazards Partnership (NHP), a consortium of Government departments and agencies and UKRI research centres. The NHP builds on the expertise and support of its partners to deliver better-coordinated natural-hazard science, research and advice to governments and civil contingency responders, both in collaboration with and to other hazard resilience groups across the UK.

The NHP has coordinated the development of a range of activities, such as:

- the Daily Hazard Assessment (DHA)
- Natural Hazard Science Notes
- hazard impact modelling frameworks
- national security risk assessments

We contributed expertise across the geological hazards, particularly the landslide hazard assessment for the DHA, and developed close working relationships with partners such as the Met Office.

Through our new vice-chair role in the NHP, appointed in March 2025, we ensure that the geological hazards are embedded into wider natural hazard conversations. This approach strengthens national preparedness and response capabilities, ensuring a more resilient society in the face of natural hazards and helping the community to share knowledge and best practice. The NHP released a modernised DHA this FY, providing a more accessible overview of natural hazards to Category 1² and Category 2³ responders and the resilience community. BGS participation in the NHP ensures that geological hazards continue to be represented in that community.

² Emergency services and local authorities

³ Cooperating responders such as utility companies and infrastructure owners

Cleat Hill response

On 19 October 2024, an explosion destroyed a property in Bedford, England, sadly resulting in the deaths of two people. The incident forced the evacuation of 50 homes in the Cleat Hill area. The immediate response focused on the potential source of gas. The working hypothesis was that the gas was linked to a 102 m-deep borehole that had been drilled as part of a ground-source heat pump system. Within 24 hours of the explosion, BGS was approached by Bedfordshire emergency services and the Department for Levelling Up, Housing and Communities, seeking BGS's assistance to provide geological expertise and help assess the local risk to residents. BGS provided expert advice and technical support to the multi-agency response coordinated through the Local Resilience Forum.

BGS scientists arrived at the scene on 22 October 2024 and, after receiving clearance for buried services, established monitoring points for soil gas and flux measurements throughout the exclusion zone. Initial findings indicated high levels of soil methane (CH_4) and low levels of CO_2 . Monitoring was extended, with soil gas probes positioned in the gardens of 21 properties around the incident site. In the early stages of the response, the scientists took daily ground gas and flux measurements, whilst two

of BGS's chief scientists attended daily technical calls and strategic command groups as well as community engagement events, which provided residents with geological interpretations and supported those who were being housed in temporary accommodation.

As understanding of the incident and its causes grew, efforts focused on plugging the borehole at the destroyed property, work that was conducted under the advice of BGS geologists. A drop in CH_4 concentrations in the soil followed and we switched to twice-weekly measurements, to establish background concentrations against which the incident coordinators could measure the success of mitigation measures.

Current understanding of the incident indicates there had been an accumulation of naturally occurring CH_4 gas in the subsurface, rather than any leak of piped gas supply in the area. An investigation by the Health and Safety Executive is underway at the time of writing, which aims to provide more detail on why the gas accumulated at this location in the subsurface and whether steps should be taken to limit the likelihood of such an incident re-occurring.

Figure 23 BGS mobile field soil gas facility like that used to take gas and flux measurements during this incident. BGS © UKRI.



Stakeholder interaction

Corporate affairs and engagement

As part of our commitment to public engagement as a strategic pillar in the delivery and impact of our science, the BGS Corporate Affairs and Engagement team delivered an events programme designed to broaden recognition of geoscience's position at the heart of solutions to societal challenges.

Highlights over the year included showcasing BGS's critical mineral expertise to crowds at the Royal Society Summer Exhibition in July 2024 and the Green Man Festival in August 2024, boosting understanding of our expertise. BGS also took a prominent role in conversations at NERC's science showcase 'Explore our Planet' at Techniquest in Cardiff in October 2024, which explored our work in landslide management and shared our findings about geothermal potential with residents in South Wales, where such issues are particularly pertinent.

Designed as a festival exhibit, the 'Commoditree' enabled BGS to stand out in arenas and exhibitions

packed with visual media. The tree encouraged visitors to consider the material origins of items in their everyday lives and challenged attitudes towards mineral extraction.

This FY also saw a strategic shift in the way that BGS works with journalists, social media platforms and policymakers to shape the public's understanding of the leading role our scientists play in addressing some of the most pressing current issues. This repositioning, alongside a more collaborative approach with influential titles, resulted in 10 778 pieces of media coverage over the year.

In our retail-related activities, we sold 2300 BGS maps, whilst introducing free access to our 1:10 000-scale geological maps via the [maps portal](#) helped to drive over 10 million views over the year. Strategically reviewing the BGS GeoReports data product also prompted the creation and implementation of a new pricing structure.

Figure 24 BGS staff and the Commoditree. BGS © UKRI.





We brought our seven-year-old nephew to expose him to the world of geology and he was totally captivated for at least three hours. These open days are informative to adults but are an inspiration to our children”.

BGS OPEN DAY PARTICIPANT.

Other notable outcomes include:

- a well-received launch campaign for the UK 2025 Criticality Assessment
- worldwide media attention around the latest World Magnetic Model
- diversification of our social media presence through new channels on BlueSky and Threads
- an 81 per cent increase in subscribers to our newsletter
- winning the ‘Public Sector Campaign of the Year’ at the PR Moment Awards for our seismology-promoting [Taylor Swift science communication campaign](#)
- 42 per cent increase in media coverage year-on-year

Science into policy

The BGS Policy team continued to play a key role in bridging science and policy this FY, ensuring our research informed decisions at the highest levels of government. Throughout the year, the team supported BGS scientists in providing evidence to policymakers and facilitated engagement with

decision makers across the UK Parliament and devolved administrations.

We submitted written evidence to parliamentary committees and government departments, contributing directly to shaping inquiry themes and priorities. Following the general election, the team also engaged with newly formed select committees to provide early input and help direct the focus of parliamentary inquiries for the new parliamentary session.

BGS maintained strong working relationships with departmental chief scientific advisors and chief scientists across government agencies. We sought more direct engagement by hosting official visits to BGS facilities, including the UK Geoenergy Observatory site in Glasgow and the ground-source heat pump Living Lab at BGS Keyworth, offering policymakers a first-hand look at our research in action.

Building on BGS’s contribution to the Government Office for Science’s [Foresight report on the future of the subsurface](#), BGS and the Geological Society of London launched a new [community of interest](#) for government planners and decision makers. This initiative will help to implement the report’s recommendations and support more effective use of subsurface knowledge in public policy and planning.

The year also saw growing interest in BGS data and knowledge in response to planning reforms and the UK’s ambitious targets for housing and infrastructure. Our engagement with the Ministry of Housing, Communities and Local Government and the newly formed New Towns Taskforce highlighted a clear demand for geological data and expertise in shaping sustainable communities and supporting planning and evidence-based developments.



Figure 25 Ammonites
in Blue Lias Lime-
stone, Kilve, Somerset.
BGS © UKRI.

Building world-class operations for world-class science

Our people

Recruitment and retention

Following a planned increase during the previous FY, headcount growth was slowed this year and recruitment activity remained focused on the key posts that are required to deliver income. We closed the BGS office in Wallingford, remobilising our laboratory facilities and consolidating our groundwater expertise at BGS Keyworth. Several staff members were relocated but the majority left the organisation, with recruitment being undertaken to replace them.

The overall effect of this and other measures taken over the year resulted in a small decrease in headcount. We started the year with a headcount of 600.3 FTE employees and ended with a headcount of 580.4 FTE employees.

The staff turnover rate hit a high of 15.1 per cent in the reporting year 2022 to 2023, following the UK-wide trend since the COVID-19 pandemic. For FY 2023 to 2024, turnover improved to 11.2 per cent and FY 2024 to 2025 further consolidated this improvement at 11.8 per cent. Our target overall retention rate is 82 per cent and, for this FY, the overall retention rate improved to 92.4 per

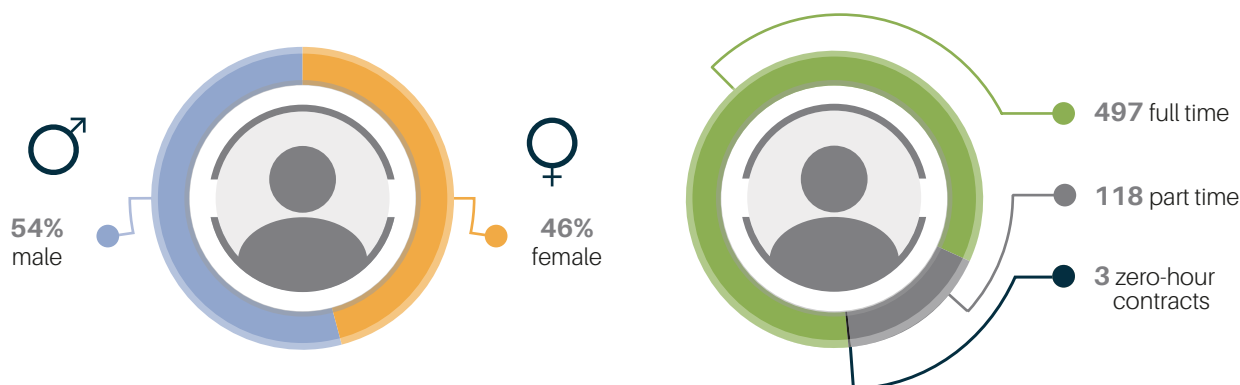


Figure 26 Human resources data 2024 to 2025. BGS © UKRI 2025.

cent, which is particularly high. The retention rates were 93.5 per cent for STEM and 88.6 per cent for non-STEM staff. There have generally been less challenges regarding recruitment and retention, which also follows the UK-wide trend.

Staff survey

BGS ran its people survey in January 2025. As well as general questions that enabled a review of employee engagement, there was a focus on staff sentiment towards BGS leadership. Seventy-six per cent of staff completed the survey.

The most positive feedback indicated that staff:

- feel engaged whilst at work
- are proud to tell others that they work for BGS
- are motivated when undertaking their work

Several actions were taken to address the feedback from the 2024 survey; for example, BGS Senior Management Board (SMB) members have been making more in-person visits to all BGS sites. We also introduced a series of operational staff ‘town halls’, which were well attended by staff across BGS and provided an opportunity to clarify strategic objectives and plans with senior operations staff.

Core values

Following a long employee engagement process, BGS adopted three new core values. Although it was clear that our existing core values — societal impacts, knowledge and impartiality — are well embedded across the organisation, they only relate to what BGS does, as opposed to how we do it.

The three new values represent the important principles, beliefs and ways of behaving and seeing the world that connect everyone within BGS. They complement the existing values and provide a framework for ‘ways of working’ within and beyond BGS.

Mental health and well-being

The BGS Mental Health and Well-being Group continued to meet regularly throughout the year. Particular areas of focus included:

- reviewing the 2024 people survey results from a well-being perspective and progressing a related action plan
- piloting and continuing to implement the UKRI Well-being Ambassador framework, ensuring that it complements the existing welfare officers’ work at BGS

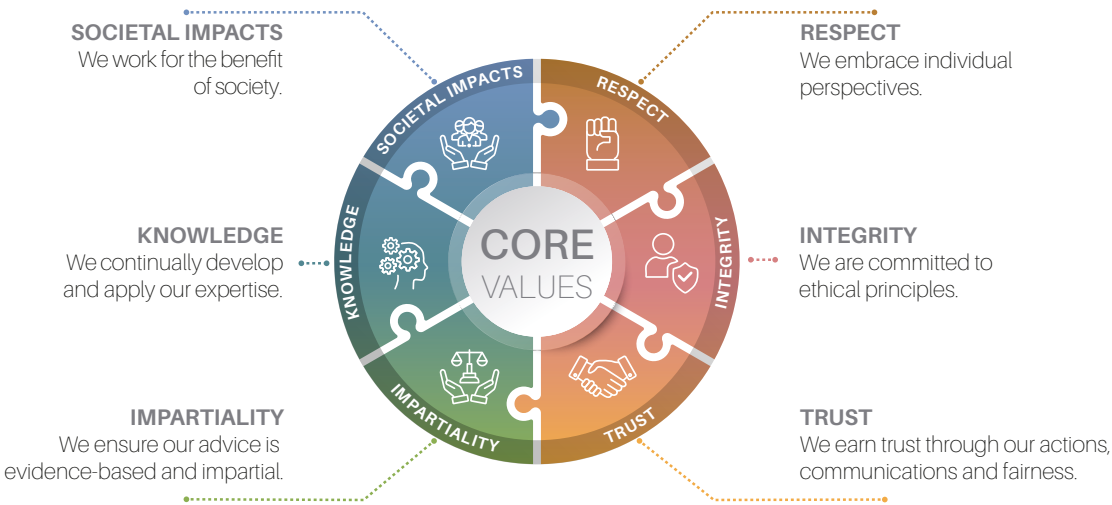


Figure 27 BGS Core Values published in 2025. BGS © UKRI 2025.

- engaging staff with a range of well-being events, including events for Mental Health Awareness Week

We rolled out a series of stress and mental health awareness training to BGS managers, in partnership with BGS Health and Safety (H&S). One hundred and thirty-six managers were trained and have undertaken risk assessments for their teams to understand factors that increase risk of stress, and potential mitigations. The training highlighted areas where managers can make improvements within their teams and organisational stressors that will be escalated to the SMB. The training was received positively.

Learning and development

BGS Learning and Development (L&D) continued its leadership development to enhance leadership skills across the organisation. External coaching was provided for two individuals moving into high-level leadership roles. BGS staff members have been encouraged to apply for the UKRI 'Inspirational

and emerging leaders' programmes and 11 staff members have completed or are currently attending sessions related to these programmes. Five staff members engaged with the Herschel Programme's 'Women in technical leadership'. We continued to roll out the Insights Discovery Programme, which is a psychometric testing programme that increases self-awareness and leadership behaviours. To date, 153 staff members have undergone this programme with involvement from all directorates.

Line management continued to receive increased investment. We developed a new continuous professional development programme for line managers, which included a line management skills course. The aim was to introduce the 'soft' skills needed for effective management to new line managers. Line managers were also encouraged to attend workshops and courses

Figure 28 Field-based hydrogeology course. BGS © UKRI.



that addressed inappropriate behaviours in the workplace.

A particular highlight of this FY was a new, field-based hydrogeology course, which was held in Northern Ireland. The aim of this course was to facilitate cross-BGS knowledge sharing between our hydrogeology experts and the wider geoscience staff. Another highlight was our progress with our [Technician Commitment](#) objectives. This included development of and progress with an action plan, including networking events, career development clinics and involvement in wider, external, technician-focused events.

L&D ran or facilitated attendance at 70 scientific, technical, IT and H&S courses, with a total of 418 attendees. We supported 80 people in on-the-job training programmes and nine staff were supported through specialist further education. Much of our training was targeted at the recent cohort of new BGS staff, who joined us through the 2023 open recruitment call. As a key developmental step, we supplied 41 people — mostly early-career scientists — with funds to participate in external conferences and enabled 40 participations in external committees, which is a key activity in building networks. We also supported approximately 150 staff with the costs of relevant professional registrations and memberships.

Spend for the year totalled approximately £900 000, including additional support from NERC Enabling Change to upskill new staff and re-skill staff to support external income growth.

Equality, diversity and inclusion

Equality, diversity and inclusion (EDI) remained a central commitment for BGS and are firmly embedded across the organisation. We developed and delivered actions aligned to our external accreditation schemes, which underpin the successful delivery of the NERC/UKRI diversity and inclusion action plans.

During this FY, we actively engaged and worked with partners from higher education institutes, industry and professional bodies to drive change across the broader geoscience sector. Our successful trial of the Unlearning Racism in the Geosciences (URGE) course was rolled out to staff in leadership positions. Having also supported AdvanceHE in redesigning the Race Equality Charter for research institutes, BGS has been accepted as part of the pilot scheme for research institutes.

We achieved the Athena SWAN Silver Award in November 2024 and were the first NERC research institute to achieve that accreditation under the transformed charter. BGS was recognised by the panel of expert reviewers for demonstrating impact in three key areas by increasing:

- female representation at senior grades
- the visibility of female (minority) role models
- EDI awareness and a sense of belonging for all staff

Developing future geoscientists

Work experience

BGS is committed to promoting awareness of careers in geoscience and developing a diverse talent pipeline of the next generation of geoscientists. This year, the EDI team offered three work-experience schemes tailored for students at various stages of their education:

- the BGS virtual [work experience programme](#) (in partnership with Springpod) was an 'on demand' programme that includes a series of interactive learning modules providing insight into BGS's research for students aged 13 and up
- a one-week online cross-centre virtual work-experience programme was produced in partnership with the British Antarctic Survey (BAS) and Creative Tuition for students aged 15 to 18

Case study: understanding the influence of groundwater in estuarine compound flooding

As part of the UKRI-funded Envision Doctoral Training Programme, BGS-hosted PhD student Ankita Bhattacharya's research investigated groundwater's contribution to compound flooding in estuaries.

Compound flooding (when multiple flood drivers such as storm surge, heavy rainfall and high river discharge occur together) poses a growing threat to low-lying coastal areas, with estuaries being particularly vulnerable. Climate change is increasing both the frequency and intensity of these events.

Ankita explored how subsurface water influences flood magnitude and timing. River and coastal flooding in the Conwy estuary in North Wales have affected local properties in the area in the past. She calibrated a coupled catchment-groundwater model with real-world fluvial and tidal data, which helped assess the estuary's sensitivity to changes in groundwater behaviour driven by factors like rainfall, sea level and aquifer properties.

- the summer placement scheme, run in partnership with the School of Geography at the University of Nottingham, was a fully remunerated, six-week placement programme designed to encourage engagement with future geoscientists from all backgrounds
- science for disaster risk reduction
- improved forecasting of rainfall-triggered landslides
- mapping rural groundwater supply chains
- land and soil restoration to control flooding
- artificial intelligence and geoelectrical imaging
- understanding geological controls on shallow fault mechanics

PhD students

Five BGS-sponsored doctoral researchers successfully completed their PhDs in this FY. The students undertook most of their research in BGS offices and laboratories, with a BGS staff member as their lead supervisor.

BGS University Funding Initiative programme

This year saw the BGS University Funding Initiative (BUFI) programme welcome a new cohort of 13 BGS-sponsored doctoral researchers. Their PhD projects span the range of research undertaken by BGS staff.

BUFI research topics starting in FY 2024 to 2025 included:

BUFI also supported 55 collaborative students, who were primarily based at a partner university but undertook a key part of their research at BGS and had a BGS staff member as part of their supervision team.

Health and safety

H&S and well-being remained key priorities at BGS. Objectives were set for continual improvement in this area and monitored throughout the year. The BGS H&S Strategy Panel and the two safety committees (north and south) provided the formal consultation mechanisms involving trade union representation. In addition, the local joint consultative

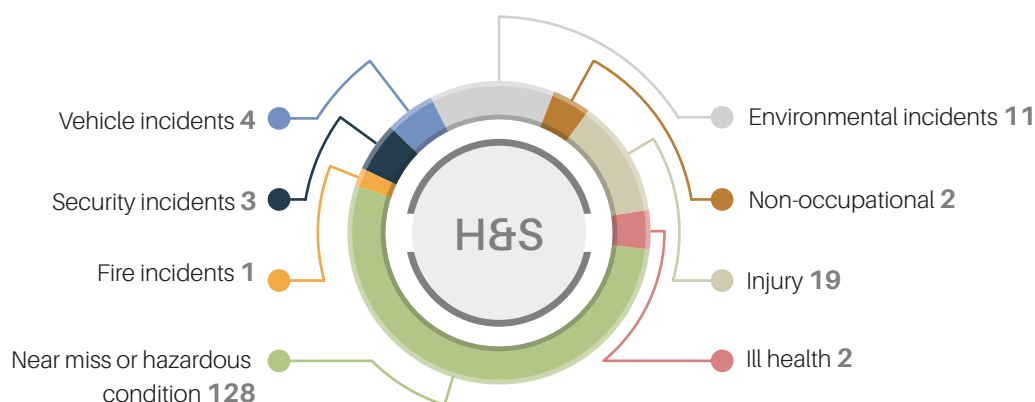


Figure 29 Health and safety incidents for FY 2024 to 2025. BGS © UKRI.

committees (union consultation structure), the genetic modification safety committee (regulatory requirement) and the laboratory safety group provided opportunities for H&S issues to be discussed.

Key achievements during this FY included:

- 136 managers trained in mental health and stress awareness
- a substantial increase in reporting of near misses and hazardous conditions, indicating an improving H&S culture
- successful ISO45001 audits with only minor non-conformities raised
- a significant improvement in the completion of mandatory training

Near-miss reporting significantly increased during the fourth quarter of FY 2024 to 2025. This was due to the BGS Board conducting a safety tour in November 2024, which raised awareness of near-miss reporting. The director of BGS Operations also led the SMB and the operations leadership group in conducting regular walkarounds and reporting issues.

BGS Estates

Net zero progress

Work continued on installing the ground-source heat pump at the BGS Keyworth site. It will replace

the gas heating in the staff restaurant and meeting room building and the James Hutton Building with high efficiency, low-carbon heating. The Living Lab was installed on five of the 28 boreholes to gather information on ground temperature and the system's performance, which is generating great interest in the heat pump community. This laboratory will produce data that will contribute to improvements in the design of new installations, potentially making them cheaper to install. The project has been challenging and delayed, but is expected to be completed in the first quarter of the next FY.

We also installed more LED lighting and upgraded building controls to improve building-user comfort and use less energy, particularly in the National Geological Repository and the publication store.

Biodiversity

BGS continued to develop biodiversity initiatives on site. We monitor biodiversity through a variety of techniques, including:

- wildlife cameras
- internal specialist surveys such as moths and insects
- external specialist ecology surveys

The bee hives at BGS Keyworth produced 50 kg of honey this year, which were collected in four harvests through spring and summer and much appreciated by the staff members who sampled them.

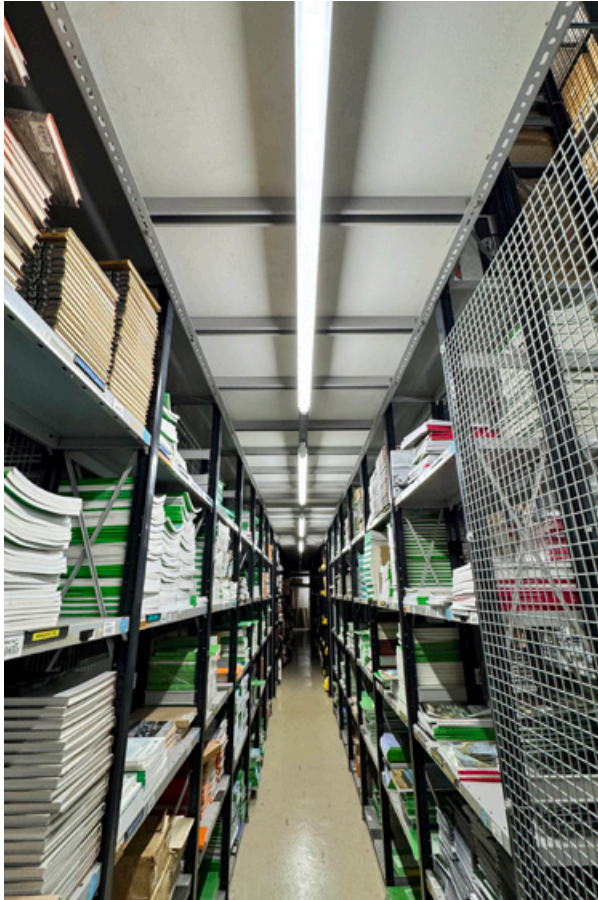


Figure 30 New LED lighting in the Keyworth publication store. BGS © UKRI.



Figure 31 Honey harvesting at the Keyworth site. BGS © UKRI.

BGS Groundwater relocation

The lease at the BGS Wallingford site expired and, in close collaboration with the BGS Project Management Office (PMO), we successfully relocated the groundwater function across the BGS estate, including paper records and digital assets. Two refurbished laboratory areas at BGS Keyworth that will provide space for the relocated groundwater chemistry laboratories.

Capital investment

We continued to invest in building condition maintenance this FY, including spending £350 000 on fire safety. There was still a significant deficit between required spend and awarded spend for maintenance of buildings across the estate, which was reflected on our risk register.

Major risks

Two areas at the BGS Keyworth site still have reinforced autoclaved aerated concrete, or RAAC, roofs.

There is an increase in risk to business continuity at BGS Keyworth as aging buildings and infrastructure need increased maintenance to maintain required operational capabilities. This was also reflected on our risk register.

BGS Informatics

BGS Informatics Solutions

BGS Informatics Solutions' focus this year was on consolidating our platforms into fewer, more robust and function-rich solutions, enhancing our code

health and streamlining our technology stack, whilst ensuring Cyber Essentials Plus (CE+) compliance.

Data governance

Building upon the data governance policies and guidance we produced in the previous FY, recent work concentrated on undertaking pilot UK data governance maturity assessments for different areas of BGS. These assessments will help further tailor our approach, enabling better alignment to scientific research and building a programme of work to manage the quality of our data assets by identifying key targets or areas to improve.

IT and security

This FY, we introduced the [ManageEngine](#) software to improve our asset management. The service desk team also completed IT Infrastructure Library foundation-level training.

We successfully completed CE+ re-certification in June 2024 and we continued to monitor and improve our baseline cyber security provision in a series of dashboards prepared for the BGS IT Security Governance Group. Successful Cyber Essentials re-certification was brought forward to March 2025, under the 'Montpellier' update, as this is a prerequisite to CE+ certification and will occur in the next FY.

We continued to improve critical infrastructure across all sites, with improvements and replacements to the local area networks at BGS Eskdalemuir and the Lyell Centre. We replaced our aging server infrastructure and improved data storage scalability and performance.

The BGS IT and Security team contributed to the BGS Environmental Sustainability programme through ongoing hardware replacements, introducing more efficient monitors and end-user computing devices. We also reduced the number of desktop systems used across BGS. Much of this was driven by the move to Windows 11.



Figure 32 Replacements to the local area networks at Eskdalemuir. BGS © UKRI.

Risk management and trusted research

Our risk management processes and reporting to senior management were well established this FY. We made a significant improvement to the responsiveness of our reporting capabilities so that compilation of reports to the SMB and the BGS Board is now highly automated. This improved both the accuracy of the data and the ability to highlight up-to-date changes in risk status. We continued to help staff improve their understanding of risk management and we carried out a review of high-level strategic risks to BGS in conjunction with the BGS Board.

Following successful external audits during the FY, our management systems for quality, environmental and safety management were all recertified to ISO 9001, ISO 14001 and ISO 45001 respectively.

Trusted research

The principles of ‘trusted research’ continued to be a focus of attention across the UK research community and BGS has an assessment process in place for considering trusted research risk of projects. This FY, we introduced an improved process for identifying and managing risk associated with individual research collaborations and ensuring that visitors who are granted access to BGS’s resources receive appropriate security screening and clearance.

Business continuity and resilience

Our incident management procedures were invoked on several occasions in response to significant external disruptors or emerging operational risks. We coordinated BGS’s responses and successfully managed and mitigated the impact on BGS’s activities through these procedures. We also undertook a cyber security simulation exercise to assess the robustness of our cyber security measures and planning.

Intellectual property rights and legal

Over this FY, the intellectual property rights (IPR) and legal team managed the negotiations of 178 commissioned proposals, of which 115 became successful commercial contracts. From 56 grant proposals, 11 research council grant awards resulted in the arrangement of the necessary collaboration agreements between the participating organisations. In addition, there were four European Commission proposals with one successful outcome.

We managed the issue or renewal of 474 digital data licences and reseller agreements, enabling external parties to use BGS’s digital data products for business purposes. Additionally, we issued 134 academic user licences at no charge, which is supplemented by the ongoing provision of BGS data products to the University of Edinburgh’s EDINA data service, which gives subscribing academic institutions free access to BGS’s data products for academic

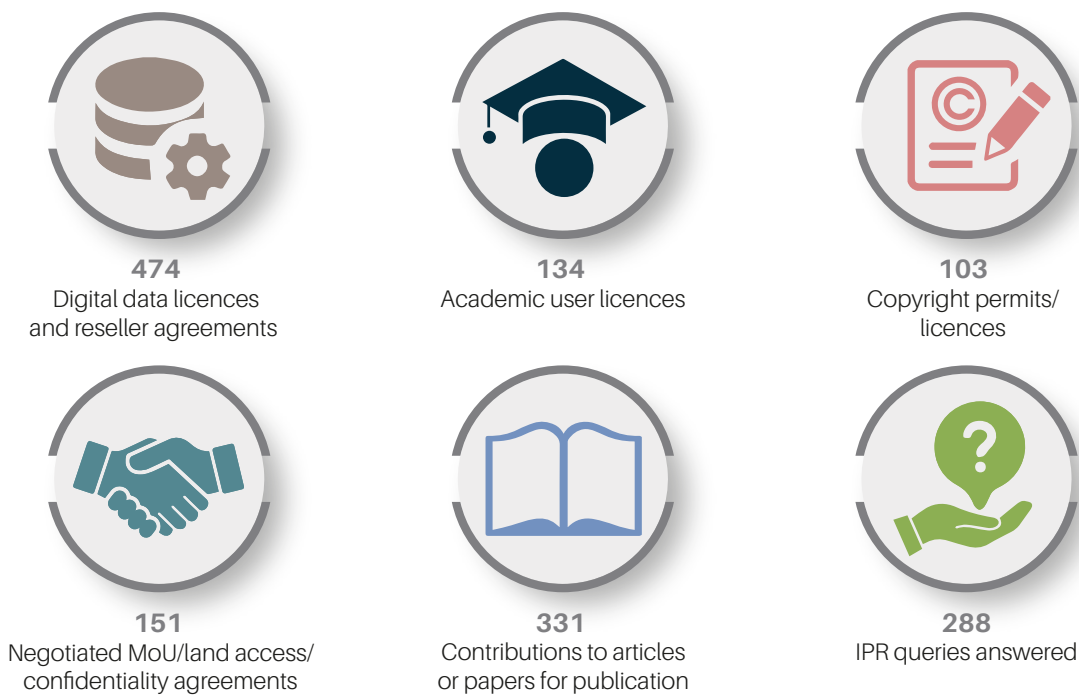


Figure 33 Legal and IPR data
FY 2024 to 2025. BGS © UKRI 2025.

use. We also negotiated 151 agreements such as Memoranda of Understanding (MoU), land-access and confidentiality agreements, and studentships.

The IPR team approved 103 copyright permits and licences, enabling external parties to use BGS-copyrighted materials. We also cleared 331 BGS contributions to articles and papers for publication and answered 288 IPR queries from internal and external parties.

Project management office

The BGS PMO supports maximising BGS's impact through robust and efficient project delivery. The team provides support in:

- delivering corporate projects
- advising on project and contract management
- strengthening project management processes

This year, the PMO facilitated the delivery of several critical and complex projects. In total, we engaged significantly with more than 20 projects, providing project management, contract management and advice directly to project managers and through internal governance groups.

We progressed the clearance of the George Bruce Building at the BGS Edinburgh site, selling and transferring the assets of the closed marine operations department to NERC-owned and other organisations, and we consulted with those who use the building about future use. We also provided project and contract management support to the BGS Keyworth ground-source heat pump project, and have collated lessons learnt to inform future projects.

The PMO continued to manage the transition to updated business management software (to Oracle Fusion), providing coordination and communication across BGS. The team was also involved in replacing the resource management software, collating requirements and identifying options.

Business development

Activities across business development over the year focused on four central ambitions:

- enhancing our business development framework to maximise income
- maintaining an in-depth understanding of existing markets for BGS science
- developing and growing income from new and emerging market sectors
- strengthening our approach to managing collaborations and partnerships

In order to meet these key goals, BGS expanded its portfolio of science products and science delivery. This led to increased UK Government funding for new work from:

- the Department for Science, Innovation and Technology (DSIT)
- the Government Office for Technology Transfer
- Defra
- FCDO

We also secured a much-increased portfolio of work for NWS in the geological interpretation of key areas of interest.

Other highlights over the period included:

- securing a MoU with FCDO to provide their global network with support and responsive expertise on natural hazards
- ongoing delivery of the International Ocean Discovery Programme with a range of partners to advance scientific discovery in the marine environment
- delivering knowledge assets projects for DSIT, including data services to the geotechnical sector, groundwater decision support to water companies and hazard tools for a range of geoscientific sectors



Figure 33 Visit from the Indonesian Education and Cultural Attaché and Indonesian embassy representatives. BGS © UKRI.

- continued work with the EA, providing geological understanding for groundwater assessments and research into contaminants in the environment
- further engagement with offshore windfarm developers, providing our specialist expertise to an area of growth to support the transition to net zero

The acceleration to net zero requires the in-depth expertise and knowledge held by BGS to meet the UK's goals. The BGS Business Development team works to raise awareness across the UK public and private sectors of the role BGS can play in the energy transition and the security of supply of vital minerals and resources to the UK.

The team also worked with key partners in strengthening collaboration to ensure we can meet their needs over the long term, such as deepening our collaboration with the UK Met Office. Working with our data licensing supply chain ensured our data portfolio continued to meet user needs; for example, considering the effects of climate change on infrastructure.

In the last quarter of this FY, we initiated a rapid review of our business development functions to support our income generation, which will inform future organisational design and development.



Figure 34 Outcrop of
autobrecciated rhyolite.
Summit of Bera
Bach, Carneddau
BGS © UKRI.

Financial statement for the financial year 2024 to 2025

Table 2 BGS income for FY 2024 to 2025.

Income type	£million
Public science role	24.44
NERC services and facilities	7.97
International Science	1.53
NERC Enabling Change funding	0.75
Total public science role (NERC non-competitive)	34.69
NERC grants and service level agreements	6.58
UKRI research grants (not inc NERC)	1.01
European Union	1.84
UKRI research income (non-lead)	1.30
Central Government departments	5.76
UK public sector	2.68
UK private sector	2.91
International public sector	1.44
International private sector	3.88
Charities and third sector	0.59
Data licences; report sales; shop sales; small projects	5.44
Rental income	0.33
Total competitively won income	33.74
Total income	68.43

Table 3 BGS expenditure for FY 2024 to 2025.

Expenditure type	£million
Frontline science	
• pay	28.38
• non-pay	7.03
Science facilities	
• pay	1.20
• non-pay	6.88
Support	
• pay	8.23
• non-pay	16.68
Total expenditure	68.40
Surplus/deficit (-) on business-as-usual activity	0.03
Adjustments	0.00
Surplus/deficit (-) as reported after adjustments	0.03

Table 4 BGS capital spend for FY 2024 to 2025.

Expenditure type	£million
Well Found Labs	
Science capital/routine spending	0.97
Corporately managed investments	
Estates	
• investment and environmental management	1.77
• decarbonisation fund	3.42
Strategic investments	
BGS IT	1.14
• IT resilience and cyber security	0.40
• Enhancing project management	0.05
• NC-LTSS Capital (BGS)	0.92
Ringfenced projects	
Resource management system	0.09
Total	8.76
Grant and community-wide assets	3.15
Total capital spend	11.91



Figure 35 Limestone landscape, Peak District. © iStock.com/Anastasija Mosina.

BGS Board

The BGS Board sets the strategic aims of the organisation and reviews organisational performance such as the delivery of science and BGS's management of finances, risk and H&S. The board also supports BGS in meeting future challenges and helps ensure it continues as a world-leading geological survey. Working closely with the SMB, the board supports delivery of the BGS mission, managing commercial risk and diversifying its funding.

The relationship between BGS and NERC/UKRI is governed by a joint MoU and a strategic relationship agreement. The BGS Board is supported by two subcommittees: the BGS Finance Subcommittee and the BGS Science Advisory Committee. Both are chaired by a BGS Board member.

During this FY, the BGS Board met on:

- 16 May 2024
- 23 July 2024
- 5 November 2024
- 12 February 2025

Membership of the BGS Board

Non-executive members

- Sir Keith O'Nions (Chair)
- Joanna Coleman, OBE
- Prof Carol Frost, Professor Emerita, University of Wyoming (Chair of the BGS Science Advisory Committee)
- Tom Karsten, CBE
- Dr Jenny Pyper, pro-chancellor and chair of council, University of Ulster

- Simon Thompson, chair of the Met Office
- Joanne Wilson, group head of treasury, Anglo American Services UK Ltd (to 30 November 2024)
- Ian Chisholm (Chair of the BGS Finance Subcommittee; from 1 December 2024)

BGS members

- Dr Karen Hanghøj, BGS Director
- Andrew McConnochie, director of BGS Operations

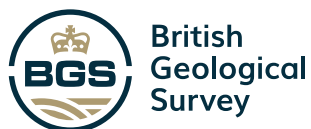
NERC observer

- Alison Robinson (NERC Acting Deputy Executive Chair; to 30 November 2024)
- Dr Tracy Shimmield (NERC Interim Director Research and Skills; from 1 December 2024)

Where eligible, non-executive directors are remunerated for their position. An honorarium of £9000 per annum is paid to the Board Chair and £6000 per annum to other eligible non-executive directors. A meeting attendance fee is also payable to those who are eligible and choose to receive it (£230 per meeting for the Board Chair; £170 per meeting for other non-executive directors). Travel and subsistence expenses incurred on BGS business are reimbursed in accordance with UKRI policy.

Glossary

AI	Artificial intelligence	FTE	Full-time equivalent
BAS	British Antarctic Survey	FY	Financial year
BGS	British Geological Survey	GDF	Geological disposal facility
BGWM	BGS British Groundwater Model	GSNI	Geological Survey of Northern Ireland
CCS	Carbon capture and storage	H&S	Health and safety
CH₄	Methane	IPR	Intellectual property rights
CMIC	Critical Minerals Intelligence Centre	L&D	Learning and development
CWI	Competitively won income	NERC	Natural Environment Research Council
CO₂	Carbon dioxide	NHP	Natural Hazards Partnership
CE+	Cyber Essentials Plus	NWS	Nuclear Waste Services
Defra	Department for Environment, Food & Rural Affairs	PRIME	Pro-active Infrastructure Monitoring and Evaluation system
DHA	Daily Hazard Assessment	Q-FAIR	Quality — findable, accessible, interoperable and re-usable
DSIT	Department for Science, Innovation & Technology	SMB	BGS Senior Management Board
EA	Environment Agency	STEM	Science, technology, engineering and mathematics
EDI	Equality, diversity and inclusion	UKRI	UK Research and Innovation
EURAD	European Partnership on Radioactive Waste Management		
FCDO	Foreign, Commonwealth & Development Office		



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