



**British Geological Survey**

NATURAL ENVIRONMENT RESEARCH COUNCIL

Applied geoscience for our  
changing Earth

Activity	Function	Examples of national good outcomes
<p>1. <i>Provide the base data and knowledge for the nation's geological framework</i></p>	<ul style="list-style-type: none"> <li>• Provision of digital geological and geophysical maps, models, data, information and knowledge at appropriate resolutions to underpin mineral, energy, water resource, land-use and development planning and exploitation at local, regional and national level, onshore and offshore.</li> <li>• Maintain a national capability of facilities and expertise to develop, refresh, revise, understand and apply this data, information and knowledge.</li> <li>• Produce a four-dimensional geological and geo-environmental framework, focusing principally on the zone of human interaction (i.e., the shallow geosphere), including strategic information on the properties of the surface and sub-surface.</li> <li>• Maintain a national database and a drill-core storage facility on sea-bed and sub-seafloor geological infrastructure, particularly in the North Sea.</li> </ul>	<ul style="list-style-type: none"> <li>• Planning policy guidance, minerals planning guidance and civil engineering best practice all recommend consultation of a geological map, GIS or 3D model prior to development to avoid unforeseen ground conditions and maximise value of land resources.</li> <li>• Maximisation of UK continental shelf hydrocarbon resource exploitation, operator compliance with environmental assessment requirements, petroleum operations regulations etc. through DEAL web service, National Hydrocarbons Data Archive.</li> <li>• Informed decision-making on land-use and planning through provision of national baseline and derived datasets</li> </ul>
<p>2. <i>Provide advice, data and information on safe and effective land use to minimise society's exposure to environmental risks</i></p>	<ul style="list-style-type: none"> <li>• Provide environmental datasets generated from public investments that enable a long-term baseline contributing to monitoring, forecasting and modelling needs, and through integrating systems and visualisation techniques, service the needs of government (at all levels), industry and the public, particularly in relation to hazards in the shallow geosphere.</li> <li>• Advice on UK land management strategies, infrastructure and waste management that are affected by geological hazards, including radon,</li> </ul>	<ul style="list-style-type: none"> <li>• Site-specific information on geological hazards, groundwater resources and renewable energy potential nationally delivered through Enquiry service</li> <li>• Rapid response for emergency assessments of potential sites for disposal carcasses, and individual site characterisation, based on baseline geological mapping during the Foot and Mouth epidemic.</li> <li>• Major socio-economic impacts and benefits to public, regulatory agencies, industry, commerce</li> </ul>



	<p>landslides, floods, droughts and erosion.</p> <ul style="list-style-type: none"> <li>• Provide advice to enable informed decision-making and responses to national emergency situations</li> <li>• Produce national thematic data-sets on the nature, incidence, extent and location of physical hazards that to allow risk to be assessed and managed.</li> <li>• Provide information on and understanding of earthquakes and geomagnetic storms that may have an impact on people and on the built and technological infrastructure – both in the UK and worldwide. Build long-term data-sets as the basis of forecasts of hazard for planning and design.</li> <li>• Provide data and information to policy makers, regulators and others to underpin evidence-based decision making across all sectors of government, industry, commerce and society.</li> <li>• Provide advice on the application of geoscientific data, information and knowledge in the implementation of new European Directives as these emerge (e.g. Mines Wastes, WFD, INSPIRE, etc).</li> </ul>	<p>through high resolution national datasets on natural geohazards including radon, flooding, ground stability, toxic chemicals etc.</p> <ul style="list-style-type: none"> <li>• Provision of geohazard information to house conveyancing and insurance sectors.</li> <li>• BGS Geomagnetic reference field information is used, in conjunction with a BGS developed technology called Interpolated In-Field Referencing, to assist with targeted directional drilling of oil and gas exploration and production wells.</li> <li>• Seismic hazard data and assessments are essential for high value/high environmental risk facilities such as nuclear power stations and offshore oil and gas pipelines</li> </ul>
<p><i>3. Monitor and predict the impacts of environmental change on the UK offshore, near-shore and coastal zones</i></p>	<ul style="list-style-type: none"> <li>• Increase knowledge of the variability of sea-bed conditions and the interaction between marine physical, chemical and biological processes, in accordance with the EU habitats and water framework directives, the proposed integrated coastal zone management regulations, the convention for the protection of the marine environment of the north-east Atlantic (OSPAR) and International Council for the Exploration of</li> </ul>	<ul style="list-style-type: none"> <li>• BGS established and managed a consortium to monitor retreat rates and collapse susceptibility of southern England's cliffs, including climate change impacts, to provide input to coastal management policy development and implementation, and information for coastal property owners, insurers, and operators of major infrastructure in coastal areas, for example Network Rail and British Gas.</li> </ul>



**British Geological Survey**

NATURAL ENVIRONMENT RESEARCH COUNCIL

Applied geoscience for our  
changing Earth

	<p>the Sea (ICES).</p> <ul style="list-style-type: none"> <li>• Predict the effects and feedbacks of climate change on the UK coast, continental shelf and margins.</li> </ul>	
<p>4. <i>Ensure the sustainability and quality of the nation's groundwater supplies</i></p>	<ul style="list-style-type: none"> <li>• Provide survey, monitoring and related research functions that are necessary to underpin efficient, sustainable groundwater management and provide strategic data, tools and research to enable a better understanding of water supply capacity, and the chemical and biological loads within the surface water, groundwater and user systems (of environment and public supply).</li> <li>• Model the impacts of climate change and extreme environmental conditions on groundwater, so that mitigation and adaptation strategies can be properly assessed to minimise environmental, economic and social damage. The assessment of diffuse groundwater pollution and the impacts of groundwater quality on human and animal health.</li> </ul>	<ul style="list-style-type: none"> <li>• 3D modelling of the Sherwood Sandstone aquifer in Nottinghamshire and Yorkshire has enabled the EA to identify zones where the public groundwater supply is at risk from cross-contamination with poor quality groundwater in the deeper, Lower Magnesian Limestone aquifer, enabling new policy and controls on abstraction to be established to protect water quality</li> </ul>
<p>5. <i>Advise on the sustainability of the nation's energy and mineral resources</i></p>	<ul style="list-style-type: none"> <li>• Identify and assess the availability and suitability of energy and mineral resources, including the identification and quantification of locally produced construction minerals, to meet present and future regional and national demands.</li> <li>• Provide advice for decision-makers on the most efficient use of energy and mineral resources, minimising harmful environmental and social impacts, minimising waste generation and designing modern waste management processes.</li> </ul>	<ul style="list-style-type: none"> <li>• Research and development of best practice for CCS, and development of underpinning scientific understanding and capability, is guiding drafting and implementation of the new EU CCS Directive</li> <li>• The BGS hosted Minerals UK website distributes BGS-synthesised information and statistics on mineral resources in the UK, fostering a more competitive minerals industry, continued inward investment and supporting new strategic assessments by Government of supply security and sustainability.</li> </ul>



**British  
Geological Survey**

NATURAL ENVIRONMENT RESEARCH COUNCIL

Applied geoscience for our  
changing Earth

	<ul style="list-style-type: none"><li>• Increase understanding and viability of alternative energy resources including geothermal, clean coal etc to underpin regulation and policy.</li><li>• Studies, experiments and advice on carbon capture and storage in the interests of a low carbon economy.</li><li>• Provide advice on and studies of underground radioactive waste repositories in the UK to assist with site selection and characterisation.</li><li>• Geoscientific advice on the location of major energy-related infrastructure and international resources.</li></ul>	
<p><i>6. Advice and action on UK foreign policy and overseas capacity building.</i></p>	<ul style="list-style-type: none"><li>• Undertake international geoscience capacity building work in developing countries and provide strategic advice on natural resources and natural hazards worldwide.</li><li>• Provide geological advice and support to when responding to natural disasters such as tsunamis, volcanoes or earthquakes where UK interests are concerned.</li></ul>	<ul style="list-style-type: none"><li>• Institutional re-building of geological survey, national minerals reconnaissance and geoscience information service functions in Afghanistan to assist with national regeneration and development after the widespread destruction of infrastructure by the civil war.</li><li>• Set up and management of the Montserrat Volcanic Observatory to provide advice on volcanogenic risks to the island government and help determine policy on evacuation, resettlement and protection/rebuilding of the island's infrastructure.</li></ul>