

Environment, Food and Rural Affairs Select Committee Inquiry: Coastal Erosion and Landslips

<https://committees.parliament.uk/call-for-evidence/3748/>

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The British Geological Survey is a world leading geoscience organisation and the UK's National Geological Survey focussed on understanding the Earth and environmental processes. BGS hosts one of the largest concentrations of landslide experts in the UK. Our researchers are involved in many aspects of coastal and landslide research with the primary objective of building resilience both in the UK and internationally. The [BGS strategy](#) is focused on helping stakeholders make effective decisions and tackling specific challenges including provision of authoritative advice to government departments.

Responses are supplied for questions 1, 2, 4, 5 and 6. Summary responses for questions 1 and 2 are followed by more detailed explanation to give further context at the end of the document.

Question 1 (summary): What is the scale and nature of the risks posed by coastal erosion and landslips to communities, the economy and the environment?

Coastal erosion poses significant, underestimated risks across the UK due to limited historical data and a lack of consistent methodologies for assessing change. Erosion is driven by wave action, storm surges, sea level rise, and human activity, while landslides result from coastal processes, rainfall, and heatwaves. These hazards threaten land, infrastructure, ecosystems, and communities. Relative Sea Level Rise (RSLR), influenced by climate change and land movement, intensifies flooding and erosion. Research highlights that 30% of England's "Hold-the-Line" coast may require realignment by the 2050s, affecting up to 160,000 properties. BGS data shows over 1.3 million people in 98 coastal built-up areas are exposed to landslide processes, with hotspots in Kent, East Sussex, Dorset, and the Isle of Wight. Projects like DEFRA/FCERM FD2724 aim to improve understanding and resilience. As climate impacts accelerate, transformational adaptation—including managed realignment and community relocation—will be essential to safeguard vulnerable coastal regions.

Away from the coast BGS data indicates that 350 000 houses in GB are in areas of significant landslide susceptibility. The National Landslides Database (NLD) hosted by BGS contains 19 000 records of for GB occurring in a range of geographical settings. The NLD highlights dense landslides activity in the Cotswolds, South Wales Coalfields, Peak District, Lake District and western Scotland.

Question 2 (summary): What strategies are currently in place, or needed, to reduce the risks of landslips and coastal erosion, and what research gaps exist? What policies are in place nationally and locally, such as within the Flood and Coastal Erosion Risk Management (FCERM) Strategy, for mitigation of hazards associated with landslips and coastal erosion? How effective and well-resourced are they and what types of impacts are considered within the policy framework?

The UK's coastal management is a collaborative effort involving multiple agencies and local authorities. It includes land and asset management, scientific research, and public engagement. Local strategies are tailored to regional challenges, with BGS providing technical support where geological expertise is lacking. The work of Local Resilience Forums (LRF) includes anticipating hazards like rockfalls, though predicting coastal landslides remains difficult due to their varied nature.

Through the Natural Hazards Partnership (NHP) BGS provide Daily Landslide Hazard Assessments, although coastal landslides are excluded due to their complexity. BGS supports numerous research projects to improve understanding and inform risk strategies, but funding for large-scale studies is limited. Critically, coastal landslides are not included in Shoreline Management Plans or National Coastal Erosion Risk Mapping (NCERM) models, restricting strategic planning.

Planning policies vary across the UK: England's National Planning Policy Framework (NPPF) outlines high-level expectations for managing land stability risks but lacks technical detail; Wales mentions landslides briefly; Northern Ireland prohibits development in areas known to be at risk from flooding, coastal erosion, or land instability. BGS, while not a statutory consultee (except in Northern Ireland), holds nationally significant datasets that can inform planning.

Effectiveness is hindered by resource constraints, inconsistent implementation, and scientific gaps. Key research gaps include understanding multi-hazard drivers, assessing social impacts, improving public awareness, and clarifying long-term policies. There is an urgent need for integrated planning, dedicated funding, and delivery mechanisms to support transformational adaptation, including relocation and realignment. While incremental adaptation is progressing, transformational change remains underdeveloped across the UK's coastal management framework.

Landslides are a named risk in the Scottish National Risk Assessment; they are not currently identified as a standalone risk in the UK National Security Risk Assessment, in part due to lack of risk owner and limited evidence of economic impacts.

Question 4: Is there sufficient support available to those who have sustained damage or loss of property due to landslips or coastal erosion, and are items such as financial compensation, relocation assistance, and wellbeing services considered in this support?

No.

BGS is contacted by homeowners unaware of the landslide risks they face or who purchased their properties before coastal management practices changed in the early 2000s away from hold-the-line to no-active-intervention

As well as the issue of recouping damage costs through insurance, homes and businesses are still bought and sold in areas with active landslides and coastal erosion. BGS is regularly contacted to provide more information about the risk to property from landslides and coastal erosion, often by members of the public as part of a house sale/purchase or after an event has occurred e.g.,

"I am purchasing a property that is situated on a cliff overlooking the sea and I am concerned about coastal erosion and how this may affect the house in the long term";

"...I fear something dreadful might happen at any minute";

"I live on the south coast and there's a cliff at the bottom of my garden. There's been a major landslide...the police and fire service are involved but I am unclear as to how to proceed further. We've informed my insurer but who is responsible for the considerable repair work needed - is it the local council? I would be very grateful for any advice you can give me".

Seeking out and understanding this information relies on the individual, solicitors and building surveyors understanding the risk and being proactive in obtaining more information from the right sources. National Coastal Erosion Risk Mapping (NCERM) estimates that over 21,000 properties (residential and non-residential) in England are located in areas projected to be at risk of coastal erosion by 2100, under current Shoreline Management Plans.

Question 5: Are emergency services and local authorities sufficiently resourced and trained to respond to the increasing risks of landslips and coastal erosion linked to extreme weather events, particularly in rural, coastal and hard-to-reach areas?

There is a significant gap in geological expertise for staff on the ground (e.g. local authorities, coastal rangers) and lack of monitoring systems. As such BGS is increasingly asked to provide scientific evidence and technical support for decision-making i.e. closing and re-routing coastal footpaths where landslides are present.

Coastal landslides driven primarily by groundwater rather than direct coastal erosion excludes local authority access to Flood and Coastal Erosion Risk Management (FCERM) funds to manage them, despite the fact that marine and coastal processes will still influence the slopes.

Question 6: To what extent is the protection of and access to significant natural landscapes and heritage sites being undermined due to coastal erosion or landslips, what are the impacts of this, and how could this be addressed?

Across the UK, there are ten UNESCO Global Geoparks, seven of which have a coastal component. Each of these seven face threats to their internationally important geological heritage because of coastal erosion and landslips. This potentially could result in reduced access to infrastructure for coastal communities, a reduction in visitor numbers which would have a negative economic and societal, loss of biodiversity and ultimately a loss of UNESCO status.

For example, in Northern Ireland, a number of key natural landscapes and heritage sites are already being impacted due to coastal erosion or landslips.

- The Giant's Causeway and Causeway Coast World Heritage Site is one of only a small number of World Heritage Sites globally that have been inscribed due to their geological heritage. It is also Northern Ireland's most significant tourism site, attracting nearly 1 million visitors annually and according to a report by the UK National Commission for UNESCO, contributes nearly £500 million to the local economy. Research by the National Trust and by the Geological Survey of Northern Ireland (through the AGEO project) have identified that there increasing numbers of rockfalls. These have led to site closures, reduced visitor numbers and present a real threat to its the Outstanding Universal Value of the site, an essential part of being a WHS.
- The Mourne Gullion Strangford UNESCO Global Geopark was designated in 2023 due to its internationally important geological heritage. It has an extensive coastline on the Irish Sea, much of which is under threat from coastal erosion, particularly in areas where the coastline comprises soft sediments such as sand dune systems. This not only affects the geological heritage, but also the coastal recreational infrastructure that provides access to such sites.

Many of the UK UNESCO Global Geoparks have begun to work to address these issues, as this is a requirement to maintain their UNESCO status. Their bottom-up and multi-stakeholder management structures makes them the perfect locations for developing community-based adaptation plans.

DETAILED RESPONSES

Question 1 (detailed): What is the scale and nature of the risks posed by coastal erosion and landslips to communities, the economy and the environment?

The scale and nature of the risk posed by coastal erosion across the UK is high and not yet well understood but likely to be underestimated. This is due to the lack of historical data that evidence coastal changes of the natural and built environment, communities and a methodology to determine historical change.

Initiatives trying to produce this evidence base include the [Dynamic Scotland](#) project, the completed but yet-unpublished DEFRA/FCERM "[Coastal monitoring and historical coastal change](#)" for England and Wales, and the [Coastal Change Information Tool in Northern Ireland](#).

Evidence gathered in these studies suggests an [underestimation of the risks](#) and highlights the increasing pressure on England's coastal communities due to sea level rise and platform erosion, and the need for transformational adaptation including managed realignment and community relocation:

- 1,600–1,900 km (~30%) of England's shoreline currently designated as "Hold-the-Line" is projected to face pressure to realign by the 2050s.
- 120,000–160,000 properties may be affected, with some requiring relocation.
- Risks are driven by relative sea level rise (rSLR) and wave-driven platform lowering, which reduce the effectiveness of existing defences.

BGS researchers are involved in many aspects of global landslide research with the primary objective of building resilience both in the UK and internationally. BGS holds records for approximately 19 000 landslides within the National Landslide Database (NLD); 1 300 of these events occur within the coastal strip. News reports and social media data used to populate the NLD highlight disruption to communities and tourists through the loss of recreational land, damage to buildings and infrastructure as well as fatalities. The NLD records 191 fatalities since 1799 (this includes Aberfan coal tip disaster). In the last

25 years, there have been 13 recorded fatalities caused by landslides. The NLD shows hotspots of landslide activity (see Fig 1.).



Fig 1. Spatial distribution of GB landslides – BGS National Landslide

BGS produces a national landslide susceptibility product (GeoSure) which is used by home buyers and developers to determine the likely potential for landslides to occur within an area. A BGS study in 2013, estimated the number of households defined as having significant landslide susceptibility (overlaying GeoSure and spatial population data) as approximately 350 000 houses (1% of the housing stock at the time) a number which is likely to have increased due to ongoing development since the paper was published.

Similarly, BGS data on coastal landslide presence and Office for National Statistics (ONS) [Built Up Area](#) statistics estimates 98 coastal built-up areas and over 1.3 million people are exposed to landslide processes. These figures exclude tourists. Not all coastal landslides are currently active but with changing climate it is likely that landslides at the coast could be reactivated or accelerated.

Question 2 (detailed): What strategies are currently in place, or needed, to reduce the risks of landslips and coastal erosion, and what research gaps exist? What policies are in place nationally and locally, such as within the Flood and Coastal Erosion Risk Management (FCERM) Strategy, for mitigation of hazards associated with landslips and coastal erosion? How effective and well-resourced are they and what types of impacts are considered within the policy framework?

Strategies to reduce risks of Landslips and coastal erosion

Management of the UK coastline is a multi-agency collaboration. It involves management of land and assets, scientific research to understand processes and public engagement. No single organisation

holds all the information to fully manage and anticipate risks associated with coastal erosion and landslides.

Strategies to reduce risks from landslides and coastal erosion are usually on a local scale and led by the local authorities. Availability of local and national government funding is limited to only the most impacted areas. Furthermore, the distinction between drivers of coastal change determines whether landslides are classified as coastal erosion or landsliding, which in turn influences the eligibility for funding.

Some Local Authorities (LA) have developed their own Standard Operating Procedures and protocols for managing rockfall events when they occur; Dorset Council consulted with BGS to develop their rockfall protocol following a fatality in 2012 and 2025 update. However, LA staff are not generally trained in landslide recognition or identifying underpinning geological processes. Where LAs no longer employ geologists, BGS has provided expertise in relation to landslides (e.g. Hastings Borough Council, Somerset and Dorset).

BGS interacts with Local Resilience Forums (LRFs) to anticipate coastal rockfalls in areas such as [Dorset](#) ahead of a heatwave. LRFs typically rely on local geological intelligence and community engagement to monitor early signs of movement but, depending on the geology, coastal landslides can be sudden (rockfalls) or take place over longer time periods (deep-seated rotational landslides), and their timing is currently very difficult to predict. Scientific funding for national- or regional-scale understanding of complex landslide drivers is lacking. These landslides are also omitted from Shoreline Management Plans and the National Coastal Erosion Risk Mapping (NCERM) models.

BGS provides expertise to multi- and inter-disciplinary projects with a range of stakeholders focused on the UK coast since the 1960s. Examples include [Slope Dynamics](#), [LOIS](#), [FutureCoast](#), [5G RuralDorset](#), [CHAMFER](#) and [The HuT](#).

As part of the Natural Hazards Partnership (NHP), BGS provides Daily Landslide Hazard Assessments for the UK. Coastal landslides and coastal processes are not currently part of the NHP assessment, focus is rainfall-induced landslides and drivers for coastal landslides are more complex.

Policies for mitigation

Planning policy:

The requirement to include geohazard information under planning guidance varies across the devolved nations:

- Historical planning policy documentation provided specific technical information for coastal landslides and risk to coastal assets and the role of local authorities in identifying the problem areas and need for stability assessments. (GB Planning Policy Guidance Note 14 (PPG-14) and Annex (Anon 1990, 1994).
- The current revised [National Planning Policy Framework](#) (NPPF, Dec 2024) applies to England only and only provides high-level policy expectations for managing land stability risks,
- The NPPF is supplemented by Planning Practice Guidance (PPG) on specific topics including [coastal change](#) and [land stability](#), however PPG is less specific on technical aspects compared to its historical predecessor. While not a statutory consultee, the BGS is signposted within the guidance as a source of authoritative information on land instability.
- Specific mention of landslides only occurs once in [Planning Policy Wales](#) (2024) in the context of subsurface hazards posing a risk to health and environment (6.9.13) and framed within the broader context of site stability and environmental risk, rather than as a standalone planning concern. Impacts and risks of coastal change are frequently mentioned but not explicit.
- In Northern Ireland, the Strategic Planning Policy Statement (SPPS) sets out the regional planning policies for securing the orderly and consistent development of land. The SPPS states that 'Development will not be permitted in areas of the coast known to be at risk from flooding, coastal erosion, or land instability'. This, in theory, is implemented by Local Authorities through the Local Development Plan system whereby they should 'identify areas of the coast known to be at risk from flooding, coastal erosion, or land instability where new development should not be permitted'.

Although BGS is not a statutory consultee within the UK planning framework (with the exception of Northern Ireland), it holds nationally significant datasets and scientific expertise that can inform planning decisions and hazard mitigation efforts.

Landslides are an identified risk in the Scottish National Risk Assessment. Landslides are mentioned as a secondary hazard in the UK National Security Risk Assessment however not currently identified as a standalone risk. This is in part due to lack of identified risk owner and limited evidence of economic impacts.

Effectiveness and resourcing

There is insufficient evidence in Northern Ireland to identify areas of coast known to be at risk from coastal erosion as identified by the [Baseline Study and Gap Analysis of Coastal Erosion Risk Management NI](#). Whilst some knowledge gaps have been addressed through the work of the Northern Ireland Coastal Forum Working Group (CFWG), especially through the establishment of the [NI Coastal Observatory](#), there is still a great deal more needed. Since the Northern Ireland Strategic Planning Policy Statement (SPPS) was first published in 2015, the need for information is even greater with several specific risks to the coast as a result of climate change being identified as part of the [Third UK Climate Change Risk Assessment \(UKCCRA3\): Summary for Northern Ireland](#). Risks to coastal business locations and infrastructure, to agriculture and forestry productivity, to coastal species and habitats, to infrastructure services, to the viability of coastal communities and to cultural heritage have all been identified. All of these are at risk from coastal erosion which is being exacerbated by climate change.

Research gaps

- Landslide specific research is lacking. Coastal landslides can be part of a suite of cascading hazards (multi-hazards), for example coastal flooding, groundwater flooding, coastal erosion, storms, heatwaves and rainfall can all pre-condition slopes to increase the likelihood of landslides occurring as well as trigger landslide events. There is a national-scale gap in process understanding in terms of what drives coastal landslides. These drivers are complex and the National Coastal Erosion Risk Mapping (NCERM) models currently exclude geologically complex areas due to uncertainties. These need to be understood and monitored on the local scale and over the long term, prioritised by their potential impact.
- There is limited data on how erosion affects community viability, especially in places like Fairbourne, Wales, described as the UK's first climate change refugee community.
- Clear, long term protection policies would remove uncertainty, loss of property, and psychological stress faced by the public in the event of a landslip or coastal erosion event. BGS is regularly contacted by members of the public, often as part of a property purchase, requesting more information about the risks to property. Campaigns associated with risks from coastal landslides are required (akin to those around water safety) to support decision making e.g. for re-routing coastal footpaths as these risk are not well understood or considered by the public (<https://thehut-nexus.eu>).