

Nationally Significant Infrastructure Projects (NSIPs) – proposed operational reforms

Author: Stephanie Bricker

The British Geological Survey (BGS) is a public sector organisation and the UK's premier centre for earth science information and expertise. BGS is a component body of the Natural Environment Research Council (NERC), which is part of UKRI (UK Research and Innovation). It has an annual budget of about £50 million, a little over half of which comes from the UK government's Science Budget, with the remainder coming from external commissioned research, and employs about 650 staff¹.

BGS is responsible for advising the UK government on all aspects of geosciences, as well as providing impartial geological advice to industry, academia and the public, with decades of corporate experience in the collection, collation, databasing, statistical evaluation, mapping and interpretation of geological and environmental data. We are the UK's principal provider of objective and authoritative geoscientific information and knowledge for wealth creation, sustainable use of natural resources, reducing risk and living with the impacts of environmental change.

Section 2.2.3 Providing greater clarity for applicants on who to consult and when

Question 7: *Are there any other amendments to the current consolidated list outlined in table 2.1 that you think should be made?*

Question 11: *Are there any other measures you think that government could take to ensure consultation requirements are proportionate to the scale and likely impact of a project?*

With respect to the pre-application service and consultation process, we encourage DLUHC and the Planning Inspectorate to consider the role of additional advisory bodies that do not have formal statutory consultee status but who can make a significant contribution to pre-application engagement. The British Geological Survey (BGS) is one such government body. The BGS, a research centre within UK Research and Innovation (UKRI) under the Dept. of Science, Innovation and Technology, is a world-leading geoscience organisation, focused on public-good science for government and commissioned research to understand earth and environmental processes. Government departments including DSIT, DESNZ, Defra, Cabinet Office, the Environment Agency, devolved governments and local authorities are key partners.

As the UK's premier provider of objective and authoritative geoscientific data and information, the BGS provides geological expertise in support of a number of Nationally Significant Infrastructure Projects, including Carbon Capture and Storage (CCS), Energy Storage, Pumped-storage schemes, Offshore Wind Projects, tunnelling operations, road and rail infrastructure. This includes provision of independent and authoritative technical advice to the UK Government; onshore-offshore regional-national geological data, maps and

models to support initial infrastructure planning and licensing of sites, and; specialist commercial services for specific infrastructure developments.

As the BGS is not a statutory consultee, the point at which BGS becomes engaged in the NSIP process varies – our data and advice may be sought at pre-application stage where potential geological constraints can be highlighted early e.g. ahead of licensing and infrastructure optioneering. Instead, or in addition, BGS expertise may be sought by the appointed contractors at the development stage, to advise on known geological constraints or to advise on remedial measures or provide refined geological understanding when unforeseen constraints are identified or problems are encountered.

Examples of BGS involvement at pre-application stage:

Offshore Wind: BGS provides regional geological data and information for offshore infrastructure projects e.g. provision of ground suitability data for The Crown Estate (TCE), which is used for geospatial planning purposes and site selection for future leasing/auction rounds. In addition, these data and information form a resource for applicants/developers at pre-application stage to undertake baseline desk-based studies of proposed lease areas (once released by TCE) in an effort to de-risk site selection by providing more confidence in ground conditions prior to submitting an application in auction phase.

Offshore Wind: BGS provides specialist offshore geological information (e.g. seismic interpretation), often as a subcontractor, to support development of ground models required for the NSIP application. BGS work with project partners to integrate geotechnical, geophysical and geological datasets into a fully integrated ground model, used for foundation design of individual wind turbine generators (WTGs), in addition to subsea export cable route selection required to connect these green energy sources into the onshore national grid.

Onshore transport infrastructure: BGS produces a range of data products for land-use planning and construction, to provide early-stage awareness of ground suitability and identify potential hazards. The transport and linear infrastructure sector is one of the largest users of [BGS data products](#) (58% share of licences between 2017-2020) to assess ground conditions ahead of construction (Geology maps; Geosure; BGS Civils).

Examples of BGS involvement at development stage:

Pumped-storage schemes: Scotland – Pumped storage infrastructure schemes form major national developments in the UK's energy transition. The new [Coire Glas Pumped Hydro Storage scheme](#), for example, will double the current pumped hydro storage capacity of the UK. De-risking the engineering design and construction of these schemes, by having regional geological understanding in early design phases, was a key lesson learnt from the £140M Glendoe infrastructure failure in 2009. BGS is being commissioned to provide regional geological knowledge, alongside assessments of the regional structural setting and fracture network variability across the engineering sites, to inform early design phases of current new schemes.

Onshore transport infrastructure: Lower Thames Crossing - Following detection of problematic chalk horizons during initial ground investigation, BGS was commissioned to undertake additional field surveys and passive seismic surveys to detect flint bands and key geological horizons. This information was required to adapt technical operation of the Tunnel-Boring Machine (TBM) and slurry treatment plants.

Benefits of early-stage awareness of ground conditions and potential ground hazards are well-documented and support early consultation with the BGS. Barron, (2011) suggest that 30%-50% of projects experience delays due to unforeseen ground conditions while Chapman (2012) concluded that significant delays due to ground conditions probably occur in 17-20% of UK Projects. Specifically, a study of ten UK highway construction projects found final costs on average to be 35% above the tender sum, and in half of these inadequate GI or GI interpretation was identified as a cause (Littlejohn et al., 1994). And an assessment of 87 projects by the United States National Committee on Tunnelling Technology found that claims for unforeseen ground conditions occurred in 60% of projects, resulting in overall 12% cost increase (Gould, 1995).

Recommendation: As part of the NSIP reforms, the Planning Inspectorate should hold a list of specialist 'advisory consultees' for specific NSIPs and make these available to applicants as part of the pre-application service. For example, the BGS could be an 'advisory consultee' for NSIPs relating to e.g. CCS, RadWaste Disposal, Pumped-storage schemes, Offshore Wind and Tunnels.

BARRON, H. 2011 Maximising the benefit of past investment: the subsurface agenda: a case study from Glasgow.[Lecture] In: European Commission INSPIRE Conference, 2011, Edinburgh, UK, 27 June – 1 July 2011. British Geological Survey, 1-17

CHAPMAN, T. 2012. Geotechnical risks and their context for the whole project. ICE manual of geotechnical engineering: Volume I. January 2012, 59-73.

LITTLEJOHN, G S, COLE, K AND MELLORS, T W. 1994. Without site investigation ground is a hazard. Proceedings of the Institution of Civil Engineers. Volume 102 Issue 2, 72-78

Question 16: *To what extent do you agree that the submission of 'planning data' will provide a valuable addition as a means of submitting information to the Planning Inspectorate?*

Question 17: *Are there any other areas in the application process which you consider would benefit from becoming 'digitalised'?*

As the national custodian of geological data and recipient of geological data that is acquired as part of the infrastructure planning process, we are supportive of the submission of 'planning data'. We are also supportive of the recommendation by the National Infrastructure Commission (NIC) to require the sharing of baseline environmental data for NSIPs (NIC 2023: Delivering net zero, climate resilience and growth: Improving nationally significant infrastructure planning). A data-sharing platform for environmental data should extend to geological data; BGS would be pleased to advise further on this. The [Marine Data Exchange](#), hosted by The Crown Estate is a comparable service supplying offshore baseline data to support new offshore infrastructure, with these data coming directly from existing offshore wind farm developments including geotechnical and geophysical datasets that can inform on anticipated ground conditions for future SI planning and site selection purposes.

BGS has, for several years, been working with the construction and infrastructure sector to encourage the submission of geological and geotechnical data acquired during ground investigations, to BGS' National Geoscience Data Centre (e.g. Highways England is a large donor of ground investigation data). Through this process we have been advocating for the submission of digital geological data in the industry standard AGS-Data Format. Adoption of

these digital data workflows has resulted in an increase in data submission rate and significant efficiencies in data ingestion and re-serving of the data via BGS web services back to users. The benefit of these data services is recognised in the relaunched [Government Construction Playbook](#), which now includes a standard boiler clause stipulating that ground investigation data collected for public works projects must be deposited to BGS' National Geoscience Data Centre as soon as reasonably practicable. Allowing submission of 'planning data' and creating a baseline data-sharing platform would further enhance these digital workflows.

Question 42: *To what extent do you agree that updated guidance on the matters outlined in this consultation will support the Nationally Significant Infrastructure Project reforms?*

We are supportive of the intention to '*Strengthen existing pre-application guidance to emphasise the importance of identifying and resolving key issues early in the pre-application process (Section 2.3)*'. As outlined previously, it is important that the guidance refer to the role of non-statutory government bodies, such as BGS, that can provide expert advice and information to help resolve issues at an early stage. Specifically the guidance should highlight the need to assess geological conditions at an early stage, doing so can help determine the viability of sites ahead of issuing the DCO, inform infrastructure alignment, identify ground constraints and inform construction methods. Collectively robust geological appraisal at an early stage can help reduce the risk of project overrun and overspend.

We are supportive of plans to update the National Policy Statements as part of the NSIP reforms and welcome the opportunity to contribute to the revisions of the National Policy Statements relating to Energy, Water and Transport infrastructure given the strong geological component for several Nationally Significant Infrastructure Projects e.g. CCS, RadWaste Disposal, Pumped-Storage Schemes, Tunnelling and Cavern development operations and Offshore Wind. We are in agreement with other consultees that the National Policy Statements for NSIPs should be accompanied by a formal Spatial Plan (e.g. NIC Recommendation 1). The Spatial Plans should include a subsurface plan in recognition of the strong geological/subsurface component of several NSIPs. Outcomes from the Government Office for Science 'Future of the Subsurface' foresight project, for which BGS is providing expertise, should inform this discussion.