

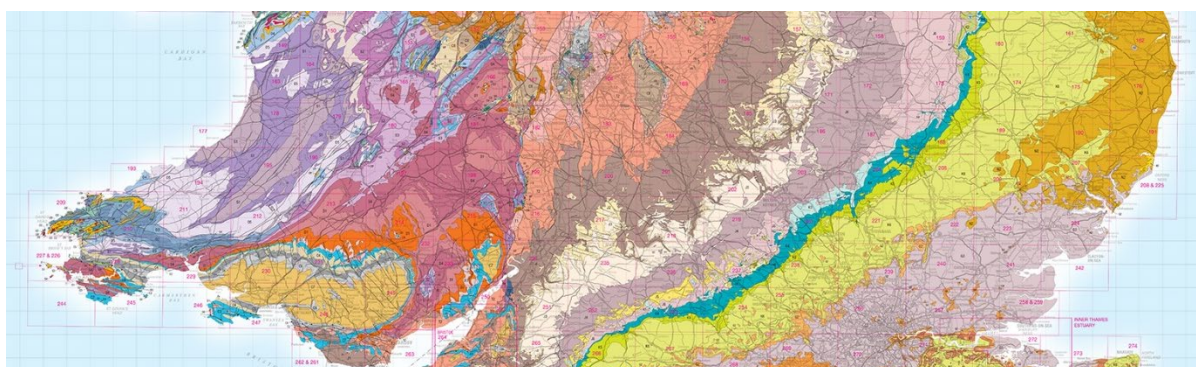
## British Geological Survey 2016-2021 Evaluation Report

### Document version control and approval

Version	Editors	Authors	Date
Draft 01	Thomas Haynes (NERC), Ben Williams (NERC) and Domnica Radulescu (NERC)	Daniel Lebel, Thalia Baldwin, Iain Stewart, Flemming Getreuer Christiansen, Morten Smelror, Jessica T Smith, and Nigel Jackson.	13/01/22
Draft 02	Thomas Haynes (NERC) and Ben Williams (NERC) and Domnica Radulescu (NERC)	Daniel Lebel, Thalia Baldwin, Iain Stewart, Flemming Getreuer Christiansen, Morten Smelror, Jessica T Smith, and Nigel Jackson.	21/01/22
Draft 03	Thomas Haynes (NERC) and Ben Williams (NERC) and Domnica Radulescu (NERC)	Daniel Lebel, Thalia Baldwin, Iain Stewart, Flemming Getreuer Christiansen, Morten Smelror, Jessica T Smith, and Nigel Jackson.	18/02/22
Final	Thomas Haynes (NERC) and Domnica Radulescu (NERC)	Daniel Lebel, Thalia Baldwin, Iain Stewart, Flemming Getreuer Christiansen, Morten Smelror, Jessica T Smith, and Nigel Jackson.	29/07/22

Approver name	Approver role	Date
Thomas Haynes & Domnica Radulescu	Final QA before publishing	07/12/22
Iain Williams	QA of Final Version	29/07/22
Sophie Laurie, Shewly Choudhury and Iain Williams	QA of Draft 01	18/01/22
Iain Williams	QA of Draft 01	19/01/22
Iain Williams	NERC HO approval of draft 02	24/01/22
Daniel Lebel	Panel Chair approval of draft 02	24/01/22
Keely Mills	Factual corrections of draft 02	15/02/22
Iain Williams & Sophie Laurie	QA of Draft 03	18/02/22

# British Geological Survey 2016-2021 Evaluation Report



## Editors

Mr Thomas Haynes, NERC  
Dr Ben Williams, NERC  
Mrs Domnica Radulescu, NERC

## Authors

Dr Daniel Lebel, Director General, Geological Survey of Canada  
Ms Thalia Baldwin, Geospatial Commission  
Dr Flemming Getreuer Christiansen, Independent consultant, previously Geological Survey of Denmark and Greenland  
Mr Nigel Jackson, Mineral Products Association  
Dr Morten Smelror, Geological Survey of Norway  
Miss Jessica T Smith, Atkins  
Professor Iain Stewart, University of Plymouth

## Executive summary

### Purpose and methods

This report presents the findings of the first five-year (2016-2021) evaluation of the British Geological Survey (BGS). The Evaluation was conducted by an independent peer review panel in December 2021 based on evidence supplied by BGS. The Evaluation focusses on BGS activities as stated in the Memorandum of Understanding (MoU) between BGS and the Natural Environment Research Council (NERC) as converted into the following objectives in table 1.

Each objective was rated against a four-point scale from “Requirements not or only partially met” to “Excellent provision of requirements”.

### Findings

The panel concluded that overall BGS provided a ‘*good provision of requirements*’ across the period 2016-2021 with further details on the scorings against each objective provided in table 1.

Table 1: Executive Summary Evaluation ratings

Objective No.	Description	Evaluation Rating
Objective 1	Develop and maintain the National Geological Repository as the UK’s leading repository of data and knowledge of UK geology and ensure that the UK government, industry, academia, and the public receive beneficial services from the National Geological Repository.	Good provision of requirements
Objective 2	Develop and maintain the BGS as the main provider of impartial and independent geoscientific advice to the UK government, industry, academia, and the public.	Good provision of requirements
Objective 3	Ensure the entire UK research community is provided access to analytical facilities (including the geophysical observatory network) for UK geology in support of Earth Science research and government needs.	Good provision of requirements
Objective 4	Provide leadership and steer in UK geoscience.	Good provision of requirements
Objective 5	Utilise the skills, expertise and knowledge developed and held by the BGS to support international initiatives	Excellent provision of requirements
<b>BGS Overall</b>	<b>Good provision of requirements</b>	

If further subdivisions were included within the scoring matrix BGS would have likely scored highly in the ‘good’ category, bordering towards ‘excellent’. In part, the reason for the scoring of ‘good’ rather than ‘excellent’ is evidence of further work that needs to be done for BGS to reach its full potential, particularly in the realm of strategy development, but the panel also note and accept that a strategy review is planned for BGS soon after the completion of the evaluation exercise in 2022.

### Recommendations

Based on the findings presented in the previous section including: the initial recommendations considered for each objective and the conclusions of the overall rating from this evaluation period, the following core recommendations were prepared by the independent evaluation panel. These recommendations are made by the panel (to both BGS and NERC) to aid BGS in achieving a rating of

‘excellent’ in the next cycle of evaluation and ensure that the strategic planning and arrangements for BGS are fit for purpose.

1. Integrate the findings of the evaluation into the 2022 BGS strategy plan review
2. Lead/steer the development of a UK geoscience strategy with the geoscience community
3. Enhance the promotion of BGS’ work and capability to its stakeholder base and beyond
4. Review the potential barriers to accessing BGS data and facilities
5. Define BGS’ approach to net zero, sustainability and geo-ethical concerns in their international working
6. Improve BGS’ systems for internal review, gap analysis and evidencing BGS’ impact
7. Ensure the role of BGS, its funding mechanisms, and contractual arrangements (including the NERC and BGS MoU) are fit for purpose for 2022-2026

#### **Management responses and preparations for the 2022-2026 evaluation**

Both BGS and NERC were asked to develop management responses in relation to the findings and recommendations provided within this report. These management responses are included in Annexes to this report and provide details on how each organisation will action the recommendations made by the evaluation panel.

## Acknowledgements

NERC and the independent evaluation Chair would like to thank the full evaluation panel for providing their expertise and time for this evaluation; their considered, constructive, and pertinent comments have been extremely useful and will be valuable to NERC and BGS as the findings of this evaluation are acted upon. We would like to thank all the BGS staff that coordinated, contributed to, authored, and edited the Evidence Pack, without all your hard work, this evaluation would not have been possible. Our gratitude is also extended to all those who completed the stakeholder survey, whose feedback was central to this evaluation.

## Table of Contents

Acknowledgements.....	5
Introduction .....	6
Purpose and scope of the evaluation .....	6
Audience .....	6
Who are BGS? .....	6
Background information and context.....	7
Evaluation governance.....	7
Methods.....	8
Objective setting .....	8
Independent evaluation panel.....	8
BGS evidence report and pack.....	8
BGS stakeholder survey .....	9
Evaluation rating criteria.....	9
Evaluation findings.....	10
Overall evaluation findings .....	20
Recommendations .....	22
Management Responses.....	25
Preparations and lessons learned for the next cycle of evaluation (2022-2026) .....	25
Annex A – BGS aims as in paragraph 16 of the MoU between NERC and BGS.....	26
Annex B – Evaluation questions.....	27
Annex C – Panel membership .....	29
Annex D – BGS Evidence Report .....	29
Annex E – NERC Management Response to the BGS Evaluation (2016-2021) Recommendations.....	29
Annex F – BGS Management Response to the BGS Evaluation (2016-2021) Recommendations .....	31

## Introduction

This report presents the findings of the first five-year (2016-2021) evaluation of the British Geological Survey (BGS). The Evaluation was conducted by an independent peer review panel in December 2021 based on evidence supplied by BGS. The Evaluation focusses on BGS activities as stated in the Memorandum of Understanding (MoU) between BGS and the Natural Environment Research Council (NERC) (see Annex A).

This report is structured around five main sections:

- Introduction – setting context for the evaluation;
- Methods – outlining the specific evaluation measures and a brief description of the overall approach;
- Findings – the main body of the report where the findings are presented and discussed;
- Recommendations – actions that are recommended to respond to the evaluation findings;
- Next steps.

### Purpose and scope of the evaluation

The purpose of this exercise was to provide an independent evaluation of the BGS's role as defined in paragraph 16 of the MoU between NERC and BGS (Annex A) with the specific aims of determining:

- Is BGS delivering towards its role as set out in the MoU;
- How successful is BGS at achieving its goals as set out in the MoU; and
- Are any improvements or changes required to better meet the ambitions of the MoU?

This evaluation focuses on outputs, and outcomes delivered by BGS and is not a process evaluation; therefore, does not evaluate BGS management processes.

This evaluation focussed on the period 2016 - 2021 and is the first 5-year evaluation of BGS using a new evaluation framework designed by NERC.

### Audience

The audience for this report includes the following institutes and groups:

- BGS Board;
- NERC Head Office;
- NERC Council;
- BGS;
- BGS's stakeholder community; and
- NERC stakeholders including UKRI and BEIS.

It should be noted that a summarised version of this report will also be published.

### Who are BGS?

The British Geological Survey (BGS) is the UK's national geological survey. It delivers public good science and research to understand earth and environmental processes that matter to people's lives and livelihoods. BGS focuses on providing objective and authoritative geoscientific data, information, and knowledge to help society to use its natural resources responsibly, manage environmental change, and be resilient to environmental hazards. BGS also work closely with international organisations (government, non-government), including geological surveys and geoscience research institutes worldwide, to build geoscience-related research capacity and infrastructure, and contribute to improved health and well-being.

BGS are part of UK Research and Innovation (UKRI) and a research centre under NERC, with an independent BGS Board created in 2018.

Annual turnover is in the region of £50 million, about 50 per cent of which comes from UKRI-NERCs directly commissioned National Capability funding, with the remainder being commissioned and competitively contracted from the public and private sectors.

### Background information and context

This evaluation process is the first of its kind for BGS. Prior to the 2021 evaluation process, BGS was evaluated as part of the [Evaluation of NERC Centres](#). This process focussed on the higher education Research Excellence Framework, with a two-part return on [staff and research outputs](#) and [impact case studies](#). In 2018, in discussion with NERC, the process by which BGS was to be evaluated was modified and redesigned by NERC to reflect its role as a geological survey as outlined in the MoU with NERC, rather than a NERC centre focussed on its research excellence and impact as a priority. Therefore, the overall framing of the 2017-2021 NERC evaluation and the language used herein is not directly comparable with previous BGS evaluations via the Evaluation of NERC Centres process.

### Evaluation governance

The BGS evaluation process was agreed between NERC Head Office and BGS in consultation with NERC Management Board. It was agreed that NERC Head Office would facilitate the independent review panel and BGS would be responsible for evidence gathering and reporting.

## Methods

### Objective setting

The role of BGS can be converted to the following five objectives, which BGS was then evaluated against for 2016-2021, these are:

- **Objective 1:** Develop and maintain the National Geological Repository as the UK's leading repository of data and knowledge of UK geology and ensure that the UK government, industry, academia, and the public receive beneficial services from the National Geological Repository.
- **Objective 2:** Develop and maintain the BGS as the main provider of impartial and independent geoscientific advice to the UK government, industry, academia, and the public.
- **Objective 3:** Ensure the entire UK research community is provided access to analytical facilities (including the geophysical observatory network) for UK geology in support of Earth Science research and government needs.
- **Objective 4:** Provide leadership and steer in UK geoscience.
- **Objective 5:** Utilise the skills, expertise and knowledge developed and held by the BGS to support international initiatives

Evaluation questions were developed for each of the above objectives, these can be found in Annex B.

### Independent evaluation panel

This evaluation used an international independent panel of experts providing a breadth of relevant expertise of national geological surveys and their stakeholder base (see Annex C for panel membership) to assess BGS against the evaluation objectives outlined above. The Independent panel Chair supported the development of the format for gathering BGS evidence, preparations for the induction of the full panel, and the final evaluation panel arrangements.

The independent panel members were free of major conflicting interests as set out in the NERC Conflict of Interest policy. The panel included:

- A Chair with experience of geological survey evaluations and a leader from equivalent geological surveys in another country
- Panel members representative of various BGS stakeholders and equivalents including:
  - An industry-based user of BGS's work;
  - A government-based user of BGS's work;
  - A member of the research community that utilises BGS's services;
  - A research-active geoscientist; and
  - Leaders from equivalent geological surveys in other countries.

The independent evaluation panel convened on 8<sup>th</sup>-10<sup>th</sup> December 2021. A Q&A session with the independent evaluation panel and BGS science leads and managers was held on the 8<sup>th</sup> December. The Q&A session and independent panel meeting was held virtually.

### BGS evidence report and pack

BGS staff were supported by NERC Head Office staff in the development of an evaluation method statement, which outlined the agreed key indicators, data sources, and collection methods for each evaluation question. This comprised a mix of evidence including primary data collection (e.g. a stakeholder survey) and synthesis of existing data (e.g. system data). The range of evidence provided to the panel included citation analysis, independently conducted and analysed stakeholder survey,



case studies, and data reviews. The evidence pack comprised a core 65-page evidence report and 70 annex documents. In addition, the panel made use of publicly accessible information (such as the BGS website). Details regarding access to the BGS evidence report are provided in Annex D.

### BGS stakeholder survey

While most of the evidence was gathered and presented by BGS, the stakeholder survey was conducted by an independent organisation, Technopolis Ltd. Survey responses were sought from those who had previously engaged with BGS. In addition, a publicly available link was shared via BGS's social media channels and website.

### Evaluation rating criteria

The panel used the following standardised assessment guidance to provide a rating for each objective and BGS overall (see table 2).

Table 2: BGS Evaluation criteria for assigning ratings

Rating	Definitions
Excellent provision of requirements	<ul style="list-style-type: none"> <li>Strong support that the objective is being met or exceeded in all areas with only a few minor gaps or areas for improvement</li> <li>BGS is providing an excellent world leading provision of results in this area that other organisations would want to emulate</li> <li>Regarded by relevant stakeholders in very high esteem</li> <li>BGS leads the way in setting international or national standards/ best practice or similar</li> <li>Demonstrable evidence that BGS provides excellent service to a wide number of users</li> </ul>
Good provision of requirements	<ul style="list-style-type: none"> <li>Strong support that the objective is being met in all areas with several minor gaps or a few moderate or areas for improvement</li> <li>BGS is providing a good provision of results in this area that follows current best practices of equivalent organisations and public sector expectations</li> <li>Regarded by relevant stakeholders in high esteem</li> <li>BGS Contributes to setting national or international standards/ best practice or similar</li> <li>Demonstrable evidence that BGS provides good service to high number of users or an excellent service to a moderate number of users</li> </ul>
Satisfactory provision of requirements	<ul style="list-style-type: none"> <li>Support that the objective is being met in most areas with many minor gaps or several moderate or areas for improvement or one larger area for improvement</li> <li>BGS is providing a satisfactory provision of results in this area that follows current accepted practices and public sector expectations.</li> <li>Well regarded by relevant stakeholders</li> <li>BGS follows good practice and may contribute evidence toward new standards</li> <li>Evidence that BGS provides satisfactory service to fair number of users or a good service to a lower-than-expected number of users</li> </ul>
*Requirements not or only partially met	<ul style="list-style-type: none"> <li>Minimal support that the objective is being met or evidence to suggest multiple larger areas for improvement or a significant failing</li> <li>BGS's provision of results is not meeting current accepted practices and public sector expectations.</li> <li>Poorly regarded by relevant stakeholders</li> <li>BGS does not follow good practice or changes to this in a timely manner</li> <li>Evidence that BGS provides satisfactory service to a lower-than-expected number of users or a poor or non-existent service where it would be expected</li> </ul>
*Insufficient Evidence	<ul style="list-style-type: none"> <li>There is insufficient evidence to assess the objective adequately</li> </ul>

While a rating was only given for each evaluation objective, the Panel were asked to consider the evaluation questions when assigning this (Annex B).

Each member provided confidential pre-scores to the Secretariat along with provisional comments. Following discussion of the evidence at the Panel meeting members discussed their scores and came to consensus for the final agreed rating.

## Evaluation findings

This section presents the ratings, strengths, and areas for development of BGS against each of the five objectives and an overall rating and commentary for BGS in 2016-2021 provided by the independent evaluation panel (referred to from here as ‘the panel’). The evaluation questions can be found in Annex B.

<b>Objective 1:</b>	<b>Develop and maintain the National Geological Repository as the UK’s leading repository of data and knowledge of UK geology and ensure that the UK government, industry, academia, and the public receive beneficial services from the National Geological Repository.</b>	
<b>Rating:</b>		Excellent provision of requirements
	<b>X</b>	<b>Good provision of requirements</b>
		Satisfactory provision of requirements
		Requirements not or only partially met
		Insufficient evidence
<p><b>Strengths:</b></p> <p><i>Developing and maintaining the UK’s leading geological repository:</i> The panel considered BGS to be providing the UK’s leading repository of data and knowledge of UK geology which included the National Geoscience Data Centre (NGDC) and the physical asset archive. The scope and range of the data offering was very strong and of equivalence and in some areas exceeding those held by other national geological surveys.</p> <p><i>Strong links with BGS policy and strategy:</i> There is a strong connection between the development and maintenance of UK geological data within BGS policies and strategies; for example, it is included in the BGS Strategy and new Digital Strategy (2020-2025) which included high ambitions for BGS’s work in this area and an overall open access policy, thus showing the amount of consideration BGS has given to its existing data assets and how it plans to manage them in the future.</p> <p><i>State of the art online resources:</i> BGS has state of the art database systems, search engines, and user interfaces allowing online users access to relevant primary datasets using a “self-service” system. In addition to the digital data and search utilities, there are state of the art tools for data visualisation and GIS applications.</p> <p><i>Comprehensive data records:</i> BGS maintains comprehensive and well-documented datasets including detailed metadata which help facilitate its data being re-used with appropriate accreditation and supporting information.</p>		
<p><b>Areas for development:</b></p> <p><i>Coverage and data gaps:</i> The evidence provided little insight into how comprehensive the coverage of the data and NGDC are, nor anything about data gaps or gaps in the user service offering, which would have been beneficial for the panel to consider in the evaluation.</p> <p><i>Primary user analysis:</i> Although primary data users are very positive about the NGDC, many stakeholder groups would benefit from more overviews, analysis, and interpretations of datasets tailored to their sectors. The development of a priority strategy as to which analytics and interpretations would be most useful to BGS’ key stakeholders would be beneficial.</p> <p><i>Chargeable data services and value for money:</i> The extent to which chargeable data services (including access to certain types of data and physical archives) are regarded as providing ‘value for money’ is not clear from the evidence. While customers are paying for these services, it is unclear if any potential customers being lost due to the pricing. Some stakeholders had concerns about prices and complex licensing systems, which may be prohibiting some researchers to visit core- and sample facilities.</p> <p><i>Digital vs physical assets:</i> It is unclear whether the same benefits are being realised from the physical assets as for digital ones. While the digital access and user figures were well-defined and provided clear evidence of high user numbers, it was difficult for the panel to assess the benefits associated with physical lab access and how well used they were as presented in the evidence. It would be beneficial to consider how the impact and benefits of this access can be evidenced in the future.</p>		

**Discussion of how the evidence contributed towards this objective and rating:**

The panel considered the NGDC to be the UK's leading repository of geological data providing more than 56,000 digital users access per month with more than 1,000 organisations accessing data via the BGS data agreement. The service also evidences a growing number of digital users (more than 200 new data licences per year).

The usage and quality of the BGS data offering is backed up by the BGS stakeholder survey and analyses, but these were based on a rather low number of respondents (n = 67) compared to the thousands of users. The feedback from the stakeholder survey included high ratings for research and industry use, but lower for policy development or public administration use.

Case Study 1 (Brownfield Risk Calculator) demonstrated a strong example of how BGS is ensuring that they remain relevant and provide data with practical end uses.

The panel advised that the following measures of performance are important to consider in the future:

- a thorough overview of relevant data hosted by other institutions, industry, and authorities and the role and importance of BGS data relative to these other sources as well as comments on availability and restrictions in use;
- benchmarking with other geological surveys data and geological core and sample material repositories; and
- further information about the physical storage facilities, how these facilities and services meet the needs of users, and the benefits they provide.

The panel concluded that it was not clear whether the geoscience community, BGS stakeholders, and public were fully aware of the breadth of data products and services provided by BGS. There appears to be a need for better promotion of the services that BGS offer in this area, knowing the high quality of these.

**Initial recommendations matched to the objective for consideration by BGS:**

*Continued focus on developing and maintaining the UK's leading geological repository* - The panel thought it was important that the work already in motion regarding the maintenance and updating of database systems and considering the effective preservation of the physical archive should continue as planned. BGS should ensure that their ambitious strategies in this area and directly connected to this evaluation objective are internally monitored by BGS on a regular basis to ensure that priority areas are focussed on benefits to the BGS stakeholder community.

*Coverage and data gaps* – Further work on assessing missing data and coverage from BGS' service provision including consideration of private collections and data and archives would be beneficial. Key questions to consider include: Is there missing data? Can it be found/acquired? Are there any issues with ownership and access in relation to data owners and authorities that distribute such data? How can the 3D and 4D models be improved if much more data are made available?

*Review the potential barriers to accessing BGS data and facilities* – It is recommended that BGS demonstrate a greater understanding of barriers to accessing their physical facilities and data services and identify means to overcoming these. For example, can the chargeable service models and licencing agreements be made simpler? What is needed to make more data freely available? What lessons learned and experience can be drawn from alternative access models used by equivalent national geological surveys?

*Enhance the promotion of BGS' data and facilities capability* - BGS have developed very strong data resources and facilities for usage by their stakeholders and they have gathered significant capability in the development of such systems. There is potential to make a broader base of the UK stakeholder community aware of BGS' services and capabilities. Furthermore, there is also strong potential for using the database systems in international projects.

**Initial recommendations matched to the objective for consideration by NERC and BGS:**

*The role of BGS* - The panel felt that consideration of the benefits and hinderances to BGS' status and role needs further consideration. For example, should more data be delivered to BGS by legal statute/regulation, and would their legal status need to change to do so? Are there alternative ways to make data from other institutions, industry, and authorities available via the NGDC? Can the chargeable service models and licencing agreements be improved to expand the open access policy further?

*Appraise the need for 'usage' clauses and agreements, contracts, and regulations with data users* - These mechanisms would ensure that geoscience data from public funded bodies is delivered to BGS as a base agreement (as per similar mechanisms operated in other countries). This is particularly important for petroleum data that are expected to be used for many other purposes in the future (geothermal, carbon capture (utilisation) and storage (CC(U)S), blue hydrogen, energy and waste storage) and where the new users do not necessarily have the same competence and tools as geological and geophysical personnel from the oil industry. Such clauses are also highly relevant for other dynamic data (e.g., from satellites) in geohazard studies, e.g., changing bathymetry, changes of land surface (4D models).

<b>Objective 2:</b>	<b>Develop and maintain the BGS as the main provider of impartial and independent geoscientific advice to the UK government, industry, academia, and the public.</b>	
<b>Rating:</b>		Excellent provision of requirements
	<b>X</b>	<b>Good provision of requirements</b>
		Satisfactory provision of requirements
		Requirements not or only partially met
		Insufficient evidence
<b>Strengths:</b> <i>Expertise recognition:</i> The panel considered that the depth and breadth of expertise in BGS is recognised by industry and public sectors and is clearly evidenced.  <i>Active participation in relevant topics:</i> Stakeholders, including a large proportion of the public sector, welcomed BGS' active involvement in many of the thematic areas relevant to their core strategic remit, though the panel noted the small sample size of the stakeholder survey (also see Objective 4 on advancing leadership).  <i>Global steer:</i> BGS lead the way as an international exemplar and evidence specific, collaborative successes (e.g. World Magnetic Model; response to volcanic and seismic hazards) where BGS' expertise has driven progress globally.  <i>Responding to UK Government needs:</i> BGS demonstrate agility in responding to UK government needs and requests and provide suitable resource and professional expertise to support to such requests, though this could be further improved through a more formalised process.  <i>Critical feedback mechanisms:</i> Of particular note is BGS' provision processes to invite critical feedback and challenge on their advice which provides additional assurance.		<b>Areas for development:</b> <i>Definition of advice:</i> 'Advice' is broadly defined in the evidence provided making it hard for the panel to assess. For example, evidence of advice includes membership on committees, datasets, models, through the media, and commissioned reports. It is unclear if all this work is genuine advice or other forms of influence; as such, it is necessarily difficult to track its systematic provision and impact.  <i>Quality of advice:</i> Potential conflation of scientific excellence (e.g. accuracy of data/analysis; focus on pertinent questions; peer reviewed) with independence/impartiality when considering the quality of advice provided. More needs to be done to evidence the impact of BGS advice.  <i>Strategic steer and guidance:</i> The panel considered that BGS could enhance their provision of advice by providing greater strategic steer to UK government (and possibly other parts of the public sector) on key policy decisions of relevance to UK geoscience, but this role would require further consideration by BGS and NERC.
<b>Discussion of how the evidence contributed towards this objective and rating:</b> The panel considered that BGS was providing professional advice where requested and strong evidence on the internal processes in place to validate and assure the credibility of BGS' advice was provided.  The evidence clearly demonstrated the breadth of advice provided but further thought needs to be given to the core function and purpose of BGS, particularly how BGS can maximise its influence and impact on UK science and government systems, or if this is even a role expected of BGS. As BGS are a public body not a lobbying organisation or a government department careful consideration is required on how they could best interact with UK Government. There is no requirement from government to seek or consider their advice, which further complicates this area of BGS work. There are equivalent examples of geological surveys in other countries where they are strongly linked to government departments and provide such advice while also mandating the submission of data from their stakeholder to their systems. It would be beneficial to appraise such alternative systems of operation for BGS.		

It would be beneficial to consider how BGS assess whether they are successful in avoiding conflict of interest, given BGS' role in competing for funding to serve the public sector whilst also being expected to act as an impartial provider of advice to UK government.

It is advised that further processes are put in place to consider comparable advisors of advice and competitors to evidence further their status as a 'main provider' of advice.

Further consideration should be given to how the quality, value and impact of BGS advice is evidenced.

**Initial recommendations matched to the objective for consideration by BGS:**

*Stakeholder engagement strategy* – BGS should develop a clearer organisational strategy for stakeholder engagement to capitalise on its significant expertise and ensure this is made available to all others that would benefit, segmenting its approach to the:

- *Public sector* - BGS should clarify its remit and role in strategically supporting and/or steering UK government on UK geoscience topics and neutralise risks to perceived independence and focus on promoting its values and raising the visibility of its offer to this sector.
- *Private and academic sectors* – BGS should develop a capability statement for the marketplace, including identifying where it has a legitimate field of chargeable operations to better market its services.
- *General public* – BGS should articulate its relationship with the general public as part of its strategy update, identifying how/where they are being served (e.g. directly and/or through public sector customers). As an input to benchmark it might be helpful for BGS to test current measures of public engagement.

*Impact of BGS advice* - BGS should establish common organisational processes for measuring the impact of its advice.

<b>Objective 3:</b>	<b>Ensure the entire UK research community is provided access to analytical facilities (including the geophysical observatory network) for UK geology in support of Earth Science research and government needs.</b>	
<b>Rating:</b>		Excellent provision of requirements
	<b>X</b>	<b>Good provision of requirements</b>
		Satisfactory provision of requirements
		Requirements not or only partially met
		Insufficient evidence
<p><b>Strengths:</b></p> <p><i>Analytical facilities:</i> The panel commended an impressively broad range of analytical facilities (laboratories, field test sites, and geophysical observatories and monitoring networks) including those operated by BGS and those managed by BGS. The extension of analytical facilities beyond the traditional laboratory setting to include field test sites was noted to be positive.</p> <p>An average of 1,500 unique users per year to these facilities and publishing output demonstrates good use of these facilities. The evidence report demonstrated that BGS is working with an impressive and diverse range of partners in research using these facilities. The panel rates BGS' analytical facilities as Excellent.</p> <p><i>UK research community:</i> Although not formally defined, BGS' interpretation of the "UK research community" is diverse and includes industry.</p> <p><i>Government needs:</i> The case studies and science highlights in the evidence report demonstrate that government needs are being met.</p> <p><i>Access:</i> The report suggests that BGS views 'access' as extending beyond use of physical analytical facilities to include access to datasets and publications.</p>		
<p><b>Areas for development:</b></p> <p><i>Analytical facilities and BGS strategy:</i> The panel felt that the report lacked detail on the strategic approach to the establishment and operation of BGS' analytical facilities. It is clear that there are many high quality and specialist facilities but the drivers to their establishment and continued investment were not clear. It was unclear if the existing assets are aligned with BGS' strategic direction moving forwards.</p> <p><i>UK research community:</i> In Section 3.4 of the evidence report it is noted that &gt;70% of stakeholder survey respondents consider that BGS facilities "meet their needs entirely" or to "a large extent". Notwithstanding the low sample size, this indicates that almost a third of users do not agree with this; the reasons why were not clear from the stakeholder survey.</p> <p><i>Access:</i> It would be beneficial for BGS to consider how access to analytical facilities can be measured and benchmarked in the future this will allow BGS to provide greater context on the success (or otherwise) in providing access to the UK research community.</p> <p>Potential barriers to access and ways to mitigate require further appraisal in the future as these were not discussed in the evidence report. It would be helpful to understand, if charging to use services is potentially prohibitive? An appraisal of alternatives that may exist and are being used by UK researchers would also be useful.</p>		
<p><b>Discussion of how the evidence contributed towards this objective and rating:</b></p> <p>The panel confirmed that the breadth and scope of BGS' analytical facilities was clearly evidenced and the case studies and science highlights, were particularly useful in making the final rating for this objective. provided in the evidence report were useful and interesting.</p> <p>In the future it would be beneficial to provide a strategic overview of priorities and how the data provided measures up against competing facilities and services operated by other scientific institutes.</p>		

It is important that BGS consider the potential barriers to access and how can these be overcome in the future.

**Initial recommendations matched to the objective for consideration by BGS:**

*Analytical facilities and BGS strategy* - It is recommended that BGS consider the extent to which their analytical facilities are being used to meet the organisation's strategic aims and science programme and consider the strategic drivers to continued investment in these facilities. It is further recommended that BGS consider opportunities for recapitalisation of their analytical facilities.

*Access* - It is recommended that BGS demonstrate a greater understanding of barriers to accessing their analytical facilities and identify means to overcoming these. The panel felt that while there was strong evidence as to the calibre of the analytical facilities there was limited information on their accessibility to the UK research community. Accessibility is central to the MoU.



<b>Objective 4:</b>		<b>Provide leadership and steer in UK geoscience</b>
<b>Rating:</b>		Excellent provision of requirements
	<b>X</b>	<b>Good provision of requirements</b>
		Satisfactory provision of requirements
		Requirements not or only partially met
		Insufficient evidence
<b>Strengths:</b> <i>Level of engagement:</i> The panel considered that BGS demonstrates a good-excellent level of engagement with the international geoscience community while actively participating across the breadth of UK geoscience.  <i>Specialist knowledge and skills:</i> There was strong consensus from the panel that BGS was globally recognised for its skills, expertise and knowledge and clear evidence that, through its excellence in research and data science, BGS was without doubt a leading national geological survey.  <i>Science prioritisation:</i> BGS' science prioritisation demonstrated an excellent internal deliberative process of participatory strategic development, although it was less clear how this extended externally to provide UK leadership.		<b>Areas for development:</b> <i>Leadership and steer of UK geoscience:</i> In terms of the top line NERC objective of providing steer and direction in UK science, the report did not convincingly show direct evidence of how BGS was actively 'setting the agenda' with and for the UK geoscience community.  <i>Comparison with other leadership/influencers:</i> It was noted that there were other groups claiming to be the voice of the UK geoscience community and the go-to authority on UK geoscience issues (e.g. Geological Society of London), and the report did not identify areas where the BGS could improve/expand its remit as a premier thought-leader and sector influencer in UK geoscience.
<b>Discussion of how the evidence contributed towards this objective and rating:</b> The panel agreed there was clear evidence of BGS' active involvement in a wide range key and relevant topics of importance to UK geoscience via engagement with various initiatives, programmes, committees, and partnerships, but there was limited evidence provided to substantiate the view that the BGS was steering the direction of UK geoscience. Such information was limited to the stakeholder survey responses, with a lack of supporting case studies or evidential narrative that demonstrated the BGS's essential and critical role in catalysing and driving forward the UK geoscience community.  Despite an impressive breadth and depth of high-prestige external professional engagement, there is a lack of clarity about the extent to which representation on national/international committees and global geoscience programmes was proactively facilitated and strategically considered by BGS as an institute and thus reflected strategic organisational intent or if such engagement was driven by individuals.		
<b>Initial recommendations matched to the objective for consideration by BGS:</b> <i>Consider BGS as a 'thought leader' in the UK</i> - The panel encourages the BGS to be bolder in its UK leadership aspirations by being a thought leader for the UK geoscience community and to develop a stronger and more distinctive brand about what it offers both the UK geoscience community and their key stakeholders in academic, industry, government and the wider public.  <i>Lead/steer the development of a national geoscience strategy</i> - To deliver on its remit in the MoU with NERC to provide leadership and steer in UK geoscience by extending its excellent internal science prioritisation process and engage with leading groups in academia, industry, and government to set the agenda for future UK geoscience through the development of a national geoscience strategy.		

<b>Objective 5:</b>	<b>Utilise the skills, expertise and knowledge developed and held by the BGS to support international initiatives</b>	
<b>Rating:</b>	<b>X</b>	<b>Excellent provision of requirements</b>
		Good provision of requirements
		Satisfactory provision of requirements
		Requirements not or only partially met
		Insufficient evidence
<p><b>Strengths:</b></p> <p><i>Expertise, experience, and qualifications:</i> The panel agreed that BGS staff working in international areas are highly qualified with a wide breadth of expertise and include many staff with significant experience of working on international projects.</p> <p><i>Unique international portfolio:</i> From the panel's broader experience, it is unique to see a geological survey with so much investment outside of its core country. Foreign development and/or foreign policy has driven this and BGS is well positioned to be an international voice and offer foreign aid.</p> <p><i>Close alignment with international strategies:</i> BGS international activity is directly connected to the BGS Science Strategy and provides alignment of the research with the UN Sustainable Development Goals (SDGs), the 2015 Paris Agreement, and the Sendai Framework for Disaster Risk Reduction (2015–2030).</p> <p><i>International capacity-building:</i> BGS is fully capable and able to lead the development of capacity-building partnerships with geological survey organisations in low- and middle-income countries.</p> <p><i>Leading on digital data management:</i> The panel considered BGS to be providing leadership in digital data management and international cooperation, by advancing digital technology and systems that are used in an international context to acquire, store, manage, and analyse geoscientific data. There are several multilateral geoscience initiatives for which the BGS is highly regarded, is internationally leading, and is a major multi-decadal contributor, including the International Ocean Discovery Program (IODP), One Geology, and Intermagnet.</p>		
<p><b>Areas for development:</b></p> <p><i>International engagement strategy:</i> There was no evidence of a clear strategy on international engagement (although there are links to UN SDGs and the Paris Agenda). Due to the multiplicity of players and funding sources, there is risk that the international activities become fragmented thematically. A more strategic approach may need to be considered with the UK Foreign Commonwealth and Development Office (FCDO) to maximise impact.</p> <p><i>Awareness and promotion of international work with key stakeholders:</i> The panel considered that BGS' UK stakeholders (including industry and the public sector) don't fully appreciate the breadth and scope of BGS' excellent international work and capability. It is important to consider the comparable work undertaken by equivalent national geological surveys with closer policy alignment to their domestic government and how they approach foreign investment priorities and outcomes. Improving awareness of the international capabilities of BGS and its alignment with UK government would enhance the relationship BGS have with UK government and the public sector, while also promoting the benefits of BGS' international scope and capability to key UK stakeholders working internationally, such as those in the Industrial sector.</p> <p><i>Geopolitical considerations:</i> The major changes that are occurring on the international geopolitical landscape may put at risk the foreign policy-driven funding that BGS has been able to secure in the past. For example, in light of Brexit changes, there is a small amount of risk exposure for the BGS regarding past EU funded (decarbonation) research at a level of about 10% of its total international related funding. There was also limited evidence regarding BGS' ethical approach to geopolitical considerations (i.e. how do BGS choose when they should or shouldn't work in a country [given full financing])?) which could open BGS up to increased risk.</p>		
<p><b>Discussion of how the evidence contributed towards this objective and rating:</b> The evidence provided showed that BGS have a long-standing history of supporting international initiatives. BGS, within the period of the evaluation, have provided leadership and participated with a number of international organisations including: OneGeology, European Plate Observing System (EPOS), European</p>		

Geological Data Infrastructure (EGDI), European Environmental Research Infrastructure (ENVRI), International Union of Geological Sciences – Commission for the Management and Application of Geoscience Information (IUGS-CGI), Group on Earth Observations (GEO), Global Earthquake Model (GEM), and European Network of Observatories and Research Infrastructures of Volcanology (EUROVOLC).

BGS received funding during 2016–2021 from a variety of sources that focussed on international work (£11 million annually). Including: The UK Official Development Assistance (ODA) budget including Global Challenges Research Fund (GCRF) and Newton Fund grants, The Foreign, Commonwealth, and Development Office (FCDO); research grants from a range of sources, particularly UKRI and its component funding councils; European Commission funding, Commissioned work by foreign governments, the World Bank, and industry.

Around 37% of data centre visitors/stakeholders come from overseas.

BGS also received positive feedback from stakeholders regarding their support and leadership of international initiatives, but it was noted that there were no references to contracts that they may have bid for and were unsuccessful for, or similar critical feedback from competitive bids.

The evidence report refers to many ODA funded projects, but the panel questioned whether the narrow scope of ODA limited what BGS could do on the international stage.

BGS are doing excellent work in the international sphere and should consider the risks this international focus brings to BGS' domestic mandate. By their nature geological surveys are usually domestic as a priority; however, the MoU does stipulate the international aspects of work and so it would be appropriate to look at the balance of domestic and international going forward. Disaster risk reduction (DRR) is something that all surveys need to consider, and it risks being overly fragmented if not approached strategically. For example, how would BGS cope and reprioritise its efforts with a policy change to less of an international focus?

The panel referenced Max Liboiron's recent paper<sup>1</sup> and suggested that the ethical positioning of BGS needs some careful consideration, particularly about where they would and wouldn't work (and developing an approach to such decision making). BGS must also consider climate awareness of their own carbon footprint, they will be one of the first geological survey organisations to grapple with some of these things, as they are so far ahead of their contemporaries.

In the future, the panel advised an overall context-setting piece in the evidence for this objective, focusing on policy and priorities, would be beneficial.

#### **Initial recommendations matched to the objective for consideration by BGS:**

*Net Zero and sustainability considerations in international operations* – The panel advise that a clear strategy and approach to how BGS consider Net Zero and Sustainability within their international operations would be beneficial and would act as an ambitious template for equivalent national geological surveys to follow.

*BGS strategy and geo-ethical statement on working in the international geopolitical environment* – Given the extent of international work in the evaluation period, the panel suggested that the ethical positioning of BGS needs some careful consideration, particularly about where they would and wouldn't work (and developing an approach to such decision making). BGS should consider the development of a geopolitical environmental assessment and stakeholder engagement plan regarding UK foreign policy and development-oriented programmes and funding to assess risk, vulnerabilities, and future project opportunities.

*Expanded promotion of international successes* – Consider publicising more widely, particularly with UK stakeholders, the international contributions of BGS to global sustainable development through geoscience, as a marketing and promotion instrument, primarily focussing on the benefits that would bring from the UK public and industrial sectors.

<sup>1</sup> Liboiron, M. Decolonizing geoscience requires more than equity and inclusion (2021) *Nat. Geosci.* **14**, 876–877.

## Overall evaluation findings

### Overall BGS Evaluation Rating 2016-2021:

Rating:		Excellent provision of requirements
	<b>X</b>	<b>Good provision of requirements</b>
		Satisfactory provision of requirements
		Requirements not or only partially met
		Insufficient evidence

### Overall comments on scoring from the independent evaluation panel:

With consideration to the individual scores provided above for the five objectives, the evidence pack submitted and the panel's experience and understanding of BGS' across the period 2016-2021, the panel concluded that overall BGS is providing '*good provision of requirements*'.

If further subdivisions were included within the scoring matrix BGS would have likely scored highly in the 'good' category, bordering towards 'excellent'. In part, the reason for the scoring of 'good' rather than 'excellent' is evidence of further work that needs to be done, particularly in the realm of strategy development, but the panel also noted and accepted that a strategy review is planned for BGS soon after the completion of the evaluation exercise in 2022.

### Overall comments on the strengths of BGS:

*BGS as an organisation and geological survey:*

The panel considered BGS to be a leading geological survey that surpasses many others. The confidence, competence, and skills of BGS experts is a significant strength.

The breadth and scope of their data offering, and services was considered UK leading as is their plan to develop and expand this offering. The digital data archives within the NGDC were considered state of the art and provide a valuable template for application in international projects and initiatives. BGS also provide access to physical archives and an impressively broad range of high-quality analytical facilities including laboratory and field-testing sites.

BGS provide expert independent and impartial advice on a wide range of topics within their remit and capability to UK and international stakeholders and provide mechanisms for critical feedback on such advice. Furthermore, BGS are actively involved in key topics and themes with a diverse range of stakeholders of relevance to the UK geoscience community. Of particular note is the excellent work BGS is doing internationally where they are leading the way in international initiatives and capacity building programme and partnerships where they operate as an example to other national geological surveys.

The panel consider BGS to be a science organisation that knows what they are doing and their passion for and engagement with geoscience is excellent.

### Overall comments on the areas for development of BGS:

*BGS as an organisation and geological survey:*

The panel considered one of the main areas for development from the evidence provided was an over-arching strategic narrative being in place for BGS. The panel are aware that BGS are currently reviewing their strategy, which will gather recommendations after this evaluation concludes and hope that the information provided in this report will be useful. The main areas that were highlighted throughout were around decision making processes by BGS as an organisation such as: how it determines which areas of research to focus on; which international initiatives to support vs. how it supports its domestic priorities; how it ethically appraises which countries it will work in; and which panels BGS should be included on to maximise its influence and what input is provided by BGS representatives in such panels. At times the evidence appeared to imply that BGS's experts were responsible for some of these decisions rather than BGS itself. BGS' current strategy is quite brief with broad themes that allow BGS plenty of flexibility, but don't tie back to the NERC and BGS MoU and there are also no outcomes mandated within the current strategy, which would be good to include in the upcoming strategy review period in 2022. However, the panel would like to highlight the importance of the evidence pack BGS

developed for this evaluation and how its authorship by science leads provides a unique insight into future themes of BGS strategy. The panel also anticipate that the NERC and BGS MoU and BGS strategy will become more aligned with time.

The panel also concluded that more thought needs to be given to the core function and purpose of BGS, particularly how BGS can maximise its influence and impact on UK science and government systems, or if this is even a role expected of BGS. As BGS are not a lobbying organisation or a government department, then there is no requirement from government to seek or consider their advice. There are equivalent examples of geological surveys in other countries that are strongly linked to government departments and provide such advice while also mandating the submission of data from their stakeholder to their systems. It would be beneficial to appraise such alternative systems of operation for BGS.

The panel also considered whether BGS' mixed funding model requires further appraisal and how it influences BGS' ability to strategically plan and develop and how it doesn't seem to allow BGS to plan with any assured certainty. The panel noted that this question was raised in Q&A sessions and that BGS didn't consider this to be a weakness, but there are limitations to BGS' funding (in terms of their financing, scope, and ability to financially forecast longer term), which makes matters such as the future of staff resourcing and financing its infrastructure a primary concern and not a strategic objective focus, therefore it could be considered a risk to any BGS strategic agenda that is put in place. However, the panel do accept that this is how BGS are organised to operate and are doing so very effectively.

**Overall comment on the NERC and BGS MoU:**

There are questions over the MoU, and these need further discussion based on the findings of this panel at both NERC and BGS. Is the MoU fit for purpose and suitably designed for the changing focus of priorities ahead of the UK and geoscience community?

## Recommendations

Based on the findings presented in the previous section including: the initial recommendations considered for each objective and the conclusions of the overall rating from this evaluation period, the following core recommendations were prepared by the independent evaluation panel. These recommendations are made by the panel (to both BGS and NERC) to aid BGS achieving a rating of 'excellent' in the next cycle of evaluation and to ensure that the strategic planning and arrangements for BGS are fit for purpose.

Evaluation recommendations 1-7 are for consideration by BGS and Evaluation Recommendation 8 is for consideration by NERC and BGS.

### 1. Integrate the findings of the evaluation into the 2022 BGS strategy plan review

The panel commented on a need for an overarching strategy to provide greater focus and purpose to BGS' work. The panel are aware that BGS have already planned for a strategy review in 2022, therefore this recommendation focusses on the key themes requiring consideration in the strategy review as per the findings of the evaluation:

- *Set measurable strategic objectives and monitoring progress* – It would be beneficial to consider how progress can be measured towards the objectives of the revised strategic plan. Developing metrics and milestones to track progress towards objectives would allow evidence to be gathered for BGS to meet its expectations and deliverables. It would also be useful to consider benchmarking against other equivalent geological surveys and appraise their experience, alternative mechanisms, and ideas.
- *Stakeholder engagement* – BGS should develop a clearer organisational strategy for stakeholder engagement to capitalise on its significant expertise and ensure this is made available to all others that would benefit, segmenting its approach to the:
  - Public sector - BGS should clarify its remit and role in strategically supporting and/or steering UK government on UK geoscience topics and neutralise risks to perceived independence and focus on promoting its values and raising the visibility of its offer to this sector.
  - Private and academic sectors – BGS should develop a capability statement for the marketplace, including identifying where it has a legitimate field of chargeable operations to better market its services.
  - General public – BGS should articulate its relationship with the general public as part of its strategy update, identifying how/where they are being served (e.g. directly and/or through public sector customers). As an input to benchmark it might be helpful for BGS to test current measures of public engagement.
- *Analytical facilities and prioritisation* – It is recommended that BGS consider the extent to which their analytical facilities are being used to meet the organisation's strategic aims and science programme and consider the strategic drivers to continued investment in these facilities. It is further recommended that BGS consider opportunities for recapitalisation of their analytical facilities.



- *Identify BGS domestic vs. international priorities* – BGS is doing excellent work in the international space and is in a unique position as a leader in this area, but this also needs to be appraised against the domestic priorities of a geological survey in the light of the changing geopolitical landscape including future UK government priorities based on Brexit and European policy changes around energy supply. Key questions include: Is BGS prepared for the potential support needed from UK Government in the coming years? Are the international priorities of BGS aligned with the UK foreign office?
- *Prioritisation and approach for working in the international geopolitical environment* – Given the extent of international work in the evaluation period, to support future strategic planning, BGS should consider the development of a geopolitical environmental appraisal and international stakeholder engagement plan regarding UK foreign policy and development-oriented programmes and funding to assess risk, vulnerabilities, and future project opportunities.

It is noted that some of the other recommendations below connect to broader BGS strategy too but were considered by the panel to be independent enough to be presented separately.

## 2. Lead/steer the development of a UK geoscience strategy with the geoscience community

The panel considered how BGS could enhance their leadership and steer of the UK geoscience community while also working collaboratively with other ‘thought leaders’ in this space and proposed the development of a national geoscience strategy. A UK geoscience strategy could be a focal point of such collaboration and allow BGS to operate as a rallying organisation for establishing priorities for the geoscience community which could also be considered by UK government. Further consideration by BGS would be needed on how such a strategy could be developed and what role BGS would play in its development and who’s mandate a national strategy should sit within (e.g. UK Government) along with consideration of how BGS already work with other ‘thought leaders’ and possible alternative mechanisms to enhance their leadership and steer of UK geoscience.

## 3. Enhance the promotion of BGS’ work and capability to its stakeholder base and beyond

BGS have significant capability, experience, and a world-leading portfolio of work. This is evidenced in detail in the BGS evidence report, but the panel agreed that BGS stakeholders (including the UK geoscience community, the industry sector, UK Government, and the general public) are not fully aware of the breadth and scope of BGS’ capability and work in both the UK and internationally. This might be partly connected to how BGS is promoted as a domestic geological survey, where its current scope of work is much broader and more influential than equivalent national geological surveys. A strategic awareness raising campaign of the scope of BGS’ work and capability would boost stakeholder support and provide greater influence over the geoscience community and UK government strategy.

## 4. Review the potential barriers to accessing BGS data and facilities

It is recommended that BGS demonstrate a greater understanding of the potential barriers to accessing their data and analytical facilities and identify means to overcoming these. The panel felt that while there was strong evidence as to the calibre of the analytical facilities there was

limited information on their accessibility to the UK geoscience community. Accessibility is central to the MoU.

## 5. Define BGS' approach to net zero, sustainability and geo-ethical concerns in their international working

BGS' position as a leader of geoscience in the international space means that they will be one of the first national geological surveys to tackle challenges associated with considering Net Zero and Sustainability in their international operations and how these strategies connect with both UK domestic strategy and international expectations.

The panel also suggested that the ethical positioning of BGS needs some careful consideration, particularly about where they would and wouldn't work (and developing an approach to such decision making). There is also a need to further consider how capacity development is ethically integrated into the countries that BGS support.

## 6. Improve BGS' systems for internal review, gap analysis and evidencing BGS' impact

BGS should further develop the evidence gathering systems established for this evaluation cycle to appraise gaps in BGS services and areas where BGS are aware they have further work to do so they can be critically appraised. There is also a need for BGS to develop a process for gathering evidence of their impact (including the impact of their support, advice, and engagement activities) and to gather further, comprehensive feedback from their stakeholder base. This will strengthen the evidence provided for future cycles of evaluation and be of significant benefit to BGS and NERC.

For consideration by NERC and BGS:

## 7. Ensure the role of BGS, its funding mechanisms, and contractual arrangements (including the NERC and BGS MoU) are fit for purpose for 2022-2026

The panel advise that both NERC and BGS consider the role of BGS as a national geological survey and how can both benefit and hinder some of its planned activity and strategic direction, such as leading UK geoscience, providing impartial and independent advice to UK government, and offering international support (all identified in the MoU). It is noted that UK Government are under no obligation to consider BGS' advice as they are not part of a formal government department and lack the legal statutes and agreements to acquisition all geoscience data from third parties of public funds. As BGS is also at times a provider of chargeable geoscience support, there are also challenges associated in providing impartial and independent advice.

Considering the above, there is a need to:

- Review the wording of the MoU to ensure it reflects the intended role of BGS and its overall strategy;
- Consider alternative mechanisms from the current mixed funding-model (an appraisal of other national geological survey mechanisms would be beneficial); and
- Consider whether the contractual obligations of public funded projects can be enhanced to allow BGS mandatory acquisition of geoscience data.



## Management Responses

Both BGS and NERC were asked to develop management responses in relation to the findings and recommendations provided within this report. These management responses are included in Annexes E and F and provide details on how each organisation will action the recommendations made by the evaluation panel.

## Preparations and lessons learned for the next cycle of evaluation (2022-2026)

A separate report reviewing the process of this first cycle of the BGS evaluation will be compiled in 2022 including feedback from the independent panel, BGS and NERC HO to improve the evaluation process for the second cycle of BGS evaluation (2022-2026).

## BGS Evaluation 2016-2021 Annexes

### Annex A – BGS aims as in paragraph 16 of the MoU between NERC and BGS

As outlined in paragraph 16 of the MoU, the BGS has the following aims:

- To provide the national repository of data and knowledge of UK geology for national purposes.
- To develop services to enable government, business, and the public to benefit from the national repository archive of data and knowledge.
- To provide impartial and independent advice to government, business, and the public in relation to UK geology.
- To provide analytical facilities, observatories, and monitoring networks in support of Earth Science research and government needs which are accessible to the entire UK research community.
- To provide UK leadership and to make skills, expertise, and knowledge available globally.
- To undertake research and development in pursuit of the above aims.

## Annex B – Evaluation questions

The following questions will be the focus of the evaluation and BGS will gather evidence to justify the answer to each of these questions. Evidence of BGS performance and comparisons with analogous geological surveys in other countries should be provided where appropriate.

**Objective 1:** *Develop and maintain the National Geological Repository as the UK's leading repository of data and knowledge of UK geology and ensure that government, businesses, and the public receive beneficial services from the National Geological Repository.*

- Has BGS developed a repository of geoscientific data and knowledge that holds the most comprehensive and up to date data in the UK?
- Is the National Geological Repository the main source of data and knowledge for all UK branches of geoscience?
- Are there any ways the National Geological Repository can be improved to ensure its status as the leading UK repository?
- Are the services provided by BGS to stakeholders considered to be beneficial?
- Are the services provided by BGS considered value for money?
- Are there any service gaps highlighted by BGS stakeholders that would be beneficial to consider?
- Are there any stakeholders or potential consumers of UK geoscience knowledge and data that services are yet to be considered for?

**Objective 2:** *Develop and maintain BGS as the main provider of impartial and independent geoscientific advice to the UK government, industry, academia, and the public.*

- Is BGS the main provider of impartial and independent geoscientific advice to:
  - the UK Government;
  - industries operating in Britain;
  - academia in Britain; and
  - the general public in Britain?
- What feedback has BGS received from the advice it has provided?
  - Did the advice address the original request?
  - Were solutions identified and recommendations given?
- How much advice is provided and which sectors/parts of society request advice?
- Are there any ways that BGS's impartial advice can be improved?
- Are there any sectors or parts of society that advice is not provided to where geoscience is a relevant factor? Do BGS have any plans to expand its services into any of these areas?
- Are there any examples where there have been conflicts of interest in the provision of advice and how were these addressed?
- Does BGS maintain a reputation for independence and impartiality? Could this be improved?

**Objective 3:** *Ensure the entire UK research community is provided access to analytical facilities for UK geology in support of Earth Science research and government needs.*

- Does the UK research community have access to analytical facilities for UK geology that are organised or hosted by BGS?
- Are there any analytical facilities that the UK research community require regarding UK geology, that are not currently provided by BGS? Are there any provided that do not support high quality analysis?
- Do users of the analytical facilities provided by BGS consider them useful and fit for purpose to support the needs of scientific research and government needs? Are they considered value for money?
- Do the facilities provided by BGS provide an appropriate capacity to meet the current and likely future demands requested from the UK research community?

**Objective 4:** *Provide leadership and steer in geoscience*

- Is BGS considered to be the UK's leading organisation providing steer and direction in UK geoscience?
- Is BGS considered a leading national geological survey within the international geoscience community?
- Are there any competing groups/institutes within the geoscience community that are developing guidance and steer to the geoscience community at a scale that could compromise BGS as the UK's lead?
- Does BGS interface with the geoscience community and relevant groups at a frequency and appropriate level to provide effective leadership and steer?
- Are there any ways that BGS can improve or expand their role as a provider of leadership and steer regarding UK geoscience?

**Objective 5:** *Utilise the skills, expertise and knowledge developed and held by the BGS to support international initiatives*

- Is BGS contributing to, leading, or supporting international initiatives?
- How many international initiatives and which geoscience areas are supported?
- Across which countries and at what scale is BGS's support provided?
- Does BGS support international initiatives to an equivalent level to other similar sized and scoped geological surveys in other countries?

## Annex C – Panel membership

Panel member	Affiliation
Daniel Lebel (Chair)	Director General, Geological Survey of Canada
Flemming Getreuer Christiansen	Independent consultant, previously Geological Survey of Denmark and Greenland
Iain Stewart	University of Plymouth
Jessica T Smith	Atkins
Morten Smelror	Geological Survey of Norway
Nigel Jackson	Mineral Products Association
Thalia Baldwin	Geospatial Commission

## Annex D – BGS Evidence Report

The BGS Evaluation 2016-2021 Evidence Report is available as a stand-alone document on request from BGS. To request a copy please email [enquiries@bgs.ac.uk](mailto:enquiries@bgs.ac.uk).

## Annex E – NERC Management Response to the BGS Evaluation (2016-2021) Recommendations

NERC have reviewed the findings of the BGS Evaluation Report (2016-2021) and would firstly like to thank the independent evaluation panel for providing a balanced impartial and credible review of BGS. NERC would also like to thank all those at BGS that contributed to the evaluation including those who provided input into the design of the evaluation and the development of the evidence package that allowed the evaluation to run effectively and reach valuable conclusions for both BGS and NERC.

This management response was developed by NERC to specifically address ‘management recommendation 7’ made by the Independent Evaluation Panel and described in full in the BGS Evaluation Report (2016-2021), which required a response by both NERC and BGS. NERC note that BGS have responded to this recommendation within their own management response to the evaluation report (see BGS Management Response to BGS Evaluation).

### Recommendation 7: Ensure the role of BGS, its funding mechanisms, and contractual arrangements (including the NERC and BGS MoU) are fit for purpose for 2022-2026

At a broad strategic level, the role of BGS is defined by NERC and BGS’s ‘Strategic Relationship Agreement’ where it is considered along with the other NERC Research Centres. The purpose of this Agreement is to recognise and describe the enduring strategic relationship between NERC and its Research Centres, which all have strategically equivalent roles, regardless of their unique domain remits, ownership, and governance models. This strategic relationship and framework are expected to be enduring, but may be updated from time to time, when NERC will discuss changes with agreement from both parties.

NERC recognises that BGS has a multifaceted role, which is described in a Memorandum of Understanding (MoU) between NERC and BGS which defines this role as:

- to provide the national repository of data and knowledge of UK geology for national purposes;
- to develop services to enable government, business, and the public to benefit from the national repository archive of data and knowledge;
- to provide impartial and independent advice to government, business, and the public in relation to UK geology;
- to provide analytical facilities including and observatory networks in support of Earth Science research and government needs which are accessible to the entire UK research community;
- to provide UK leadership and to make skills, expertise and knowledge available globally; and
- to undertake research and development in pursuit of the above aims.

This role means that BGS fills a unique function, different to the other NERC Research Centres and therefore demands that its role and function is looked at using a more tailored approach.

The evaluation process used for the BGS evaluation (2016-2021) is the first of its kind for BGS. Prior to the 2021 evaluation process, BGS was evaluated along with the other NERC Research Centres as part of the [Evaluation of NERC Centres](#), which was based on the higher education institutions Research Excellence Framework. The process by which BGS was to be evaluated was redesigned to reflect its role as a geological survey as outlined in the MoU with NERC, rather than as a NERC Research Centre focussed on research excellence and research impact, thus emphasising NERC's commitment to ensuring that BGS's role is fit for purpose.

In addition to evaluations, NERC's approach to reviewing arrangements with BGS and its other Research Centres also includes the six monthly Strategic Relationship and Assurance Meetings, focussing on operations, science delivery, management, and resourcing, . In addition, NERC is an Observer on the BGS Board.

NERC acknowledges the need to ensure the role of BGS is fit for purpose for the period 2022-2026 (including its funding mechanisms). NERC is investigating the balance of different BGS funding lines within national capability. NERC also consider the contractual arrangements and needed changes to the role of BGS within the framework of updates to the NERC and BGS MoU which occurs periodically and will now aligned with the BGS evaluation cycle.

NERC note that the results of the BGS evaluation report will be used to inform BGS' Strategy Review, which will include a review of BGS' purpose and mission. NERC will support BGS and act accordingly to ensure the findings of the BGS Strategy Review in relation to the role and purpose of BGS are relevant for the next evaluation cycle (2022-2026).

The following approach will be taken by NERC to ensure the role of BGS is suitable for 2022-2026 by:

- conducting a review of national capability funding; and,
- reviewing the content of the MoU between NERC and BGS in light of the BGS Strategy Review's findings.

## Annex F – BGS Management Response to the BGS Evaluation (2016-2021) Recommendations

The BGS 2016-2021 Evaluation report has been reviewed by the BGS Senior Management Board (SMB). The SMB accept and endorse all the recommendations [R1-R7] and have provided responses to each recommendation. Actions to support several of the recommendations are already being developed or were initiated during (or indeed before) the evaluation review phase, including the development of a process for guiding the new BGS Strategy [R1], and the development of new partnerships to enhance the promotion of BGS's work to a broader stakeholder base [R3]. For several years, BGS have been proactively leading the net zero and sustainability agenda within and on behalf of NERC [R5; 2020 onwards], and actively engaging with our international partners to ensure we deliver equitable and ethical research [R5; 2019 onwards]. We take this opportunity to respond to the reviews recommendations and highlight the substantial body of work that is ongoing, and being developed, within BGS.

### **Recommendation 1: Integrate the findings of the evaluation into the 2022 BGS strategy plan review**

At the time of the Evaluation panel review meeting, BGS SMB had actioned an internal working group to define a process for the development of the new corporate strategy. The existing science strategy 'Gateway to the Earth' ends in 2023. The new BGS strategy will cover the whole organisation, include a new science strategy, and encompass all digital and corporate functions required to enable the delivery of excellent geoscience with demonstrable impact for UK and international stakeholders now and in the future. All the recommendations [R1-R7] will be core considerations within the new organisational strategy.

#### **a. Set measurable strategic objectives and monitoring progress.**

As part of our organisational strategy, we will review BGS mission and vision as well as reviewing our internal capabilities and undertaking a culture analysis. We will establish our strategic direction through a number of internal and external workshops, which will also enable us to better understand the environment we operate within – both collaborative and competitive. The new strategy process will provide us with the space to learn from strategic reviews (including both the BGS evaluation and our ongoing Digital Data Review), as well as build on work from our ODA programme to formulate a Theory of Change and develop a Monitoring and Evaluation (M&E) framework for the next 5 years.

Following the development of a draft strategy, we will share and consult with internal and external stakeholders. The final version will be reviewed and approved by the BGS Board and by NERC Council. The new strategy (2023-2028) will be implemented via the annual BGS Business Plan, and the strategy will be reviewed and adjusted through our M&E framework. This framework will enable the monitoring and reporting of outputs, outcomes, and impact over time for our science, and enable us to course-correct throughout the period of the strategy.

#### **b. Develop a clearer organisational strategy for stakeholder engagement to capitalise on its significant expertise and ensure this is made available to all others.**

As part of our strategy development we will engage internal and external stakeholders and update our stakeholder mapping and engagement plan. A series of strategy consultation workshops with external stakeholders will also be planned. BGS work across a wide range of stakeholders across many functional areas, and as part of our Theory of Change we will examine how to structure and

plan stakeholder engagement to maximise impact. In relation to the public, private and academic and general public sectors we will:

Public sector. Review and clarify our remit and approach to maintaining capabilities to strategically support the UK and its devolved governments on geoscience issues and continue to provide policy advice using our scientific expertise on geoscience topics

Private and academic sectors. Clarify our workflow and offer, defining how we operate alongside the geoscience topics that we focus on. We will also review our chargeable operations and define how we will achieve impact and implications with respect to our approach to chargeable and open digital data.

General public. Examine the role that engagement has in informing the public on key geoscience topics and delivering impact. We are in the final stages of developing and embedding a strategic “Geoscience Discovery Partnership” (January 2022) with the Natural History Museum to broaden the promotion of our geoscience, to co-produce solutions relating to the perception of geoscience, increasing diversity within the geosciences, and inspiring the next generation of geoscientists.

**c. Review the extent to which their analytical facilities are being used to meet the organisation’s strategic aims and science programme and consider the strategic drivers to continued investment in these facilities. It is further recommended that BGS consider opportunities for recapitalisation of their analytical facilities.**

BGS’s analytical facilities underpin key aspects of our science delivery and continued investment in these facilities to deliver world class geoscience is of the highest importance; the provision of analytical facilities will be a central element of the BGS strategy development process. Alongside our staff resource, the workflow delivered through our analytical facilities provides geoscience capabilities for government, National Public Good science, scientific grant activities and commercial services to local, national, and international clients/stakeholders.

At an operational and strategic level, the ‘Laboratory Strategy Committee’ launched in 2021 examines these questions and implements relevant actions. We acknowledge the need to establish the ‘golden thread’ that links our laboratories to strategic objectives and impact, as well as recognising the underpinning nature of analytical capabilities for the organisation. From a strategic capital investment perspective, BGS has been, and will continue to, engage with NERC on capital funding pressures particularly on our Keyworth laboratories and UK observatories.

**d. Identify BGS domestic vs international priorities.**

BGS will continue to be responsive to UK and its devolved government science priorities, frequently reviewing the balance of priorities internally. We will further review this as part of the strategy development process, and reflect on the changing nature of our role in response to changes in the international development sphere (the creation of the FCDO), changes to international and national policy (Global Britain), changes within the political landscape in Europe (Brexit and implications for European funding), the UK political landscape (devolved governments and regional levelling-up agendas) and national pressures (energy supplies, net zero targets, radioactive waste management). Our strategy development process, and our engagement with key national and international stakeholders, will enable us to adjust the balance between national and international geoscience.

For the last five years, our international science programme has largely been underpinned by the NERC international NC (ODA) programme, which created definition in the balance of our science



funding directed to international activities. This is strongly focussed on the parts of UK Government global policy that align to NERC's strategy. The ODA programme (now ended) focussed on 'Development Science' with direct impact in countries in receipt of ODA funding. The international programme that begins in April 2022 is designed to deliver 'Global Public Good' and 'Research & Innovation'. This programme will purposefully cut across the diverse range of BGS science challenges and reflects delivery of our strategic proposition on a global platform. The remainder of our international portfolio will focus on developing relevant external income where we have flexibility to tune the balance in response to changing levels of demand for our support from UK Government. As in the UK, the programme is partly responsive, identifying opportunities to competitively market our capabilities. However, in recent years much of this has been directly supporting UK Government objectives and funded through the DFID Partnerships for Development programme. We are keeping a watching brief on the FCDO agenda and regularly interact with the FCDO, DIT, Cabinet Office, and other Government agencies to ensure we align with upcoming UK drivers.

#### **e. Prioritisation and approach for working in the international geopolitical environment.**

This point is incorporated into the approach outlined in the section immediately above.

#### **Recommendation 2: Lead/steer the development of a UK geoscience strategy with the geoscience community**

BGS currently steers and influences UK geoscience strategy through the delivery of our National Public Good in the geosciences, which includes the delivery and management of a number of scientific facilities and capabilities. We work in partnership with the Geological Society for London and with the academic and industry sectors, recognising the need to deliver coherent leadership, from education through to implementation (e.g. BGS co-convened the 'University Geoscience UK: Future Science - a vision for the next 25 years' in 2017). We are conscious of the need to balance stakeholder perception of BGS taking on such a role in the development of a UK geoscience strategy, as well as the reputational impact of producing an actual UK Geoscience strategy without financial support for implementation.

Over the next year, BGS will be developing its new strategy *[see response to R1]*. Part of this process will be to reflect on our role as a 'thought leader' for the UK geoscience community. In parallel and as part of the horizon scanning component of strategy development, BGS will also consider the agenda for future UK geoscience. In dialogue with our stakeholders we will determine if there is a consensus on the need to develop a UK geoscience strategy, and if so what role the BGS might play in the development of the strategy.

#### **Recommendation 3: Enhance the promotion of BGS' work and capability to its stakeholder base and beyond**

Since 2019, strategic development and investment into corporate communications has enabled us to build depth and reach in our stakeholder engagement work, both nationally and internationally. BGS co-ordinates key stakeholder engagement through our 'Policy and External Relations Advisory Group' (PERAG, established in April 2021). This internal committee has oversight of the stakeholder engagement requirements set within the NERC-BGS MoU and reviews and guides requests from government departments (e.g. BEIS, DEFRA, FCDO, the Cabinet Office, in our capacity as a core member of the Geospatial Commission), and requests from the devolved governments.

Building on best practice examples within our science delivery (e.g. community relations delivered through the UK Geoenergy Observatories project since 2017), BGS are currently engaged with

stakeholders as part of our 'Digital Data Review' (2021-2022).

We will continue to deliver targeted campaigns, evaluating and sharing learning from our 12-month COP26 campaign, 'Geoscience solutions for net zero' in 2021, into 2022 and beyond. We will continue to participate in a broad range of annual stakeholder events in key sectors where our work is relevant and delivers impact. This includes participating in relevant committees, exhibiting, and presenting regularly at conferences. Stakeholder engagement is embedded in our planned engagement schedules (e.g., Nuclear Waste Services), whilst also having the flexibility to respond to stakeholder requirements within year.

#### **Recommendation 4: Review the potential barriers to accessing BGS data and facilities**

BGS data and data products are freely available globally, and our facilities are accessed by over 15,000 UK research community users in collaboration or as a service. The SMB acknowledge the recommendation to review barriers to access and from our stakeholder survey we have identified a number of barriers in accessing BGS facilities, including:

- Stakeholder awareness of facilities we offer
- Understanding how to access
- Understanding the funding mechanisms and/or costs associated with access
- The lack of provision of non-collaborative, 'unsupervised', access
- Lack of availability of free analytical services.

Wider external access to facilities will, form a key component in the development of the new BGS organisational strategy *[see response to R1c]*.

The implementation of our 'Laboratory Strategy Committee' in 2021 *[see response R1c]* provides a single group with oversight and understanding of the laboratory facilities within BGS. This strategic committee, alongside the development of four thematic laboratory clusters will address issues around differing operating models and strategic drivers across the portfolio. BGS are also investing in ensuring outputs of our analytical facilities are 'FAIR' (findable, accessible, interoperable, reusable).

With specific reference to the National Geoscience Data Centre (NGDC) and National Geological Repository (NGR), raw geoscience data is made openly available post-scientific journal embargo as per our Data Policy, either through download or use through BGS web services. BGS hold some commercially generated data and these data will be openly available in time, but industry is granted varying periods of embargo. The BGS corporate approach on this issue will be informed by the outcome of the 'Digital Data Review.' This review is in process, and we are engaging with our diverse stakeholder community. Where barriers are identified to the access and/or use of our data we will consider alternative scenarios and models.

#### **Recommendation 5: Define BGS' approach to net zero, sustainability and geo-ethical concerns in their international working**

BGS have played a key role in the development and delivery of NERC's Responsible Research Framework, and two members of our international team are part of the NERC Sustainability Steering Group. This group developed NERC's four pillars of Responsible Business which are embedded across all NERC Research Centres and sets a minimum expectation for those in receipt of NERC funding. As part of our commitment to Responsible Research, BGS have a dedicated Equality, Diversity & Inclusion (EDI) team (including a decolonisation sub-group), a Research Ethics Committee, and staff in our international directorate who focus on building, monitoring, and evaluating our partnerships. Sustainability. The BGS Environmental Sustainability Strategy is designed to enable implementation of the UKRI Environmental Sustainability Strategy (2020) and the NERC Responsible Business

Statement. BGS is committed to reducing the environmental impacts of business travel to meet NERC targets to achieve a 40% cut in carbon emissions by 2025. One of the key priority areas for BGS relates to our business travel, which accounts for c. 30% of our total emissions, and the setting of challenging but achievable annual targets for the reduction of travel-related emissions. Our commitment is underpinned through the implementation of a policy for travel beyond Europe, developing a carbon accounting system and instilling a cultural change in attitudes towards travel amongst our staff.

Geo-ethical concerns. The BGS Research Ethics Committee (appointed in 2020) and the Director of Operations (on behalf of the SMB) are constantly reflecting on geo-ethics in the delivery of geoscience, particularly in the international space. We began developing our 'Research Ethics and Integrity Policy' in 2017 in response to our international ODA National Capability funding [see response to R1d]. The geo-ethics landscape is complex, and we work in many places where there may not always be direct alignment with the ethos and commitment to diversity, equity, and inclusion (DEI) held by BGS. We are committed to using our science as a tool for diplomacy, valuing equitable partnerships. We work in collaboration in the UK and overseas to develop an ethos that address cultural differences and work in a way that is inclusive and respectful of these differences.

We work alongside our partners to understand their needs and to co-design any research and/or capacity strengthening work to ensure the outputs and outcomes are beneficial to all involved, and embed and value indigenous knowledge, and this comes across strongly in our international hazard-focused work. For the first time at BGS, scientific practice, and the way in which we deliver our research (including, EDI and ethics) will be embedding in the new organisational strategy and accompanying Theory of Change [see response to R1].

Accelerating the international net zero agenda. In both the UK and internationally, there is a focus on a 'green recovery' as economies accelerate decarbonisation, alongside building back from the impacts of COVID-19. One of our three major science challenges directly addresses this 'net-zero' agenda and is focused on helping policy makers, industry and civil society meet challenging targets for carbon reduction in both the UK and worldwide. Our research emphasises the unique ability of the subsurface to deliver carbon reduction technologies at the scale required to mitigate global climate change. This includes investigating subsurface storage capacity for CO<sub>2</sub>, hydrogen and the waste from nuclear energy. We also research the potential of the subsurface to deliver low carbon geothermal energy, and as a geological resource for the critical raw materials we need for low carbon technologies such as renewable energy, energy storage and zero-emission transport. Alongside our role as a leading national and international research organisation on this topic, BGS will play an active role by lowering the environmental impact and carbon footprint of our operations.

#### **Recommendation 6: Improve BGS' systems for internal review, gap analysis and evidencing BGS' impact**

We recognise the importance of building and maintaining a rigorous system for review, gap-analysis, monitoring and reporting of our science, business, and our impacts. As part of the strategy process, the SMB is developing a system to enable this. The system will build on our understanding of Monitoring, Evaluation and Learning arising from our previous ODA programme, as well as a Theory of Change good practice and constructs [see response to R1]. It will form a key component of the Target Operating Model which is being developed over the same timescale.

BGS annually review science priorities through our National Capability prioritisation process which brings together all science and digital areas with the aim of identifying, as a whole organisation,

where our resources should be targeted and has the added benefit of the opportunity to identify gaps (and overlaps) between the challenge area portfolios. This process is in its second year of operation and will be strengthened during the next evaluation period.

Over the longer-term scale, as part of the new strategy development process, we will run horizon scanning workshops to provide fresh thinking on what BGS should be doing, to facilitate the identification of gaps in our current offering and mitigate against continuation of the same programmes approach *[see response to R1]*. One facilitated Horizon Scanning workshop with the BGS board and BGS Science Advisory Committee took place in October 2021. As part of this we used tools to enable us to visualise the future and the wider environment from the outset, as opposed to beginning with BGS as an organisation. Further, the development of a Theory of Change for BGS will build in the recommended evidence-based approach to demonstrate our impact. It will encompass measurement of our policy and stakeholder impact and systematically incorporate stakeholder feedback.

#### **Recommendation 7: Ensure the role of BGS, its funding mechanisms, and contractual arrangements (including the NERC and BGS MoU) are fit for purpose for 2022-2026**

The SMB acknowledges the need to ensure that the role, governance, resourcing, and contractual arrangements of BGS are appropriate for the next 5-10 years and that our relationships with NERC and with the UK Government are at the core of this. We propose to review the purpose and mission of BGS and use this to inform and update our MoU with NERC as part of the Strategy Review Process *[see response to R1]*. We will pay particular attention to:

- Financial sustainability (including drivers)
- Governance

Internally, BGS undertake an annual exercise to prioritise our national capability (NC) science. Alongside this, BGS science is delivered through a hybrid model of NC, grants, and external income. BGS finances are monitored through the BGS Board Finance Sub Committee and directly with NERC through a number of reporting mechanisms. BGS are engaged in a number of UKRI-NERC exercises to support the financial sustainability of centres, alongside a NERC review of National Capability funding. This includes establishing the true costs of running BGS including highlighting areas of under-investment or where funding is provided centrally on an ad hoc basis.

There are continual, and positive, conversations with UKRI-NERC around where BGS is best located and our relationship to government. These considerations are being led by NERC but do feed into shared thinking around the MoU (which establishes the nature of the scientific, governance and funding relationship between BGS and NERC). Specifically, the NERC-BGS MoU should reflect the strategic intentions of BGS and will evolve as the new strategy is developed and if a potential new government location/relationship is identified *[see response to R1]*.

A mandatory acquisition of geoscientific data would require primary legislative changes, and is dependent on a number of criteria, including:

- That our strategy identifies that we need this (e.g. our route to achieve impact for the requires it)
- our location in the public sector is such that we are able to (make a case to) mandate this
- it underpins an operating model for BGS that is mandated by government.

#### **Additional Comments**

On behalf of BGS, the Senior Management Board would like to extend thanks to the independent

evaluation panel for their time, expertise and feedback on the work that BGS deliver. The recommendations are timely and provide us with much to reflect on as we move into the development of our new organisational strategy. We would also like to thank the team at NERC who have helped navigate the process of the first BGS evaluation, and we look forward to continued collaboration as we refine and improve the process for the next evaluation period that has already begun. Our thanks are also extended to both the BGS Board and Science Advisory Committee for their support and feedback during the evaluation process. We also recognise the hard work of all BGS staff who contributed to our evidence report through the work they deliver on behalf of the UK for National and Global Public Good.