

National Geological Screening

Public consultation response

When complete, please email to NGSconsultation@nda.gov.uk or send by post to: National Geological Screening Consultation, Radioactive Waste Management, Building 587, Curie Avenue, Harwell, Didcot OX11 0RH.

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Question 1:

To what extent do you think our proposed approach to providing national-scale existing information about geology relevant to long-term safety is appropriate? Please give your reasons.

This submission is on behalf of the Geological Society, the UK's learned and professional body for geoscience, with about 12,000 Fellows (members) worldwide. The Fellowship encompasses those working in industry, academia and government with a broad range of perspectives on policy-relevant science, and the Society is a leading communicator of this science to government bodies, those in education, and other non-technical audiences.

At the request of Government and as set out in the July 2014 White Paper, the Geological Society appointed an Independent Review Panel (IRP) to review and evaluate the National Screening Guidance (NSG). The IRP provided comments on an earlier draft of the NSG, both at a meeting held in public on 23 June 2015 and in writing, and Radioactive Waste Management (RWM) collated and responded to these comments in a document published alongside the current draft of the NSG in September 2015.

We note that a number of the IRP's comments and suggestions have been taken up in the current draft. RWM have indicated that others will be addressed in the technical instructions to be developed by RWM and BGS which will set out how information about the selected attributes is to be captured from the available datasets, and that the IRP will be asked to review these instructions. It would be inappropriate for the Geological Society to attempt to duplicate the work of the IRP by

offering comments on the detail of the geological attributes selected, the datasets identified and the ways in which these are intended to be used. It would also be premature for us to comment on how RWM has responded to the IRP's feedback, given that this will not be fully apparent until the technical instructions are issued. We have therefore limited our comments to some general aspects of the proposed approach to the screening exercise and how this is communicated in the consultation document.

The consultation document does not make explicitly clear how the proposed geological attributes would (or could) contribute to delivery of the required safety functions. Paragraph 3.6 states that information is provided in Appendix 2 on why the attributes were chosen. For the most part, this short appendix simply offers some further comments on the categories of attribute and the specific attributes within each category. In some cases, there is a partial or implied explanation (which may be more evident to those with extensive geological knowledge) of the way in which attributes may contribute to delivery of a safety function – for example at paragraph A2.5 where an example is given of how clay layers in the surrounding rock may prevent groundwater moving into the rocks above. In other cases, there is no explanation at all – for example regarding rock structure at paragraph A2.7, which just states that understanding of the features referred to will be important for building confidence in safety and links faults and folding with unpredictable properties. Nowhere are these comments linked to the safety requirements set out at Table 1 – which could be done, for example, by pointing out that some aspects of geological complexity are likely to make it very difficult to characterise a site sufficiently to demonstrate safety (requirement 5).

The May 2015 draft of the guidance set out these links between the safety requirements and the proposed geological attributes much more effectively than the present consultation document. We recognise that the earlier document was aimed principally at the IRP, whose members could be relied on to have considerable geological knowledge. But it is equally important to convey to those without extensive technical knowledge why the geological attributes have been chosen and how they contribute to the stated safety requirements. This will be of value now in setting out final plans for the geological screening programme, if non-technical stakeholders and members of the public are to have confidence in it. It will be even more important to do so when communicating the outputs of the screening programme to potential host communities.

As we pointed out in our December 2013 response to DECC's consultation on the review of the siting process, if communities are to make an informed decision as to whether to participate in the process, the geological information provided to them should not just be about the geology of their area but must also include information about the geosphere functions on which safe performance of a geological disposal facility will depend and how these functions might be provided by different geological settings. Careful thought should be given to how this is to be achieved, including explaining clearly and in comprehensible terms how particular safety requirements would or could be provided by geological attributes.

The consultation document also fails to recognise explicitly that the safety requirements which will depend (in whole or in part) on the geosphere may differ depending on the disposal concept which is used. The geological attributes which will contribute to delivery of these safety requirements will in turn depend on the disposal concept. The engineered barriers and the safety requirements to

which they contribute will similarly vary between disposal concepts. In other words, it is the appropriate combination of engineering and geology which would be relied on to demonstrate safety in each concept. The disposal concept and detailed design of the facility will in turn depend on the geological setting. RWM has recognised these points and communicated them clearly to non-technical audiences in the past, so it is puzzling that they are not addressed here. These dependencies do not invalidate or undermine the proposed general approach to screening. Rather, it is necessary to recognise them and explain how the selected geological attributes would contribute to meeting the relevant safety requirements under different disposal concepts if technical and non-technical audiences are to have confidence in the screening process, and if plans for its implementation are to be tested effectively.

Because these dependencies are not recognised, some misleading language is used in statements about the contribution of the geosphere and of geological attributes to delivery of safety requirements. At Table 1, it would be more accurate to say that the geological environment ‘may contribute’ (rather than ‘contributes’) to the following safety requirements, given that this will depend on the disposal concept, i.e. the combination of geological and engineered barriers appropriate to the geological setting. Similarly, there are references (for example at paragraph 2.18) to geological attributes which ‘are relevant’ – it would be better to recognise that these attributes may be relevant, depending on the disposal concept.

Question 2:

To what extent do you think that the proposed national information sources are appropriate and sufficient for this exercise? Please give your reasons.

We have nothing to add to our observations under question 1.

Question 3:

To what extent do you agree or disagree with the proposed form of the outputs from geological screening? What additional outputs would you find useful?

As we noted in our December 2013 response, careful thought should be given to how the outputs of screening and complementary geological information are communicated to potential host communities. This is far from being a straightforward matter. There is a wide range of research and practical expertise in geoscience communication on which we encourage RWM and its contractors to draw, notwithstanding their own knowledge and experience. We would be pleased to discuss these matters further.

Question 4:

Do you have any other views on the matters presented in the draft Guidance?

We have nothing further to add.