



Radioactive Waste Management

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.

Name	Daniel A. Galson
Email address	[REDACTED]
Organisation	Galson Sciences Ltd

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 question cannot be answered based on the information presented in the document, because the link between geology and long-term safety is not clearly addressed. This was clearer in the previous version of the document published earlier in the year; the deleted material/safety case Appendix could usefully be reinserted to ensure that the screening process keeps in mind the importance of this link, particularly given the stated focus on geological features relevant to long-term safety. What are these features and how might they be relevant?

It is also difficult to answer because there is no definition in the document of what RWM means by "long-term safety". Is this protection of humans against radiological impacts, protection of humans against chemotoxic impacts, protection of non-human biota, protection of groundwater, other things? All of these might be considered as measures of safety by regulators (and others). Would consideration of geological information alone provide a consistent answer on safety for all such issues?

It might also be asked whether by "long-term" RWM is thinking about the post-closure period only. For many stakeholders, "long-term" might also be taken to include any extended operational period of a GDF (already likely to extend beyond several generations).

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.

It is not clear from the document why geological screening excludes considerations that extend beyond how geology might impact long-term safety, e.g. consideration of the impact of geology and geography on GDF engineering, population density and on various environmental considerations (e.g. location of National Parks, sensitive coastlines, etc.)? Focusing the geological screening exercise on long-term safety alone seems too narrow an approach. There are several potential concerns to be addressed if it is intended to continue with this narrow focus:

- It seems unlikely that consideration of long-term safety alone would allow significant parts of the UK to be excluded in any screening exercise (as recognised in the document itself), given that engineering (extra cost) could be used to compensate for and work together with the geological environments that become available. Therefore, information on how geology affects engineering suitability is also something that communities could usefully be provided with.
- The regulatory approach for long-term radiological safety is not based on limiting future exposures to any particular level, but is rather expressed in terms of guidance levels and a requirement to demonstrate optimisation at whatever site is eventually proposed. There are no levels of safety specifically identified by regulators for the other measures of long-term safety identified in the response to Question 1. There is also no intent that safety alone should dictate screening or siting decisions and under no circumstances should the impression be given that RWM is looking for the "safest" site. It would be worth highlighting this point in the document, although it is also important not to give the impression that geology is subsidiary to engineering.
- Over-emphasis on long-term safety in "geological" screening could lead to areas with potentially acceptable sites being excluded, and to inappropriate (for other reasons) regions being included. The former might be unfortunate, but not necessarily a problem. The latter could waste time and resources and lead to wide misunderstanding about what areas are regarded as "suitable" (e.g. would the clay layers beneath central London be "suitable"?); this could set back the entire siting process.
- The narrow focus on long-term safety in national geological screening is at odds with international guidance and good practice regarding screening processes conducted in other countries. More contextual discussion around this is needed.

With regard to the proposed sources of information and the consideration of long-term radiological safety:

- Consideration of rock type could usefully include information on rock mineralogy. This could be important in terms of considering potential sorption capacity and containment of radionuclides within the geosphere.
- Consideration of natural processes could consider the extent of sea-level rise on any extended GDF operational timescales (to ~2250). Sea-level rise and flooding potential is not only important for operational safety, but also long-term safety, particularly for coastal areas.

- Can it be explained why only BGS information sources are included and not any other sources (e.g. information held by oil and gas companies, wider literature)?

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?

There could be benefit in the outputs also including the following information directly related to geology:

- representation of those areas of coastline considered most vulnerable to climate change impacts / sea-level rise over the longest projected GDF operational lifetime.

And the following information indirectly related to geology:

- Population density.
- Wider environmental issues (as noted above).

Question 4:

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

Even if the proposed approach to geological screening is largely retained, the guidance document would benefit significantly from more contextual information – this would benefit stakeholders, RWM, and any consultants responsible for carrying out / managing the screening process. Most of the issues are discussed above. In particular:

- There is limited reference to the international context, e.g. para. 2.15 refers to IAEA guidance on safety, but there is no mention of IAEA guidance or other international or national guidance on siting factors / site selection for nuclear installations or geological repositories. What is the internationally agreed guidance and how does the proposed UK screening activity take account of international guidance? If there are differences, why are these justified?
- What RWM means by “long-term safety” and the link between geology and long-term safety are not clearly identified or addressed.
- The rationale for focusing on long-term safety – and excluding other important considerations – is not provided.
- There is no consideration of the national geological (and wider) screening exercise for an ILW repository carried out in the late 1980s. How will the new exercise differ and why might the results differ? How will the new exercise learn from the earlier one?

The document refers to the process followed in developing the approach to geological screening and, in particular, to review by the Independent Review Panel (IRP). It would be informative to other stakeholders to provide a flavour of the comments received by the IRP. Did they broadly agree with the proposed approach? Were there any significant comments that RWM disagreed with? These comments may be provided elsewhere, but summarising the key messages here could build confidence (and most readers will not want to search for another more detailed document).

