



# Radioactive Waste Management

## National Geological Screening

### Public consultation response

When complete, please email to [NGSconsultation@nda.gov.uk](mailto: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.

Based on the discussions at the workshop in Northern Ireland it was apparent that in terms of geology there are actually very few locations in the UK that are NOT suitable for locating the repository. The engineering protection of the repository is such that it could be located in almost any location regardless of the geology. Plus it was identified that in most 'communities' that are being asked to consider having the repository, because geological conditions can change over a relatively short distance eg presence of aquifer, faults etc (things that may make the location of the repository unsuitable), it is highly likely that in other areas of the 'community' these geological conditions would not be present and would be suitable for the repository.

Therefore in my view the providing of all this geological information to the various 'communities' being considered is largely irrelevant as it is very likely that in most communities (eg District council areas – if this is what is chosen as the definition of 'community'), there will be an location that is suitable from a geological viewpoint. This should be stated from the outset.

### 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.

As mentioned above, whilst it is useful to provide all this geological information to the various communities, as they will no doubt ask questions regarding this, from the outset it should be made clear that in fact there are very few geological conditions present that preclude the locating of a repository from a safety point of view and that it is highly likely that in any one 'community' area there will be a location that is geologically suitable.

In my view further very important information that should be shared is:

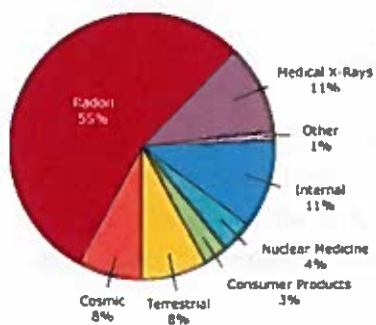
1. International experience, showing the wide range of geological conditions that they are used / being considered for locating repositories
2. The hazard/risk of locating the repository in the area. Some simple graphic should be used to show that the average exposure of radiation from radioactive waste is very small indeed, in comparison to other common sources (see details in Q3 below)
3. Let communities know that radioactive waste is already being moved around the country and is successfully managed. This will help put their minds at rest that this is not a new thing i.e. it is already being done and the risks and ways of dealing with the hazard of radioactive waste is well known and carefully controlled.

### Question 3:

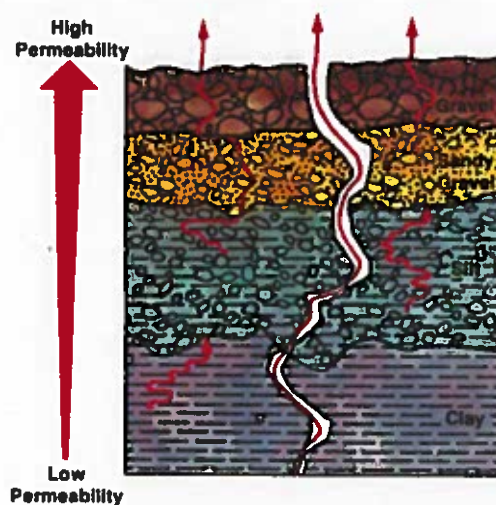
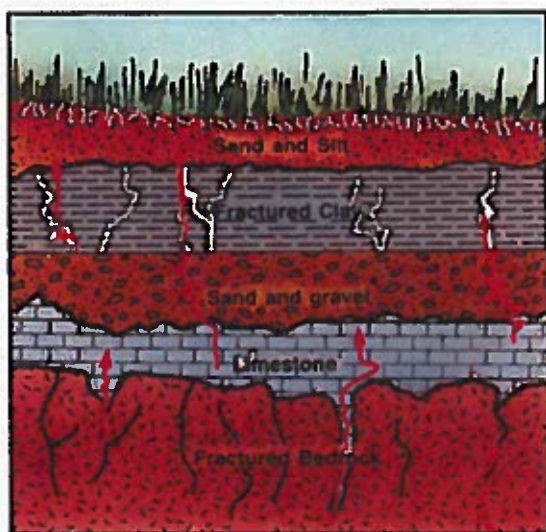
To what extent do you agree or disagree with the proposed form of the outputs from geological screening? What additional outputs would you find useful?

I think using some other images would be useful to explain the way that radioactivity can escape from the repository would be useful, plus a graph/chart showing the relative radiation exposure levels from radioactive waste in proportion to other forms of radiation exposure. See examples below, which highlight the dangers of Radon exposure and the other sources of radiation. I think if you show the public that the exposure to radiation is far higher from these other sources than from radioactive waste – then that would be highly comforting and put members of the public and those in the 'communities' considering hosting the repository, minds at rest on this issue.

You could also give some relative figures of what is the radioactivity exposure to humans would be at ground level from radioactive waste buried at say 500m below ground level – and how would this vary between different rock types that could hypothetically encase the repository. Plus also give radioactivity levels at various distances using the various engineering barrier systems used. Eg if used Barrier System A – radioactivity exposure at 500m is x, and if is combined with Barrier System B, the radioactive exposure at 500m is y etc (based on sound rock).



Group	Annual dose (mSv)
Average UK citizen from nuclear discharges	0.0002
Sellafield Critical Group (from discharges)	0.6
Average UK citizen (radon)	1.0
Average UK citizen (all sources)	2.5
House at the UK Action Level for radon	10
Legal limit for occupational exposure	20
House with radon at 17,000 Bq m <sup>-3</sup> (the highest level so far found)	850



**Question 4:**

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

- International experience – and the wide range of rock types that are deemed 'suitable' for hosting the repository should be highlighted – to show that there are in fact very few geological conditions that would make a repository unsuitable. (and within any one 'community' it is very likely that suitable geological conditions would be found. This needs to be highlighted from the outset.
- More emphasis on the Engineering barrier and the fact that engineering techniques such as jet grouting / permeation grouting etc can be used to effectively seal even fractured bedrock and so prevent escape of fluids and gases, which should give further comfort to any community considering hosting the repository.