

1472/jd01/rb2405

24 May 2011

Mr R Bennett  
c/o West Cumbrian MRWS Partnership  
Copeland Borough Council  
The Copeland Centre  
Catherine Street  
WHITEHAVEN  
Cumbria  
CA28 7SJ

Dear Mr Bennett

## **REVIEW OF FINALISED NDA REPORT**

As requested, I have undertaken a review of the finalised Nuclear Decommissioning Authority (NDA) report Geological Disposal: Further information on geology for West Cumbria MRWS Partnership. Specifically, the Partnership has set the question "In your opinion, is this a balanced and sufficiently robust answer to the question the Partnership posed given the nature of information available?"

The document sets out in paragraph 1.3 the three main questions the NDA briefing note aims to provide a response to. These are:-

- Why are the prospects of finding a site for a GDF [*Geological Disposal Facility*] in West Cumbria sufficiently good to justify proceeding further (i.e. into MRWS Stage 4, desk-based studies)?
- What are the inherent uncertainties and how will these be managed?
- What are the future research needs?

As requested, my comments deal with the overall document and do not focus on specific details. Overall I found the current draft to be an improvement on the earlier draft circulated in April.

In response to the first Partnership question, whilst the NDA document is a politically expedient response, it does set out in paragraphs 3.9 and 3.10 a specific answer to the question and appears to respond to issues raised regarding the initial draft of this document. The BGS screening report has identified the geological units within the Partnership area that are unsuitable to host a potential GDF. Of the remaining geological units/rock types left in the Partnership area, the NDA state there are a number of these rock types which have the

“generic geological characteristics consistent with the guidelines at depths suitable for the location of a GDF”. In summary, the guidelines referred to require a geological environment that is suitably deep and stable over long periods which can delay the movement of long-lived radionuclides released from the Engineered Barrier System. If the geology is less than ideal, there will need to be an increase in the performance of other components of the multi-barrier system to compensate for this. The report does outline the basic framework for identifying potentially suitable sites during Stage 4 of the MRWS process, in Section 4. This is a useful addition over the earlier draft. However, if you follow the logic in paragraphs 3.9 and 3.10 you come to the conclusion drawn by Professor Smythe that the potential sites to be investigated at Stage 4 will be “any suitable host rock” and that, in effect, anywhere in the Partnership area that hasn’t been screened out by the BGS is a potentially suitable site. From this you must draw the logical conclusion that the prospects of finding a site for a GDF are good because anywhere in the Partnership area that was not screened out is, based on this document, a potentially suitable site. However, as the document makes clear, specific areas for potentially suitable sites can only be identified at Stage 4 using the process outlined in Section 4.

The NDA identify the three general geological disposal concepts via reference to their Generic Environmental Safety Case: High Strength Host Rock, Lower Strength Host Rock and Evaporites. What is not clear is that in geological terms the Swedish/Finnish Basement Host Rock is different to the West Cumbrian potential Basement Host Rock/High Strength Host Rock. A similar criticism may be raised regarding the Lower Strength Host Rock, which in Switzerland and France is clay whilst the logical West Cumbrian equivalent would be mudstone. There are no West Cumbrian equivalent evaporite host rocks. The fundamental geological differences between the International sites and their potential equivalents (or absence) in West Cumbria is not acknowledged in the report. It would be better if the key geological differences, as they relate to relevant site selection geological properties, were briefly discussed otherwise the document may be taken to imply that the same geological formations studied at International sites are present in West Cumbria..

The report covers the issue of technical uncertainties by reference to other NDA documents. Future R&D is dealt with in the same way. However, a potentially key uncertainty from the Partnership’s perspective is what will be included in the site selection criteria to be derived at Stage 4 in “late 2011”. Clearly the Partnership will be involved in this process of selecting appropriate criteria if they decide to progress to Stage 4. Paragraph 3.11 gives an example of the application of the frequency of geological deformation zones as it could relate to the former Longlands Farm site. The role of the derivation of site-selection criteria, and the uncertainty associated with it, could be more clearly identified in the NDA document.

I hope you find these comments helpful and useful at your meeting tomorrow. If you want any clarification of the issues raised please feel free to contact me.

Yours sincerely  
for FWS Consultants Ltd



DR J P L DEARLOVE  
PRINCIPAL CONSULTANT



DR F W SMITH  
DIRECTOR