

Comments on National Geological Screening Guidance

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[REDACTED]

There are three classes of comments: geology-related; policy-related; and minor presentational comments.

Geology Related Comments

Table 1 (page 11), point 7: This is illogical as written and is not supported by the subsequent text on information to be sought. Given the stylised nature of human intrusion assessments, the potential consequences can be assessed in the absence of any specific geological information. The safety requirement to which geological information can contribute might be expressed as "the probability that the GDF will be disrupted by human actions (e.g. mining or drilling) can be assessed."

Para. 3.18 (page 14): The statement "The minimum rock volume of interest as a potential host rock has an area of the order of one square kilometre" sits in stark contradiction to the statement in para. 2.13, "a GDFwill cover an area of approximately 10 to 20 square kilometres." This implies that RWM would be happy to develop up to 20 separate GDFs. Some simple explanation and/ or a rethink is needed.

Para. A2.3 (page 29): The criteria given for a suitable host rock are unnecessarily demanding and bear no relation to safety requirements, i.e. groundwater residence time of tens of thousands of years and little or very slow groundwater flow. The true safety requirement relates to radionuclide transport, not water flow. The Forsmark site, an excellent site for spent fuel disposal has groundwater return times from repository depth to surface in the fracture network of order tens of years. The criteria as currently written in this paragraph effectively rule out strong fractured rocks with advective transport in open fractures. This needs a rethink. Para. A 2.8 presents an alternative/ inconsistent and preferable version of the same requirement; I suggest rationalisation of these two paragraphs, perhaps A 2.3 can simply refer forward to A 2.8.

Policy Related Comments

Para. 2.1 (page 4): The prefix to the bullet points needs to be clearer "The UK's higher activity waste is **defined by Government policy** to be made up of:" and add the relevant reference. This deals with the developments in waste categorisation and management that are currently in train, and the seeming contradiction that low-level waste is said (by RWM) to be higher activity waste.

Para. 2.7 (page 5): "about two years' time" is meaningless without a datum point and is seemingly contradicted by later text referring to 2016. I suggest inserting "from the start in [give date – end 2014?] of the current process".

Para. 2.15 (page 8): I suggest prefix this paragraph by "In the current process, geological screening etc." This gets over the problem that geology is also very important in respect of constructability, rock mechanics etc.

Minor Presentational Comments

Para. 2.1 (page 4), 2nd bullet: insert comma after "operation".

Para. 2.3 (page 4): new build programme is jargon. I suggest: "new build" programme of new nuclear power stations.

Para. 2.5 (page 5), line 2: in the UK

Para. 2.6 (page 5), line 3: before formal discussions with communities can begin.

Figure 2 (page 6): I suggest replacing "buffer" by "backfill" in LH figure (preceding text explains that this term is used) ; essential that "Durable Metal Container" is correctly identified as the outer waste container and not the vit canister as currently shown in the RH figure.

Figure 3 (page 7) Incorrect grammar in caption: "show" should be "shows". Also an awful figure with ghostly underground excavations which are what it purports to be explaining.

Para. A1.4 (page 28), line 7; I strongly advise deletion of "deep".

Para. A2.3 (page 29), line 2: I strongly advise deletion of "minute". This could reasonably be claimed as highly misleading. I would not think of fractures extending tens of metres with apertures of order millimetres as minute.

Para. A2.4 (page 29), line 4: Earth should have a capital E.

Para. A2.7 (page 30), line 6: Add text at end Figure 5 shows an example of a faulted and folded rock structure exposed at the surface.

Para. 2.8 (page 30): I strongly advise against judgemental statements such as "very small amounts" in line 4. Also the main section of the document refers to radionuclides whereas the appendix uses "radioactive material", conjuring images of chunks of wastes floating upwards. I suggest simply "it may transport radionuclides from the GDF to the surface". In line 5 replace "radioactive" by "radionuclides". A rather specialist point is that the final sentence is not correct: long groundwater return times allow the uranium-238 decay chain to approach secular equilibrium, resulting in higher levels of radioactivity. I suggest "so that the radionuclides initially present in the wastes are reduced by radioactive decay."

General: I found the partial capitalisation of compound proper nouns bizarre, e.g national geological screening Guidance. Also some common nouns are capitalised for no apparent reason.

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