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*Dear Marianne,*

*We met briefly at the last NGO Forum.*

I have been asked to reply to your email of 19 March to Edward Davey, containing six questions which you present as being in the name of Tim Farron MP, and which appear to be worded as written Parliamentary Questions. I am sorry that you have had to wait so long for a response.

As far as we are aware, Mr Farron has not tabled these questions in the House of Commons, but some brief responses are below for your information.

**1. [...] explain the discrepancy between the statement in the Nuclear Policy Statement Volume II Annex para B2.2, that “over 30% of the UK has suitable geology for siting a deep geological disposal facility” and the statement in the original BGS reference that over 30% of the UK would be “potentially suitable” for such a repository.**

The discrepancy is only semantic; what both documents are describing is the proportion of the UK that could sensibly be considered for a GDF. The Nuclear Policy Statement Annex refers to the proportion of the UK’s geology that is “suitable for siting” a GDF – this refers to areas where it could be worthwhile to conduct investigations as part of a siting (i.e. site selection) process; this is in effect the same as the earlier paper’s description of areas “potentially suitable for hosting” a GDF.

Any potential site would need to be assessed geologically, including borehole investigations, before anyone could be certain that a GDF could successfully be constructed there.

**2. [...] explain the inclusion of the Borrowdale Volcanic Group of rock near Sellafield as suitable for a repository in Nuclear Policy Statement Volume II Annex para B2.2, in the light of the findings of the Nirex Inquiry in 1997 that this rock is unsuitable for a repository.**

No specific rock formations are mentioned either in the Nuclear Policy Statement Volume II Annex para B2.2 or in the references cited therein.

It is also not correct that the Public Inquiry into the Nirex Rock Characterisation Facility (RCF) found that the Borrowdale Volcanic Group of rock near Sellafield is unsuitable for a repository.

The Secretary of State's reasons for refusing Nirex's application were the conventional environmental impacts of the RCF, such as its impact on visual amenity and protected species. He listed two other areas as areas of concern which would also have justified refusal of the appeal:

- Scientific uncertainties and technical deficiencies in the proposals presented by Nirex – the application was premature;
- The process of the selection of the site and the broader issue of scope and adequacy of the environmental statement – the process was not transparent.

In his report of the Inquiry, the inspector did state that, in his judgement, the site was not suitable; however, he did acknowledge that the assessment did not completely rule it out. Furthermore, he based this conclusion on an early evaluation of the site which used as input data, only information collected up to July 1993.

The Inspector and his Assessor were not qualified to assess fully the safety case for a geological disposal facility via a planning application, and such a case was not put by Nirex in what was an application only for a Rock Characterisation Facility. The assessment of a fully developed safety case for a GDF is the role of regulators. Since 1997, improvements have been made in the regulatory regime for implementing geological disposal, which now requires early engagement with regulators and a permit to be granted before borehole investigations can be undertaken.

**3. [...] provide a copy of the study underpinning the statement by MRWS Cumbria that the anticipated 'footprint' of the underground facilities associated with a nuclear waste repository could range from 6km<sup>2</sup> to 25km<sup>2</sup>.**

There is no such body as "MRWS Cumbria"; you may be referring to the West Cumbria MRWS Partnership, which was a local group formed by Copeland Borough Council, Allerdale Borough Council and Cumbria County Council, and which was independent of Government.

However, in case it is helpful, I would refer you to the 2010 UK Radioactive Waste Inventory report (<http://www.nda.gov.uk/documents/upload/Radioactive->

[Wastes-in-the-UK-The-2010-estimate-of-radioactive-waste-for-Geological-Disposal.pdf](#)), and specifically to pages 9 and 10, which outline that a 16GW new nuclear build programme would require a facility around 2.5 times the size of the baseline inventory.

**4. [...]clarify in the light of CoRWM Document 2550, July 2009, paragraphs 12.30-12.39, regarding the different chemical conditions needed for underground repositories of high-level and intermediate-level nuclear waste, whether a single underground repository can safely accommodate both types of waste.**

As recognised in both the MRWS White Paper and the National Policy Statement, a definitive view on whether co-location is technically feasible will only be possible at a future site specific phase.

At the current generic stage, RWMD's designs are based on the assumption of a single geological disposal facility to accommodate all the wastes and materials in the Baseline Inventory. This is done by including in the designs separate disposal modules for the different waste types, with engineered barrier systems aligned to the properties of these different wastes. The layouts in these generic designs include a separation between modules so that potential interactions would not compromise safety. The understanding of potential interactions between different disposal modules would be taken into account in the design of a facility for a specific site when determining separation distance between disposal modules, layout and engineered barrier system materials in order to ensure that interactions would not compromise the performance of the disposal system. Whether a particular potential candidate site is large enough to accommodate different types of waste, including separation distance, is a question that can only be addressed at the site specific phase.

Of course, we will only proceed with a GDF at a specific location if we believe a 'safety case' can be made, and the independent regulators will only allow a GDF to be built or operated if they are satisfied that it will meet their demanding requirements.

The sharing of surface facilities, access tunnels, construction support and security provision for different wastes could lead to benefits including cost savings and lower environmental impacts.

Other countries e.g. France and Switzerland are also pursuing co-location of a range of higher activity radioactive waste types.

**5. [...]whether he has made any assessment of the safety implications of report SSM 2013: 07, published by the Swedish nuclear waste regulators in January 2013, which indicates that copper casing for spent nuclear fuel in underground repository will corrode in groundwater much faster than expected and release hydrogen gas.**

The UK programme currently considers a range of disposal concepts for high-level waste and spent fuel, including (but not solely) concepts based on the use of copper canisters similar to that considered in the Swedish programme. In its generic R&D programme, the NDA is considering the implications of the scientific findings described in the report SSM 2013:07 together with other information available in scientific literature and produced through the Swedish and other disposal programmes.

The NDA notes, however, that while the scientific results reported in SSM 2013:07 indicate that a corrosion mechanism (copper corrosion by anoxic water resulting in the generation of hydrogen gas) previously considered unlikely may indeed need consideration in assessing the safety of the Swedish disposal concept, the implications of such a mechanism for the overall safety of that particular concept are unlikely to be significant, given that the hydrogen pressures needed to offset the proposed mechanism are much lower than that expected to arise in the disposal system.

**6. [...]provide a copy of any assessment made regarding the nuclear proliferation risk of endorsing a global expansion of nuclear reactors as a response to climate change, including proliferation risk associated with: (1) the separation of plutonium from spent nuclear fuel by reprocessing; and (2) the production of highly enriched uranium during nuclear fuel manufacture using centrifuges.**

Government does make detailed assessments of such risks as part of its overall and ongoing assessment of threats to international security. These are not disclosed.

However, there is considerable information in the public domain that focuses on this very question, both from general media and from a number of NGOs who have interests in this area. I attach one example, a paper from the Nonproliferation Policy Education Center, for your information.

I hope that is of some assistance.

*Yours sincerely,*



Tom Yates