

Consultation response to:

Part I UK policy proposals for managing radioactive substances and nuclear decommissioning

Our expertise

The British Geological Survey (BGS) is a world leading applied geoscience research centre, which provides objective and authoritative geoscientific data, information, and knowledge to inform UK Government and other stakeholders on the opportunities and challenges of the subsurface environment. The BGS has undertaken research related to radioactive waste disposal for over 60 years, working with waste management organisations and regulators both, in the UK and internationally. Our work has contributed to the safety case for deep geological disposal, and BGS is also the UK national provider of geological information, both for surface geology and understanding of the deep subsurface.

Section: Managing solid radioactive waste from the nuclear and non-nuclear sectors
1. Do you agree with the proposal to require the application of a risk-informed approach as a decision-making framework for the management of all solid radioactive waste? Please provide the reasoning behind your response.
We are in agreement with the proposal above. • Reclassification of waste will reduce the overall volume of waste required to be disposed of within a GDF. • The process of obtaining, characterising, and licensing of a GDF site is lengthy and expensive, so waste requiring this level of isolation should be prioritised in order to reduce costs. • The construction of a GDF will be the largest infrastructure project the UK has ever seen, so we regard any gains in the reduction of the size volume requiring disposal in a GDF as a positive benefit. • Any reduction in the GDF volume also reduces the demand for resource materials required for the engineered barriers, construction and backfill e.g., bentonite, metals (copper, steel), concrete and cements. However, the changes suggested will result in a change of waste types which can be disposed of within shallow surface disposal sites, and it should be re-emphasised that this can only take place within the stringent framework of regulation, an appropriate safety case, and thorough, effective and active geological and hydrogeological characterisation of any proposed LLW/ILWR disposal site. Given the shallower nature of such sites, this is likely to require a somewhat different skills set and expertise compared to deep disposal sites, as well as consideration of how such a disposal site may interact with other existing (or future) near surface infrastructure.
2. Do you agree that application of the waste hierarchy should be an explicit policy requirement for the management of all solid radioactive waste where practicable? Please provide the reasoning behind your response.

We are in agreement with the policy proposal around application of the waste hierarchy where practically safe to do so. Any minimisation in the volume of waste requiring permanent disposal is advantageous. This not only reduces the volume required within a waste disposal site, but this additionally reduces the demand for natural resources and components (e.g., bentonites and cements) required for the construction of the permanent radioactive waste disposal sites.

Section: Disposal of solid radioactive waste

3. Do you agree with the proposed amendment to current policies on geological disposal to allow disposal of ILW in near surface facilities? Please provide the reasoning behind your response.

In principle yes, subject to strict adherence to environmental regulation and a robust safety case. This should be based on a thorough understanding of the geosphere and relevant environmental processes and interactions both at site specific and relevant larger scales, and the ILW materials, to ensure that any risk is understood, minimised and managed. As discussed above, this is a sensible approach for several reasons, which are outlined in the responses to the questions 1 and 2.

4. Do you agree with the proposed policy framework for the development of near surface disposal facilities by the NDA for the disposal of less hazardous ILW? Please provide the reasoning behind your response.

It is stated that the “investigations necessary to identify a suitable location would be far less complex and time consuming, without the need to characterise geological features at great depth over a large area”. However, we would still emphasise that any site would need to be robustly characterised and understood from a geological and hydrogeological perspective (rock types, permeability, fracture regime, groundwater levels and flow characteristics, aquifer characteristics and interactions, and geochemistry). There is potential for a chemically disturbed zone to form around a near-surface repository (e.g., through leaching of the cementitious barrier which will affect the surrounding geosphere). The extent of geosphere characterisation needs to be clearly defined as it will be dependent on factors including the scale of the facility, the nature of the ILW, subsurface properties and the identification of potential sub-surface migration pathways, and the likelihood of migration in the event of a leak. We therefore stress the need for a programme of robust groundwater-quality monitoring focused on the pollutants planned for disposal at site over the lifetime of the facility and following its closure. Numerous complex processes will be active within this domain which may impact any safety case, and any perturbation of the groundwater flow and chemistry due to the emplacement of a near-surface disposal facility would need to be fully understood.

5. Do you agree that the policy of the UK Government and devolved administrations should promote the use of on-site disposal of radioactively contaminated waste from the decommissioning of nuclear sites, subject to environmental permits? Please provide the reasoning behind your response.

On-site disposal reduces potential risks inherent when transporting contaminated waste, particularly through any transport accident which may occur, and the potential for secondary contamination. However, it is assumed that any potential site will undergo the necessary assessments to determine that on-site disposal, by any of the three ways suggested, is the most appropriate route e.g., economically, such that the end volume of LLW or VLLW is volumetrically sufficient to justify this, and /or that environmental conditions on site will be sufficient to ensure any on-site disposal meets long term safety

requirements. Ongoing monitoring of the site is key, including robust groundwater monitoring.

Section: Decommissioning and clean-up of the UK's nuclear facilities

6. Are there any further improvements that we might consider in relation to the proposed update of nuclear decommissioning and clean-up policy? Please provide the reasoning behind your response.

Having an effective decommissioning plan in place during the construction of a facility is crucial. A challenge to decommission and clean-up is ensuring there is an understanding of previous phases of site development (e.g., uses, construction materials – especially hazardous materials, level of radioactive waste). The availability of adequate systematic documentation for site (re)development is key to understanding the evolution of any site, potential concealed hazards and mobilisation of legacy contamination to the wider environment.

Section: Nuclear materials and spent nuclear fuel

This section is not within BGS' area of expertise, and hence it is not appropriate for us to comment.

7. Do you agree with our proposed updates to the policy statement on the management of spent fuel? Please provide the reasoning behind your response.

8. Do you agree with our proposed policy statement on the management of uranium? Please provide the reasoning behind your response.

Consultation:

Part II Draft UK policy framework for managing radioactive substances and nuclear decommissioning

Section 6: Managing radioactive sources - civil nuclear and non-nuclear sites

This section is not within BGS' area of expertise, and hence it is not appropriate for us to comment.

1. Do you think that the draft policy statements on radioactive sources accurately reflects existing practice and regulation? Please provide the reasoning behind your response

2. Do you have any suggestions on how to improve this chapter on radioactive sources? Please provide the reasoning behind your response.

Section 7: Managing radioactive liquid and gaseous discharges - nuclear licensed sites and from non-nuclear operators such as universities, hospitals and the oil and gas industry

This section is not within BGS' area of expertise, and hence it is not appropriate for us to comment.

3. Do you think that the draft policy statement on radioactive liquid and gaseous discharges accurately reflects existing policy, practice and regulation? Please provide the reasoning behind your response.

4. Do you have any suggestions on how to improve this chapter on radioactive liquid and gaseous discharges? Please provide the reasoning behind your response.

Section 8. Managing solid radioactive waste in the nuclear and non-nuclear sectors – includes GDF

5. The solid radioactive waste policy set out above includes existing policy and policies that would be implemented if the proposals in Part 1 are taken forward. Do you agree that the policy statement captures all relevant policy on managing solid radioactive waste?
Agree

As far as we are aware, this appears to capture all relevant policy on managing solid radioactive waste.

6. Do you have any suggestions for how this chapter on managing solid radioactive waste could be improved? Please provide the reasoning behind your response.

Although geology, climate change and sea level rise are mentioned, a key factor in relation to disposal is the hydrogeological (groundwater) regime, e.g., 8.76 and 8.136. We suggest that groundwater protection / hydrogeological considerations are specifically mentioned where relevant for clarity.

Section 9. Nuclear decommissioning

This section is not within BGS' area of expertise, and hence it is not appropriate for us to comment.

The nuclear decommissioning policy set out above includes existing policy and policies that would be implemented if the proposals in Part I are taken forward. Do you agree that the policy statement captures all relevant policy on nuclear decommissioning?

Do you have any suggestions for how this chapter on nuclear decommissioning could be improved? Please provide the reasoning behind your response.

Section 10. Import and export of radioactive substances

This section is not within BGS' area of expertise, and hence it is not appropriate for us to comment.

9. Do you think this chapter on the import and export of radioactive substances accurately reflects existing policy, practice and the regulatory framework? Please provide the reasoning behind your response.

10. Do you have any suggestions on how to improve this chapter on the import and export of radioactive substances? Please provide the reasoning behind your response.

Section 11. Managing nuclear materials and spent nuclear fuel

This section is not within BGS' area of expertise, and hence it is not appropriate for us to comment.

11. Do you agree that the policy covers everything you would expect it to regarding managing spent fuel and uranium? We are not currently seeking views on plutonium management policy.

12. Do you have any suggestions for how the policy statements on managing spent fuel and uranium could be improved? Please provide the reasoning behind your response.