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The Scottish
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Riaghaltas na h-Alba



Llywodraeth Cymru
Welsh Government



DOE

UK Strategy for the Management of Solid Low Level Waste from the Nuclear Industry

A consultation response to the review of the nuclear
industry LLW Strategy

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Executive summary

This document provides a summary of the responses received to the consultation document for the UK Strategy for the Management of Solid Low Level Waste from the Nuclear Industry, published in January 2015; and the Government response to them.

In March 2007 the UK Government and Devolved Administrations published the policy for the long term management of solid low level radioactive waste (LLW) in the UK. Within this policy they required the Nuclear Decommissioning Authority (NDA) to develop a strategy for the management of solid low level radioactive waste in the nuclear industry on their behalf.

In August 2010 the NDA published the UK Strategy for the Management of Solid Low Level Waste from the Nuclear Industry; identifying a review cycle in line with that for the review of the NDA Strategy. The review process commenced in April 2014 and the resulting consultation document was published in January 2015. The consultation closed in April 2015.

The consultation document recognised the considerable change in the LLW management environment within the nuclear industry since the publication of the original strategy and, through the questions included in the consultation document, sought to ensure that the direction of travel for the revised strategy remained correct.

Having considered the responses to the consultation the Government has concluded that the direction of travel for LLW management within the nuclear industry is correct.

The Government recognises that there are potential advantages to integrating the three LLW strategies identified in the 2007 policy (for nuclear, non-nuclear and NORM wastes), however there also will be challenges in implementation. As a result Government will retain separate strategies during the next lifetime of this revised Nuclear Industry LLW Strategy, whilst continuing to review this position as the three strategies mature.

- The Government notes the potential benefit of moving towards a waste management approach of risk based disposability assessment, rather than through classification; and will work with Regulators, the NDA and waste producers to determine the practicalities and feasibility of adopting such an approach; recognising the importance of proportionate and coordinated stakeholder engagement in any potential change.
- There is recognition that the nuclear industry already applies the waste hierarchy when managing its LLW, including the reuse and recycling of suitable wastes; and that the NDA, Regulators and waste producers continue to seek further opportunities. The Government support these efforts.
- The Government is supportive of the work being undertaken by the industry and Regulators to identify how waste at the LLW / ILW boundary could be managed more flexibly, according to risk assessment.

1. Introduction

Why we consulted

- 1.1. The UK Strategy for the Management of Solid Low Level Waste (LLW) from the Nuclear Industry was first published in 2010 by the Nuclear Decommissioning Authority (NDA). Within the original strategy was a commitment to review the strategy in line with the 5-yearly review cycle of the NDA strategy.
- 1.2. During 2014 the NDA, on behalf of DECC, led this review, resulting in a revised draft Strategy document which was published for consultation in January 2015. The consultation period closed formally on the 21st April 2015.

About the consultation

- 1.3. There were 53 responses to the consultation in total. These were broken down into 7 categories of respondent: Local Government, Regulators, National NGOs (non-governmental organisations), Local NGOs, Businesses (including radioactive waste producers and waste treatment supply chain organisations), Local Groups and Individuals. The number of responses in each category is set out in the table below.

Respondent Category	Number of Responses
Local Government	4
Regulators	1
National NGO	2
Local NGO	3
Local Group	2
Businesses	15
Individuals	26

Responses to consultation by category

- 1.4. Of the 53 respondents, 28 did not directly answer the consultation questions, but provided a more general response. These responses are considered under question 7.

- 1.5. The remainder of this document provides a high level summary of the consultation responses and the UK Government's response to these, organised under each question of the consultation.
- 1.6. In reporting the overall response to each question, 'majority' indicates the clear view of more than 50% of those who provided a response to that question; and 'minority' indicates less than 50%. 'About half' indicates an overall response within a few percentage points of 50% (either way).
- 1.7. The following terms have been used in summarising additional points raised in the responses: 'many' respondents indicate more than 70% of those answering a particular question; 'a few' respondents means fewer than 30%; and 'some' respondents refers to the range between 30% and 70%.
- 1.8. In the Government response sections, 'we' refers to the UK Government.

2. Responses to the consultation questions

Question 1: What do you think would be the advantages and disadvantages of integrating the three LLW strategies into a single strategy?

Summary of responses to question 1

- 2.1. The majority of respondents were in favour of integration between the LLW strategies for nuclear, non-nuclear and naturally occurring radioactive material (NORM) LLW. There was recognition that the key themes and principles within the nuclear LLW Strategy are common to them all. One respondent favoured the integration of the nuclear LLW and the higher activity waste (HAW) strategies over the integration of the three LLW strategies.
- 2.2. There was, however, a majority view that there should be distinct implementation arrangements for different LLW producing sectors given their diverse characteristics.
- 2.3. Respondents said there were a range of challenges to increasing integration between the strategies, including that the industries concerned have differing operating regimes; that improved understanding of the forecast volumes of LLW arisings would be required; and that the active engagement of all stakeholders in the integration process would be key to its success. A few respondents also said that an integrated strategy could become unwieldy.
- 2.4. A number of advantages were identified by respondents, including that a more integrated strategy could facilitate a strengthened supply chain, since the same infrastructure for the treatment and disposal of LLW is used by the three sectors. Thus improved understanding of arisings may give greater confidence in commercial business cases.
- 2.5. Local Government respondents recognised that a more integrated approach could help local authorities when preparing their Local Waste Plans. They did, however, note that there was a wider opportunity to improve the integration between radioactive waste management and non-radioactive waste planning policy and guidance.
- 2.6. Other advantages identified included the opportunity to share learning and good practice more widely; to allow an improved understanding of the skills and capabilities needed for effective LLW management; the potential for harmonisation of regulation; and the opportunity for a single organisation to lead the implementation of an integrated strategy.

Government response

- 2.7. We agree that there are potential advantages and challenges to closer integration of the three LLW Strategies; and that the strategies are at different levels of maturity. We also recognise the range of industries and the different operating regimes covered by the three strategies.
- 2.8. As a result, we will retain separate strategies during the next lifetime of this revised Nuclear Industry LLW Strategy but will continue to review the position as the three strategies mature.

Question 2: What do you think are the advantages and disadvantages of using radiological classification as opposed to disposability assessment as the basis for waste management decisions?

Summary of responses to question 2

- 2.9. The majority of respondents were in favour of using risk based disposability assessment for radioactive wastes, recognising that this approach is used elsewhere in the European Union (EU). There was a view that the current approach, of radioactive classification, can lead to inefficient radioactive waste management solutions, especially for wastes containing low risk radionuclides.
- 2.10. Respondents also stated that radiological classifications are not risk based and therefore provide a relatively coarse view of the hazard associated with the waste.
- 2.11. They did, however, recognise that the radiological classifications are widely understood: stakeholders are conversant with the definitions of the waste categories and are clear what type of waste can be accepted at a facility. Thus, any change would require careful stakeholder management and communication to ensure it was not perceived as 'downgrading' the way radioactive waste is managed in the UK: stakeholders would need to be assured that radioactive wastes are still managed safely and compliantly.
- 2.12. A few respondents identified that a change to disposability assessment could enable a more holistic and integrated approach to radioactive waste management; potentially allowing more flexible and pragmatic solutions, since the assessment of a waste population would consider the hazard posed by its actual radiological, physical and chemical properties, as opposed to its classification. There may also be an opportunity to develop a disposal solution between the Geological Disposal Facility (GDF) and the LLW Repository for some HAW. This could deliver waste management solutions earlier than currently planned; supporting hazard reduction and reducing volumes of waste on sites, providing more cost effective, safe solutions.
- 2.13. Respondents also noted that any change would require considerable resource to implement; not only for waste producers, but also for Regulators and Local Government (where Local Plans are based on current definitions). Thus the benefit would need to be clearly articulated and delivered through an integrated approach.

Government response

- 2.14. We recognise the potential benefits that could be delivered by the use of risk based disposability assessments. The hazards associated with the management of radioactive waste within the nuclear industry are better understood now than when the radiological classifications were originally derived and thus there could be the potential for more effective solutions to be adopted with no impact on hazard or risk.
- 2.15. We will work with Regulators, the NDA and waste producers to determine the practicalities and feasibility of implementing any change. This would include consideration of proportionately engaging stakeholders in the process, including any impact on public understanding, acceptability and trust; and consideration of how to optimise the resources required to implement any change which would mainly affect wastes on the LLW/ILW boundary.

Question 3: Do you think there are barriers to reuse within the nuclear industry? If so, what do you consider these to be and how do you think they could be addressed?

Summary of responses to question 3

- 2.16. The majority of respondents recognised that the waste hierarchy is central to the management of radioactive waste from the nuclear industry and therefore that reuse should be and is considered within waste management arrangements.
- 2.17. Some respondents identified that there are already examples of successful reuse within the industry (whether small items, such as hand tools; or the reuse of equipment, buildings, or bulk materials); however these are often not well communicated and therefore the opportunity to share learning is lost. They felt that this could be increased through better access to and visibility of the existing asset transfer registers; and better waste producer awareness.
- 2.18. A range of technical, environmental, organisational, regulatory and cultural barriers to reuse were identified by one or more respondents. These included the cost and complexity to enable material to be reused (since good characterisation and provenance is necessary, and/or the item may require decontamination); the lack of standardisation of equipment across the industry; the timing of potential arisings and their reuse; the ability to suitably store and manage materials until needed for their new use; and the lack of awareness of opportunities with waste practitioners. It was also recognised that many wastes are not currently suitable for reuse; and that the uncertainty and quality of arisings information may prevent the market from coming forward with possible solutions and opportunities.
- 2.19. The main opportunity identified by some respondents was the reuse of bulk Very Low Level Waste (VLLW) material for void filling on sites, rather than its removal and disposal. It was recognised, however, that under the current regulatory arrangements the reuse of either VLLW or low active LLW in this way would be considered as disposal by Regulators, requiring the site to obtain a disposal authorisation. Such reuse could therefore be in conflict with the proposed site end state.

Government response

- 2.20. We recognise that the industry already reuses materials; but that there may be opportunities to share learning and good practice more widely to improve industry awareness and use of existing asset transfer systems.
- 2.21. We also recognise that NDA and Regulators are working with site licence companies to clarify the position around site end states and delicensing. This may provide the opportunity to enable more flexible reuse options for materials, including the use of VLLW or low active LLW in void filling. The environment agencies are also producing guidance on how they would regulate this type of disposal. We will therefore await the outcome from these activities.

Question 4: Do you think there are barriers to recycling waste in the nuclear industry? If so, what do you think could be done to facilitate improvement in this area?

Summary of responses to question 4

- 2.22. Respondents again recognised and supported the application of the waste hierarchy in their responses to this question.
- 2.23. The majority of responses focussed on metals recycling, noting that metal has been successfully recycled since the LLW Repository Ltd commercial metallic treatment framework was launched. However they also identified a number of challenges to metals recycling, including cost and the availability of treatment facility capacity, both in the UK and overseas. There was a desire to have more robust forecasts of waste arisings to facilitate

supply chain understanding of the opportunity to enter the UK market – a few respondents noted that it could be beneficial to have UK metal smelter capability. A few respondents also identified the opportunity to undertake a study to quantify the size of the metal recycling market across the nuclear, non-nuclear and NORM LLW sectors, which could facilitate investment decisions.

- 2.24. A few respondents recognised some public reservations to the recycling of metal from the nuclear industry for reuse outside the industry (in terms of the perceived risk this may pose to the general public). They noted that there may be opportunities to reuse the metal within the industry, for example for shield blocks or to the manufacture of waste containers.
- 2.25. A few respondents also identified that there may be recycling opportunities for other materials; but that further investigation and guidance was needed to support change within waste producing organisations.

Government response

- 2.26. We recognise that the nuclear industry has recycled significant volumes of metallic LLW since the opening of the routes through the LLW Repository Ltd commercial metallic treatment framework.
- 2.27. However we also understand the constraints and challenges noted by respondents to this route. We therefore support the need to make forecast volumes of waste that could be recycled more visible and accessible to the supply chain to facilitate their investment decisions. We will continue to support the NDA who, on behalf of Government, work with nuclear industry waste producers to improve the inventory data sets.

Question 5: Do you think opportunities should be explored to manage wastes at the boundary of LLW/ILW more flexibly according to risk assessment?

Summary of responses to question 5

- 2.28. The majority of respondents linked this question to question 2, recognising that the application of risk based disposability assessments could facilitate a more flexible approach to managing wastes at the LLW/Intermediate Level Waste (ILW) boundary. They were in favour of seeking these more flexible solutions, which could support acceleration of risk and hazard reduction; as well as the opportunity to optimise volumes of waste requiring disposal to both the GDF and LLWR.
- 2.29. Some respondents noted that EU countries such as France already manage ILW containing short lived radionuclides differently from those containing long lived radionuclides – disposing of these wastes in near surface facilities. They felt that this could be an effective solution in the UK, since it may be possible to develop a near surface facility more quickly than the GDF, allowing earlier disposal of suitable ILW.
- 2.30. Some respondents also noted that the benefit of managing wastes at the boundary more flexibly could only be understood if further work was undertaken to understand the extent of suitable wastes within the current inventory (for example, those containing short lived ILW). This analysis could include the identification of options for packaging and storage of such wastes.
- 2.31. Respondents also recognised that, as in their responses to question 2, the potential blurring of the LLW/ILW boundary could cause stakeholder concerns that there would be a perceived increased risk to the general public or nuclear workers. A few respondents therefore felt that any change in the approach to the management of boundary wastes should be communicated through, for example, guidance to waste producers.

Government response

2.32. We note the overlap in the responses to this question with those provided for question 2. The current approach to risk assessment for wastes at the LLW/ILW boundary will remain the same under the new strategy. We also recognise that work is already being undertaken by the industry and Regulators to explore the opportunities of moving towards managing waste through disposability assessments in the future; and support these efforts, which will help to inform future dialogue between interested parties on this issue.

Question 6: Do you consider the current extent of stakeholder engagement for the LLW strategy is proportionate and appropriate? If not, what would you like to see with regard to stakeholder engagement?

Summary of responses to question 6

2.33. This question was responded to in two ways – the first was with respect to the Strategy review itself and the second was with respect to the implementation of the Strategy.

2.34. With respect to the first, the majority of respondents who replied in this vein stated that the level of stakeholder engagement within the Strategy review was proportionate and appropriate.

2.35. With respect to the implementation of the Strategy and stakeholder engagement with it, the majority of respondents felt that it is effective and that the various fora provided by the National Programme governance arrangements were of value. A range of ideas for the further development of the stakeholder engagement arrangements, including a greater engagement at different levels within the waste producing organisations; a greater focus on working collaboratively to resolve specific issues within the industry associated with LLW management; working to gain increased engagement of the non-NDA estate and the supply chain within the National Programme; and site licence company (SLC) consultation with their local communities.

Government response

2.36. We are pleased that respondents recognise the effectiveness of the processes for stakeholder engagement in the Strategy review and with strategy implementation through the National Programme; and the value delivered. We will continue to encourage further development of the engagement processes, as required, to meet the needs of the maturing Strategy through the National Programme.

Question 7: Do you have any other comments on this revised strategy?

Summary of responses to question 7

2.37. A majority of respondents focused on general areas of concern and opposition to the nuclear industry, including the principle of nuclear new build and the GDF. Their responses included objecting to the LLW management principles described within the Strategy; and proposing a moratorium on decommissioning and new build. Some respondents described the current strategic approach as “diluting and dispersing” the LLW; preferring an approach which would “concentrate and contain” the waste local to its site of origin.

2.38. A minority of respondents used this question to reiterate their support to the principles of the LLW Strategy; its implementation to date; and its revision. A few respondents proposed

specific amendments or more general changes to the strategy document and these have been incorporated into the document where appropriate.

2.39. Local Government identified the opportunity for Government departments to work to better integrate radioactive waste policy and strategy with that for wider waste management. They also expressed the view that the industry should work to further enhance the local socio economic benefits from their operations.

Government response

2.40. We welcome the level of response to the consultation document and we have considered the detail within the responses, where they are relevant, during the development of the final strategy document. Some responses were general objections to the nuclear industry, decommissioning and new build which were considered to be out of scope of this consultation.

2.41. We are committed to ensuring the safe, cost effective management of our nuclear legacy and to make sure the UK has a secure energy infrastructure. The principles introduced in the 2010 UK Nuclear LLW Strategy have proven to be successful; resulting in significant improvements in application of the waste hierarchy, resulting in approximately 85 % of LLW generated in 2014/15 being diverted from LLW disposal¹. This has resulted in substantial environmental and economic benefits. The strategy consultation document does not propose any changes to these principles.

¹ <http://llwrsite.com/wp-content/uploads/2013/03/Waste-Metric-Dashboard-March-2015-v2.pdf>

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