

Managing Radioactive Waste Safely:

Implementing Geological Disposal Annual Report

April 2010 – March 2011

June 2011

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Ministerial Foreword

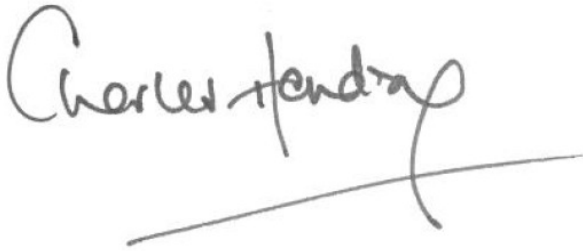
One of my first visits as Minister for Energy in May 2010 was to Sellafield with the Secretary of State, to see firsthand the challenges of nuclear decommissioning and the long term management of radioactive waste and materials. It was clear to me that everything we and the Nuclear Decommissioning Authority are doing to decommission and clean up our legacy civil nuclear sites is eventually dependent on one thing – that we can finally dispose of the waste.

As such, this Government has been quick to reaffirm its commitment to geological disposal, a siting process based on voluntarism and partnership, safe and secure interim storage and ongoing research and development. A multi-billion pound programme, it is essential that there are robust arrangements to manage a process that needs to be both delivery driven as well as balanced with the principles of voluntarism and partnership. We have strengthened programme management arrangements and I have set up, and chair, a new Implementation Board which provides senior level oversight as well as enabling stakeholder observation and input.

We have also published an indicative timeline and milestones. It is a timeline which is credible and based on international experience of similar programmes but one which I think there is scope to improve. I would like to go forward with the ambition of seeing the first waste put into a geological disposal facility by the end of 2029 and I have tasked NDA to look at opportunities for accelerating progress. It might be that by increasing the resources allocated to key phases of the programme, by undertaking work in parallel, by looking again at more advanced programmes overseas, or by improving plans for both site characterisation and construction, that we can achieve this. For now, though, the current timeline provides a useful baseline against which progress can, and will, be measured. Ensuring the programme keeps on-track means ongoing review. As well as scrutiny from the Committee on Radioactive Waste Management and of course, Parliament, our involvement in the Office of Government Commerce review process will provide regular, and independent, snapshot assessments on key issues and risks to our delivery.

To say a little about actual delivery. So far, we have three expressions of interest (for two borough council areas) and during 2010 the local process passed an important milestone with the publication of the British Geological Survey initial 'sub surface unsuitability test' in west Cumbria. The report did not present any reason why the area in west Cumbria cannot move forward into the next stage of the siting process. The west Cumbrian local authorities are now considering whether or not to participate further in the process and their deliberations and local engagement will continue during 2011.

Finally, it is important to make clear that the invitation for other communities to come forward, to find out more about the siting process, is still open. We want as many communities involved as possible. Nothing will be built unless the independent regulators say it is safe to do so, and of course perceptions may need to be addressed, but this is a major infrastructure programme that will provide skilled employment, an average of 550 jobs, for over a century. We continue to promote the invitation and my officials are happy to talk to any local authority that wants to find out more.

A handwritten signature in dark ink, reading "Charles Hendry". The signature is written in a cursive style with a long horizontal stroke extending to the right.

CHARLES HENDRY MP

Introduction and Background

Introduction

1. Government's response in November 2010 to the House of Lords Science and Technology Select Committee's report "Radioactive Waste Management: a Further Update", committed Government to the production of an annual report to Parliament that would be published and copies provided to the Committee on Radioactive Waste Management (CoRWM), as well as to key stakeholders.
2. This is the first of those reports. As such, it briefly sets out some of the context, explaining the background to the Managing Radioactive Waste Safely (MRWS) programme as well as covering some of the actions and updates since the publication of the MRWS White Paper: a Framework for Implementing Geological Disposal in June 2008 (Cm7386). It focuses on progress with implementing geological disposal and describes developments leading to the key milestones set out in the published MRWS timeline, included at **annex A**.

Background

3. The UK has been a nuclear nation since the 1950s and has a legacy of higher activity radioactive waste that already exists and needs to be managed safely for the long term. There are also other materials (spent fuels, plutonium and uranic materials) some of which could come to be viewed as wastes in future, as well as the potential of new waste from proposed new nuclear power stations.
4. All these wastes and materials can be stored safely and securely in the short and medium term but it is essential to provide a means of managing them in the long term. Following the breakdown of the Nirex programme in the 1990s, Government took stock, setting up the MRWS programme in 2001. Under the MRWS programme, an independent Committee on Radioactive Waste Management (CoRWM) was established to consider and evaluate all of the options for the long-term management of the UK's legacy higher activity waste.
5. In 2006, following extensive engagement with experts, stakeholders and the public, CoRWM made a set of recommendations to Government, the primary one being that, within the context of present knowledge, geological disposal was the best method for the long-term management of legacy higher activity waste. Government accepted this recommendation. Geological disposal is internationally recognised as the preferred approach and is also supported by the UK learned societies including the Royal Society, the Geological Society and the Royal Society of Chemistry.
6. Following further Government consultation, the 2008 MRWS White Paper set out the framework for implementing geological disposal. This includes -
 - a strong and effective implementing organisation in the Nuclear Decommissioning Authority (NDA);
 - strong independent regulation by the statutory regulators;
 - independent scrutiny and advice from a reconstituted CoRWM; and

- an approach to siting a geological disposal facility based on voluntarism and partnership with local communities.
7. Alongside the publication of the White Paper, all local authorities in England and Wales were invited to 'express an interest' in holding discussions with Government about potential involvement in the siting process for a disposal facility. Since then, three local authorities have expressed an interest and are working with Government to consider whether to move into the next stage of the process, desk-based studies. The invitation for other communities to express an interest is still open.

2010-11 Update

Robust Programme Plans

Geological Disposal Implementation Board

8. During 2010-11, Government re-affirmed its commitment to geological disposal, safe and secure interim storage and a geological disposal facility siting process based on voluntarism and partnership. Ministers have looked to re-energise the MRWS programme, strengthening programme management arrangements and setting up the Geological Disposal Implementation Board (GDIB), chaired by Ministers, to provide senior level oversight of implementation as well as enabling key stakeholders to provide input to, or to have observation of, the programme.
9. The creation of the Board enables key stakeholders including nuclear operators, local government representatives, regulators and non-governmental organisations to observe and provide input to the programme. The intention is to provide increased visibility, to foster better shared understanding of the issues involved and to bring challenge and hold the Department of Energy and Climate Change (DECC) to account for the successful and timely delivery of the programme.
10. The Board met for the first time on 30th November 2010 and will continue to meet 2-3 times per year. Presentations given to GDIB and the minutes of each meeting are published on the DECC website¹ following each meeting.

Timeline and milestones

11. Government has developed a clear high-level timeline for the MRWS programme, which was presented to the first GDIB meeting. This describes the key steps since the programme was launched as well as setting out indicative timescales and milestones leading to the estimated first consignment of waste. The timeline has been published on the GDIB webpage² and is attached as an annex to this report.
12. Current planning assumptions suggest first waste emplacement in a geological disposal facility by 2040. Recognising that the early pace is guided by local communities, it is also

¹[www.decc.gov.uk/en/content/cms/what we do/uk supply/energy mix/nuclear/forums/geo_disposal/geo_disposal.aspx](http://www.decc.gov.uk/en/content/cms/what_we_do/uk_supply/energy_mix/nuclear/forums/geo_disposal/geo_disposal.aspx)

²www.decc.gov.uk/en/content/cms/meeting_energy/nuclear/forums/geo_disposal/geo_disposal.aspx

important to be clear that later, more technical stages in the MRWS programme will necessarily take several decades.

13. Desk based studies of potential candidate sites are estimated to take around 4 years, surface based investigations (seismic surveys and borehole investigation of candidate sites) about 10 years and underground operations (research, initial construction and commissioning) about 15 years, prior to the facility beginning to receive wastes
14. These timescales are credible estimates, based on planning assumptions used by NDA, which have been benchmarked with international experience. International implementation timescales range from 27 to over 40 years. The UK's indicative timeline of 32 years (from publication of the MRWS White Paper in 2008) is consistent with the estimated timescales of the three most advanced programmes in Europe – estimated at 31 years in Sweden, 32 years in France and 37 years in Finland.
15. Although these timescales are credible, there may be scope for improvement and Government has challenged the NDA to look at opportunities for optimising the process with an ambition to accelerate progress. Government is committed to optimising the process wherever possible, to look for ways to do things in the most efficient, timely way whilst taking account of safety, security and the views of a local community. As the programme moves forward aspects such as the host geology, the design of a facility, the inventory of waste to be disposed, and the timing of waste arisings will become more defined and thus the scope for optimisation and increasing the rate of progress will become clearer.
16. The timeline provides an indicative baseline against which progress can be made and subsequently measured. It, and the milestones within it, will be kept under review and updated whenever required.

Annual report

17. As part of the drive to increase visibility and to ensure Government's programme delivery is held to account, Government also committed to this annual report to Parliament which is being published and copies provided to CoRWM and to key stakeholders. The report includes progress on underpinning projects that work towards the principal milestones set out in the timeline, as well as progress against major commitments given by Government as a result of CoRWM's recommendations since it was reconstituted.

Office of Government Commerce Review

18. As part of Government's enhanced programme management arrangements, the MRWS Senior Responsible Officer requested the Office of Government Commerce (OGC) undertake a Starting Gate review during 2010. Starting Gate reviews are intended to help Departments working on major policy initiatives and aim to provide independent, constructive, snapshot assessments and advice on key issues and risks to successful policy development and delivery.
19. The OGC review team identified a number of aspects of the programme which are going well, including widespread support for the general approach, clear programme roles and responsibilities, and a clear commitment to the voluntarism approach. Government is already working on areas highlighted for further attention, including continuing to enhance

programme management arrangements, evaluating resources and skills required as the programme develops, and undertaking further work on future implementation stages. Further OGC reviews will be undertaken at appropriate points to ensure arrangements continue to be effective.

Expressions of Interest

20. So far, three local authorities (Allerdale Borough Council, Copeland Borough Council, and Cumbria County Council) have 'expressed an interest' for the areas of Allerdale and Copeland. In 2009 they established the West Cumbria MRWS Partnership ('the Partnership') to consider the issues and advise the three local authorities on whether or not to 'decide to participate' further in the siting process.
21. The Partnership is an association of local interests that includes the three local authorities, neighbouring boroughs, parish and town council representatives, trade unions, Cumbria Chamber of Commerce, and community groups. Environmental NGOs have also been invited to participate but have declined. Meetings are open to the public and are reported on thoroughly, with agendas, presentations, minutes and further information all available on the Partnership website at www.westcumbriamrws.org.uk.
22. Government is committed to helping communities with the cost of their involvement in the process and the cost of their local engagement. For 2010-11, based on the Partnership's detailed project planning, Government provided £1m to the Partnership through an engagement package grant. This expenditure covered costs of the running of the local partnership (project management, venue hire, facilitation), direct costs incurred by local authorities as a result of their involvement, the cost of public engagement activities and the provision of independent legal and expert advice.
23. DECC officials also sit on the West Cumbria MRWS Partnership as observing members to provide ongoing advice and support. Officials have attended all the Partnership's 6-weekly meetings throughout 2010–11, offering background and advice on such issues as planning requirements, waste inventory, the British Geological Survey screening process (see below) and the siting process more generally.
24. 2010-11 also saw the completion of a 'sub-surface unsuitability test' in west Cumbria, an important milestone and Stage 2 of the process set out in the MRWS White Paper. This geological screening of the areas of Allerdale and Copeland was a desk-based study using only currently available information. It screened against high level geological criteria (previously consulted on and set out in the MRWS White Paper) to rule out volumes of rock that definitely could not host the underground workings of a disposal facility for obvious geological reasons. Undertaken by the British Geological Survey (BGS), the study did not consider any non-geological factors and does not show where a facility could eventually be located. This is an early stage in the siting process and further, increasingly detailed, assessments applying more localised geological and other criteria will only be made **IF** a community decided to participate further.
25. The BGS Geological Unsuitability Screening report does not present any reason why the west Cumbrian authorities cannot continue to consider whether or not to participate in the site selection process.

26. Local engagement and consultation is key to the voluntarism process and the Partnership is undertaking three phases of local engagement. The first, completed in early 2010, was to raise awareness of the process and the second, recently completed, was to gather views on what the Partnership should be considering as it moves forward and to raise awareness of the BGS screening.
27. Engagement has been comprehensive and has included regular newsletters mailed out to all residents in west Cumbria, community events across the county, discussion packs, telephone polls and presentations to schools and other community groups. The Partnership has also ensured that all activity has been independently evaluated. The Partnership's work has been funded via Government's 'engagement package' and DECC officials and NDA staff have also attended many of the local events to answer policy questions and provide background information wherever needed.
28. The Partnership's third and final phase of local engagement will be during the second half of 2011 and will be to gather views on whether the local authorities should make a 'decision to participate' in the siting process or not. The Partnership is currently expecting to make a recommendation to the local authorities on whether to participate further early in 2012.

National Promotion

29. The invitation for communities to 'express an interest' is still open and Government wants to have as many areas involved in the process as possible. This is a multi-billion pound project that will directly provide skilled employment for an average of 550 people for over a century. It will also provide indirect employment in any local communities close to such a facility. Given that the suitability of any area cannot be guaranteed at this early stage in the process, and that communities have a voluntary right of withdrawal right up until a late stage, it is sensible for Government to continue to keep the invitation open.
30. As such, Government has undertaken a number of activities to encourage other communities to come forward, to raise awareness of the invitation and to provide factual information to as many people as possible.
31. This has included development of a dedicated MRWS website with several layers of background information aimed at a range of audiences (<http://mrws.decc.gov.uk/>), Ministerial letters to all local authority leaders in England, a series of short, easy to read factsheets summarising the key aspects of the siting process, DECC information stands at a number of local Government conferences and exhibitions (2009 Local Government Association Annual Conference, 2009 National Association of Local Councils Annual Conference, 2010 Royal Town Planning Institute Planning Conference) and disseminating information via engagement on other Government policies as well as through other regional bodies.
32. The NDA also continues to develop and present new material useful for the promotion of MRWS as its implementation programme progresses. In particular, there was much publicity around the publication of NDA's 'Steps towards Implementation' in July 2010, which included a DVD sent out to all NDA stakeholders and made available in a number of stakeholder forums. The DVD included a new, informative animation to help the viewer to understand the highly engineered nature of a facility and to visualise the

process of emplacing packaged waste into a facility. The animation is also available on the NDA website at www.nda.gov.uk/aboutus/geological-disposal/steps-to-implementation.cfm

33. Government continues to look for opportunities to raise the profile of the invitation and officials are pleased to attend meetings and provide presentations to anyone who requests it.

NDA Planning and Implementation

34. As the body responsible for implementing geological disposal, NDA has established the Radioactive Waste Management Directorate (RWMD), which will evolve into a wholly owned subsidiary of NDA and eventually into a Site Licence Company (SLC). This is required so that RWMD can apply for and hold the necessary environmental permits and planning permission for geological disposal. RWMD continues to develop and is currently working as a 'Prospective SLC' and already voluntarily submits to regulatory scrutiny and advice³.
35. RWMD has undertaken a great deal of generic planning work already. As mentioned above, in July 2010 it published "Steps Towards Implementation"⁴, a document that describes its preparatory work so far and the planning of its future work programme. It set out how the various activities and outputs of RWMD's work programme are designed to achieve a safe, secure facility as well as outlining areas where there are uncertainties with explanations of how these will be dealt with in future planning.
36. RWMD also published the generic Disposal System Safety Case⁵ (DSSC) in February 2011. This suite of documents was developed to demonstrate how robust regulatory requirements for a geological disposal facility could be met in the future, once a specific site, waste inventory and facility design have been identified. It draws together detailed information on scientific and engineering principles supporting geological disposal, setting out at a generic level how a suitable, site-specific safety case might be made. As the programme proceeds and once a site has been identified, the safety case will be refined based on detailed scientific and technical assessments to provide evidence that a geological disposal facility meets all applicable regulatory requirements.

Committee on Radioactive Waste Management (CoRWM)

37. In line with Government's response to CoRWM's 2006 recommendations, the Committee was reconstituted in 2007 to provide independent scrutiny and advice on the long-term management, including storage and disposal, of radioactive waste. Its primary task is to provide independent scrutiny of the Government and NDA's proposals, plans and programmes to deliver geological disposal, together with robust interim storage.
38. CoRWM provides both formal and informal advice to Government. Since 2008 it has submitted three substantive reports to Government covering interim storage, geological

³ Further information available on the Environment Agency website at www.environment-agency.gov.uk/business/sectors/114335.aspx

⁴ www.nda.gov.uk/aboutus/geological-disposal/steps-to-implementation.cfm

⁵ www.nda.gov.uk/aboutus/geological-disposal/rwmd-work/dssc/

disposal and research and development (R&D). Responding to these reports⁶ provided Government a useful opportunity to consider general issues such as strategic co-ordination, information provision and stakeholder engagement, as well as more technical issues specific to each report.

39. Government responded positively to many of the recommendations from CoRWM's three reports and these responses have subsequently begun to influence a number of areas within the MRWS programme.
40. Strategic co-ordination was something which was mentioned in both CoRWM's report on interim storage and in its report on R&D. In March 2011 the NDA published its updated Strategy setting out its strategic direction and its long-term objectives. NDA's Strategy also makes clear that when considering integrated waste management the NDA intends to take a UK-wide view, including its own sites and where appropriate the operations of other waste producers such as EDF Energy (formally British Energy operations) and the Ministry of Defence.
41. This has been demonstrated in recent work on interim storage, where NDA has been working closely with wider industry colleagues and will shortly publish an industry guidance document on Robust Interim Storage of Higher Activity Waste Packages. This will cover key issues such as waste package performance, store longevity, monitoring and inspection regimes, and store maintenance and refurbishment. The plan is to publish the first issue of the guidance in summer 2011 and then to 'road test' it for about a year and then update it in the light of experience.
42. In the case of R&D, NDA has reviewed the bodies it has established to co-ordinate R&D and to share national and international good practice. These include the NDA Research Board and the Nuclear Waste Research Forum. Through these bodies NDA is strengthening its co-ordination and assurance of R&D activities and building on established good practice to underpin key strategic decisions. In particular, NDA has appointed an independent Chair for the Research Board, which will look at the strategic direction of R&D across the field of decommissioning and radioactive waste management.
43. In terms of Government's response to CoRWM's report on the geological disposal programme, there have also been a number of developments. As noted above, RWMD has published the generic Disposal System Safety Case and, as part of its 2011-12 work programme CoRWM has been asked to review and comment on the documentation, focussing on the scientific basis for RWMD's forward programme. Government is also working closely with communities that have currently 'expressed an interest' to agree a number of local principles associated with Community Benefits. These should enable those communities to have enough confidence in both the nature and delivery of Community Benefits to enable them to take a decision on whether or not to participate further in the geological disposal facility siting process.
44. CoRWM's reports and recommendations will continue to influence the MRWS programme as it moves forward. In particular, given its effectiveness to date, CoRWM's 'real time' advice, observing and advising at meetings/events and commenting on

⁶ Copies of CoRWM's reports and Government's responses are available at <http://corwm.decc.gov.uk/>

documentation as it is drafted, is expected to play a continuing role. Further information on CoRWM, including its proposed work programme for 2011-14 and shortly its annual report for 2010-11, is available on its website at <http://corwm.decc.gov.uk/>

NEXT STEPS

45. Government will continue to develop and embed the delivery arrangements it has put in place during 2010-11. The combination of a high profile, transparent, ministerial implementation Board, of an indicative timeline and milestones, of annual progress reports and of ongoing, independent programme reviews have put the programme on a sound footing.
46. Government expects to progress a number of projects under the MRWS programme this year. In summer 2011 it will conduct a consultation on the Identification and Assessment of Potential Candidate Sites for a geological disposal facility. This will propose how, following any decision to participate, Potential Candidate Sites within the area covered by the decision can be identified and assessed. The outcomes of the identification and assessment process will input to decisions on whether an appropriate Site, or selection of Sites, merit surface-based investigations.
47. Furthermore, following the publication of the 2010 UK Radioactive Waste Inventory⁷ in March 2011, Government and NDA are working to produce a report that provides an estimate of the wastes and materials currently identified as potentially for disposal in a geological facility. In particular this will be focussed on informing any local community or communities who may be involved in, or considering involvement in, the facility siting process. It will provide a transparent updated estimate of the quantity and the types of waste, as well as indicating the scale and nature of any changes from previous inventories.
48. Government will also continue its engagement with the West Cumbria MRWS Partnership, west Cumbrian local authorities, stakeholders and the public. This will be a particularly important year for the process in west Cumbria and local activity is likely to be substantially increased as the area moves towards its decision on whether to participate further in the siting process or not. Government will provide as much support as is necessary to the local process.
49. Finally, Government continues to be keen to encourage other communities to find out more about the siting process. The invitation is still open and it is important to recognise that this is a multi-billion pound project that will directly provide skilled employment for an average of 550 people for over a century. Government will continue to look to promote the invitation and is happy to offer information briefings, presentations or meetings to any community that might want to find out more.

⁷ www.nda.gov.uk/ukinventory/

Annex A – MRWS Indicative Timeline

