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Recent Developments in the United Kingdom Geological Disposal Facility Programme – 17558

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ABSTRACT

The United Kingdom Government remains committed to the policy of geological disposal. All major nuclear nations are actively pursuing geological disposal. It is internationally recognised that geological disposal represents the safest and most sustainable option as the end point of the management of high level waste and spent fuel considered as waste. Other countries that have also decided on a policy of geological disposal include Canada, Finland, France, Switzerland, Sweden and the United States of America. The United Kingdom Government continues to favour an approach to siting a Geological Disposal Facility that is based on the willingness of local communities to participate in the siting process.

Construction and operation of a Geological Disposal Facility will be a multi-billion pound project that will provide skilled employment for hundreds of people over many decades. It will contribute greatly to the local economy and wider socio-economic framework. There are also likely to be spin-off industry benefits, infrastructure investments, benefits to local education or academic resources, and positive impacts on local service industries that support the facility and its workforce. It is also likely to involve major investments in local transport facilities and other infrastructure, which would remain after the facility had been closed.

The United Kingdom Government published a renewed process for siting a Geological Disposal Facility in 2014 – the *Implementing Geological Disposal* White Paper. This paper discusses the status of activities in the 2014 White Paper that have been accomplished or are underway through to 2016.

INTRODUCTION

All major nuclear nations are actively pursuing geological disposal. It is internationally recognised that geological disposal represents the safest and most sustainable option as the end point of the management of high level waste and spent fuel considered as waste. The UK Government remains committed to geological disposal as the best means to manage

WM2017 Conference, March 5-9, 2017, Phoenix, Arizona, USA.

higher activity radioactive waste for the long term. It does this through its Geological Disposal Facility (GDF) programme.

The primary objective of the programme is to site and construct a permanent GDF as the safe, secure and environmentally responsible solution to the need for long-term management of higher activity radioactive waste.

Roles and Responsibilities

The UK Government is responsible for the policy of geological disposal. Radioactive waste management is a devolved issue, meaning that the UK Government has responsibility for the policy in respect of England, the Welsh Government in respect of Wales, and the Northern Ireland Executive in respect of Northern Ireland. The Scottish Government has adopted a separate policy of near-surface disposal for the management of higher activity radioactive waste in Scotland and is not part of the GDF programme.

The Nuclear Decommissioning Authority (NDA) is a non-departmental public body that was established by the Energy Act 2004. It is responsible for decommissioning and cleaning up existing, publicly-owned civil nuclear sites across the whole of the UK and making them available for other purposes. It is responsible for implementing Government policy on the long-term management of radioactive waste.

Radioactive Waste Management Limited (RWM) is a wholly-owned subsidiary of the NDA, and is responsible for implementing Government policy on geological disposal of higher activity radioactive waste. As the developer of a GDF, RWM is responsible for safety, security and environmental protection throughout the lifetime of the programme. RWM is undertaking a transition programme to ensure the organisation has the capability, capacity and the culture needed to launch and deliver the GDF policy.

BACKGROUND

Higher activity radioactive wastes are produced as a result of the generation of electricity in nuclear power stations, from the associated production and reprocessing of the nuclear fuel, from the use of radioactive materials in industry, medicine and research, and from defence-related nuclear programmes. As a pioneer of nuclear technology, the UK has accumulated a legacy of higher activity radioactive waste and material. Some of this has already arisen as waste and is being stored on an interim basis at nuclear sites across the UK. More will arise as existing facilities reach the end of their lifetime and are decommissioned and cleaned up, and through the operation and decommissioning of any new nuclear power stations.

WM2017 Conference, March 5-9, 2017, Phoenix, Arizona, USA.

The provision of a GDF will not only allow the UK to complete the decommissioning and clean-up of its legacy facilities but it will also enable the delivery of the UK's nuclear new build programme because before development consents for new nuclear power stations are granted, the Government needs to be satisfied that effective arrangements exist or will exist to manage and dispose of the wastes they will produce.

Identifying a site for the repository is a significant challenge. Previous processes put in place to identify a site have been unsuccessful. The most recent process to identify a suitable site to host a GDF came to an end in 2013 when one of the three local authorities involved voted against continuing with the siting process.

Since then, the UK has undertaken an extensive lessons learned review and consultation, which resulted in the publication of a new White Paper *Implementing Geological Disposal*¹ in July 2014 designed to clarify elements of policy through a set of initial actions and set out the framework for managing higher activity radioactive waste through geological disposal.

The UK Government favours a 'voluntarist' approach based on working with communities that are willing to participate in the siting process. A GDF is likely to bring significant economic benefits to a community that hosts it, in the form of long-term employment and infrastructure investment, and in the form of additional community investment that the UK Government has committed to provide.

In due course, as communities enter the process, the developer will work in partnership with community representatives to develop a locally specific plan for how additional funding could best be invested in their area. The process going forward is outlined in Figure 1.

¹ Implementing Geological Disposal, DECC White Paper, 2014, available online at: <http://bit.ly/1rF6xQn>



Fig. 1. Diagram showing process going forward.

INITIAL ACTIONS

The 2014 *Implementing Geological Disposal* White Paper set out a revised siting process for a GDF and included a commitment by government to develop further key details across three areas, referred to as initial actions:

- National Geological Screening (led by RWM, the developer);
- National Land-use Planning - establishment of the policy framework for planning decisions in England (led by the UK Government);
- Developing a process of Working with Communities, including community representation, community investment, and a means of obtaining independent views (led by the UK Government).

Formal engagement between the developer and potential host communities is expected to begin once the initial actions have been completed. With greater clarity on issues like geology and development impacts, community investment and community representation, communities will be able to engage with more confidence in the process to deliver this nationally significant infrastructure project.

National Geological Screening

The 2014 White Paper committed RWM to providing greater certainty about existing knowledge of the geology of the UK through a 'National Geological Screening' exercise, bringing together existing information

about UK geology and making it available in an accessible form. This is to provide authoritative information about the local geology that can be used in discussions with communities. Screening will focus on the relationship between geology and the long-term safety of a GDF. By providing existing, relevant geological information across the various regions of the UK, there will be a national resource to help inform early discussions with communities about their potential suitability to host a GDF. It will not definitively rule all areas as either 'suitable' or 'unsuitable'; it will not seek to target/select individual sites for development; nor will it replace the statutory planning and regulatory processes that will continue to apply to a development of this nature.

National Geological Screening involves two stages:

- The first stage produced draft Guidance setting out how the information would be assembled and presented, and was subject to public consultation and scrutiny by experts. The consultation was completed in autumn 2015.
The Geological Society of London established an Independent Review Panel (IRP), on behalf of the Department of Energy and Climate Change (DECC) (now the department for Business Energy and Industrial Strategy (BEIS)), with access to a broad range of well-respected national and international geoscience expertise. The remit of the IRP was to assess whether the national geological screening Guidance was technically robust, whether it could be implemented using the existing geological information available, and whether it provided an appropriate assessment of the prospects for developing a robust long-term safety case in a range of geological settings to accommodate the UK inventory of higher activity waste. The IRP endorsed the national geological screening Guidance and detailed technical instructions, and these, along with the consultation response report were published in April 2016².
- The second stage is underway and is using the Guidance to produce Regional Narratives and illustrative maps to describe characteristics of the geological environment and their relevance to safety; RWM has worked closely with the British Geological Survey³ to apply the national geological screening Guidance (with the IRP also giving their view on the application of the Guidance during the latter part of 2016), to develop the Regional Narratives showing existing information about geological settings across the country relevant to potential development and long-term safety of a GDF. A Narrative will be produced for each of the 13 regions of England, Wales and Northern Ireland used by the British Geological Survey in its existing regional guides.

² <https://www.gov.uk/government/consultations/public-consultation-on-national-geological-screening>

³ <http://www.bgs.ac.uk/>

National Land-use Planning

The objective of the National Land-use Planning initial action is to put in place a clear and transparent process for GDF land-use planning decisions in England. The Planning Act 2008 has been amended, bringing geological disposal and the associated deep borehole investigations (in England) within the definition of Nationally Significant Infrastructure, putting in place a process that is appropriate for an infrastructure project of this scale and importance, in line with a range of existing major energy, transport and waste projects.

After the inclusion of GDFs and deep investigatory boreholes within the definition of Nationally Significant Infrastructure Projects (NSIPs), further work was required to develop a National Policy Statement (NPS), in respect of geological disposal infrastructure that would further define the planning process for a GDF.

The primary purpose of an NPS is to guide the Planning Inspectorate and the Secretary of State when examining and making decisions on applications for development consent for major infrastructure; it will also aid the developer in their application for development consent. Its function is to establish the need case for such infrastructure and to set out the framework for decision making, taking into account the likely impacts of that infrastructure. This creates greater certainty and transparency in the delivery of the planning process.

The Planning Act 2008 requires that an Appraisal of Sustainability (AoS) of the NPS must be carried out before it can be designated to assess the likely socio-economic and environmental effects of the NPS; the White Paper also stated that a Habitats Regulation Assessment (HRA) of the NPS would be carried out to identify any likely significant effects on European designated nature conservation sites.

As part of the first stage of this process, a technical consultation on the AoS scoping report and HRA Methodology report associated with the draft NPS took place in Summer/Autumn 2015. The Government response was published in February 2016⁴.

A draft NPS has been developed and will be subject to public consultation (alongside the AoS and HRA reports) and parliamentary scrutiny during 2017.

⁴ <https://www.gov.uk/government/consultations/appraisal-of-sustainability-scoping-and-habitats-regulations-assessment-methodology-reports-for-geological-disposal-national-policy-statement>

Working with Communities

The 2014 *Implementing Geological Disposal* White Paper set out clear principles for how the developer of the GDF, RWM, would work with communities in the siting process.

The objective of working with communities is that the developer is held to account, tasked with providing communities with all the information they require and with listening and responding to views and concerns in an open and responsive way. UK Government recognises that local representative bodies – including all levels of local government – will need to have a voice in the process. UK Government is currently of the view that no one tier of local government should be able to prevent the participation of other members of that community.

In addition, to enhance flexibility within the siting process, community representatives will be able to participate in discussions and be given more information without needing to make formal commitments to on-going participation. UK Government intends that communities should be able to proceed in the process at the pace at which they are comfortable, and that access to information should not be limited by predetermined decisions points.

The White Paper stated that to ensure that the process of working with communities is robust, and that community representatives are able (in the course of formal discussions) to hold the developer to account in the provision of information, the final decision to site a GDF in a community would not be taken until there has been a test of public opinion that demonstrates community support for development at a specific site.

Communities will have a right of withdrawal from discussions with the developer at any stage in the siting process leading up to the test of public support. If the community withdraws from discussions with the developer prior to the test of public support, the siting process in that community will stop. If the community's response to the test of public support is positive, the development can proceed, with the developer applying for planning consent for a GDF, and other permissions from the environmental and nuclear safety and security regulators. If the community's response is negative, development of a GDF cannot proceed, and the siting process in respect of the site under consideration would cease.

The White Paper also set out that the UK Government will make investment available early on in the siting process for a GDF, in order to support the development of communities that engage constructively with the process to find a site (or sites). Community investment of up to one million pounds (£1m) per involved community, per year, will be made available in the early stages of the siting process. This amount of community investment would rise to up two and a half million pounds (£2.5m) per year for the community (or communities) that progresses to the stage of intrusive, borehole investigations to assess a potentially

suitable site (or sites). This funding would only continue for as long as the community remained engaged in the process. This process is outlined in Figure 1.

The White Paper did not seek to prescribe the detailed process of how community representation and community investment would operate but instead it set out a process for how those details would be further developed within the Working with Communities initial action. This work has been underway for the last two years.

The objective of the Working with Communities initial action was to develop approaches to:

- defining communities in areas interested in learning more about a GDF and options for effective community representation;
- defining roles and responsibilities for community representatives;
- providing clarity around the point at which a test of public support within the host community would be appropriate, with whom the decision will rest, and how the right of withdrawal for both the communities and the developer would operate;
- for the management and disbursement of early community investment funding.

To deliver this work, a Community Representation Working Group (CRWG)⁵ was set up in early 2015, to help DECC (now BEIS) develop approaches for working with communities in an open and transparent fashion. The group was chaired by DECC (now BEIS) and had a core membership comprising relevant other government departments, RWM and voluntary representatives with experience and expertise in local government issues, delivery of large infrastructure projects, GDF siting, and academia. In total eight formal meetings of the CRWG were held. In conjunction with a Call for Evidence, which took place in summer 2015 to draw together evidence and information on processes for working with communities in the siting of a GDF (responses were published⁶) and supplemented by meetings with specific members on issues as they arose during the work programme, the policy development was also shaped by a literature review which was carried out in 2016.

Detailed discussions took place on community representation, including early representation and constructive engagement, community investment, the test of public support and the right of withdrawal.

As part of an innovative open policy making approach, a number of public dialogue events took place in Manchester and Swindon in February and March 2016. These were intended to help achieve better policy making through engaging with a broad range of people who had no prior knowledge of, or involvement in, nuclear-related business, on the approach to siting a GDF and specifically what an effective community engagement process could look like.

⁵ <https://www.gov.uk/government/groups/implementing-geological-disposal-community-representation-working-group>

⁶ <https://www.gov.uk/government/consultations/implementing-geological-disposal-working-with-communities>

The draft policy will be subject to a further public consultation in 2017 and the process of formal engagement with communities is expected to start once the policy has been finalised.

Licensing of a GDF

In addition to the initial actions described above, the White Paper also stated that a GDF would be a nuclear installation under the Nuclear Installations Act (NIA) 1965. This means that it will be the Office for Nuclear Regulation's (ONR)⁷ role as regulator to ensure that, prior to construction of a GDF, a working process is in place such that the ONR can consider the granting of a licence for the site; with the requisite site licence conditions attached, and enforce the requirements of that licence. Work is progressing on ensuring that the relevant regulations are in place to grant the ONR legal vires to license a GDF under the NIA 1965.

Devolution

Radioactive waste management is a devolved issue. The Northern Ireland Executive jointly issued the 2014 White Paper with the UK Government and the Welsh Government supports geological disposal.

In May 2015⁸, following public consultation, the Welsh Government adopted a policy for geological disposal of higher activity radioactive waste based on the principle of voluntary participation by potential host communities. In December 2015, the Welsh Government issued a further policy statement confirming its intention of working with the CRWG with a view to adopting arrangements for engaging with potential volunteer host communities that are compatible with those arrangements being proposed for England, providing that they are compatible with the needs of communities in Wales and with those of Wales as a whole. The Welsh Government is considering the outcomes of the CRWG's work and will consult further before any arrangements for engaging with potential volunteer host communities in Wales are adopted. As part of implementing its policy for the geological disposal of radioactive waste, the Welsh Government is considering how the current Welsh planning system should be applied to any Geological Disposal Facility in Wales. This will need to take into account the Planning (Wales) Act 2015, and will consult further on proposals before any new arrangements are adopted.

⁷ The ONR independently regulates nuclear safety and security at 37 nuclear licensed sites in the UK. It also regulates the transport of radioactive materials and works closely with the IAEA and European Commission to ensure that the UK's safeguarding obligations are met. The ONR operates a goal-setting regime setting out its regulatory expectations, and requiring licensees to determine and justify how best to achieve them. The ONR has 36 conditions attached to each nuclear site licence within which the licensees are expected to operate. A combination of the ONR's assessment and inspection functions allow the ONR to judge whether licensees are meeting their legal obligations.

⁸ The Welsh Government policy statements adopting geological disposal as the long term management route for higher activity radioactive waste, and engagement with potential volunteer host communities can be found at: <http://gov.wales/topics/environmentcountryside/epq/chemicalsradioactivity/radioactivity/radioactivewastemanagement/?skip=1&lang=en>

WM2017 Conference, March 5-9, 2017, Phoenix, Arizona, USA.

The Scottish Government has a separate higher activity radioactive waste policy⁹.

FORWARD LOOK

The Government expects to consult on the Working with Communities (WWC) policy framework and the National Policy Statement (NPS) during 2017. Once the initial actions are completed, the new siting process is expected to be launched by RWM. Interested communities will be invited to come forward and engage with RWM on the GDF siting process and the exciting opportunities it presents.

The next phase will be working with the interested communities to identify and characterise potential sites. It is essential to understand the underlying geology and be confident that a facility can be designed to safely and securely isolate and contain the waste. When the delivery body (RWM) has gathered sufficient information to satisfy itself that a GDF is viable, and the community has indicated that it wishes to host the facility, it will make an application for development consent for the facility itself and the associated development (for example transport infrastructure). The construction and operation of a GDF will only be authorised by the regulators if the delivery body (RWM) can demonstrate that it will be safe and secure and that the environment will be protected. In the England, these regulators are the ONR and the Environment Agency (EA)¹⁰.

⁹ Scotland's higher activity radioactive waste policy 2011, <http://www.gov.scot/Publications/2011/01/20114928/0>

¹⁰ The EA is the environmental regulator for England. The Agency's role is the enforcement of specified laws and regulations aimed at protecting the environment, in the context of sustainable development, predominantly by authorising and controlling radioactive discharges and waste disposal to air, water and land. The Environment Agency regulates nuclear sites under the Environmental Permitting Regulations 2010, and issues consents for non-radioactive discharges.