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Welsh Government

## Consultation Document

# Review of Welsh Government Policy on the Management and Disposal of Higher Activity Radioactive Waste

Date of issue: 23 October 2014

Action required: Responses by 22 January 2015

## Overview

In April 2014, the Welsh Government issued a call for evidence asking for views on whether we should review our policy on higher activity radioactive waste disposal (HAW). The responses were considered and the decision was made to review our policy. This consultation document looks at options and seeks comments on proposals for a new Welsh Government policy.

## How to respond

Please submit responses by email or by post, along with the consultation response form.

The consultation and response forms are available on the Welsh Government's website at [www.wales.gov.uk/consultations](http://www.wales.gov.uk/consultations).

## Further information and related documents

Large print, Braille and alternative language versions of this document are available on request.

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## Data protection

### How the views and information you give us will be used

Any response you send us will be seen in full by Welsh Government staff dealing with the issues which this consultation is about. It may also be seen by other Welsh Government staff to help them plan future consultations.

The Welsh Government intends to publish a summary of the responses to this document. We may also publish responses in full.

Normally, the name and address (or part of the address) of the person or organisation who sent the response are published with the response. This helps to show that the consultation was carried out properly. If you do not want your name or address published, please tell us this in writing when you send your response. We will then blank them out.

Names or addresses we blank out might still get published later, though we do not think this would happen very often. The Freedom of Information Act 2000 and the Environmental Information Regulations 2004 allow the public to ask to see information held by many public bodies, including the Welsh Government.

This includes information which has not been published. However, the law also allows us to withhold information in some circumstances. If anyone asks to see information we have withheld, we will have to decide whether to release it or not. If someone has asked for their name and address not to be published, that is an important fact we would take into account. However, there might sometimes be important reasons why we would have to reveal someone's name and address, even though they have asked for them not to be published. We would get in touch with the person and ask their views before we finally decided to reveal the information.

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## INTRODUCTION

- i. Radioactive waste disposal is a devolved matter: the Welsh Government is therefore responsible for determining the policy for the disposal of radioactive waste in Wales.
- ii. The Welsh Government has joined the other UK administrations in adopting strategies for the management and disposal of low level radioactive waste (LLW) both from nuclear sites<sup>1</sup> and non nuclear sites<sup>2</sup>, and for naturally occurring radioactive materials (NORM)<sup>3</sup>.
- iii. As regards higher activity radioactive waste (HAW) current Welsh Government policy is neither to support nor to oppose the United Kingdom Government policy of geological disposal for HAW. Nor does the Welsh Government support any other disposal option for HAW.

### Welsh Government call for evidence

- iv. In March 2014 the Welsh Government issued a call for evidence<sup>4</sup> setting down reasons why it might be necessary to review its current policy. The call for evidence sought views on whether the Welsh Government should review its current policy and if it were to do so what options for the disposal of HAW it should consider.
- v. 25 responses were received to the call for evidence. The Welsh Government has analysed these responses and has published both this analysis and the responses themselves<sup>5</sup>. The Welsh Government asked its expert advisors on the management and disposal of HAW, the independent Committee on Radioactive Waste Management (CoRWM), to analyse and advise on the responses. CoRWM's advice has been placed at Annex 3 to this consultation paper.

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<sup>1</sup> NDA, *UK Strategy for the Management of Solid Low Level Radioactive Waste from the Nuclear Industry*, August 2010

<http://www.nda.gov.uk/publication/uk-strategy-for-the-management-of-solid-low-level-radioactive-waste-from-the-nuclear-industry-august-2010/>

<sup>2</sup> DECC, Scottish Executive, Welsh Assembly Government, Department of the Environment Northern Ireland, *Strategy for the management of solid low level radioactive waste from the non-nuclear industry in the United Kingdom*, 2012

[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/48291/4616-strategy-low-level-radioactive-waste.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/48291/4616-strategy-low-level-radioactive-waste.pdf)

<sup>3</sup> DECC, Department of Environment Northern Ireland, Scottish Government, Welsh Government *Strategy for the management of Naturally Occurring Radioactive Material (NORM) waste in the United Kingdom*, July 2014 <http://www.scotland.gov.uk/Publications/2014/07/5552>

<sup>4</sup> Welsh Government, *Call for Evidence: Review of Current Policy on the Disposal of Higher Activity Radioactive Waste*, April 2014

<http://wales.gov.uk/consultations/environmentandcountryside/disposing-of-higher-activity-radioactive-waste/?lang=en>

<sup>5</sup> <http://wales.gov.uk/consultations/environmentandcountryside/disposing-of-higher-activity-radioactive-waste/?lang=en>

- vi. The Welsh Government has carefully considered the evidence submitted in response to the call for evidence and other evidence and information available to it.

### **This consultation**

- vii. For the reasons set down in paragraphs 3.16 below the Welsh Government has decided that it should carry out a review of its current policy on HAW disposal.
- viii. Although the Welsh Government has devolved responsibility for policy relating to the disposal of radioactive waste in Wales this does not mean that waste arising from activities in Wales needs to be disposed of in Wales, even if the Welsh Government does, following consideration of the outcome of this consultation, decide to adopt a policy for the disposal of HAW. Waste arising from activities in Wales forms part of the overall inventory for disposal (see paragraphs 5.14 and 5.15 from Annex 1).
- ix. While it has taken no final decisions the Welsh Government has decided that it should review its current policy with a preferred option of adopting a policy for the disposal of HAW. This consultation paper sets down the reasons for this approach and seeks further views and comment about it.
- x. The Welsh Government has considered different options for the long term future management and disposal of HAW, including those referred to in the responses to the call for evidence. Once more, while the Welsh Government has made no final decisions about which option it should choose, for the reasons referred to in paragraphs 3.23, it is issuing this consultation paper with a preferred option for HAW of adopting geological disposal. This consultation paper therefore also seeks views about that preferred option and about viable alternative disposal options for HAW.

### **How this consultation is structured**

- xi. This consultation has four chapters:
  - Chapter 1 discusses the background to the current Welsh Government policy on HAW disposal.
  - Chapter 2 contains the Welsh Government's consideration of the most significant issues raised in the responses to the call for evidence.
  - Chapter 3 discusses why the Welsh Government has decided to review its current policy on HAW disposal and why it is doing so with a preferred option of adopting a policy for the disposal of HAW and with the preferred option of geological disposal as the method of disposal.
  - Chapter 4 discusses the next steps.
  - Annex 1 discusses the types of radioactive material which make up HAW and how it is currently managed.
  - Annex 2 provides generic information about geological disposal to inform responses to this consultation.

- Annex 3 contains the consideration of CoRWM's advice.
- xii. In producing this consultation paper the Welsh Government has drawn on technical information from the UK Government White Paper *Implementing Geological Disposal*<sup>6</sup> in particular as regards information about types of radioactive waste, its current management and storage and about geological disposal, as the White Paper provides the necessary technical detail about these matters and presents it in a UK context.
- xiii. However, using information from the White Paper does not imply that the Welsh Government has decided to adopt policies currently supported by the UK Government. Any such decisions will be made in the light of this consultation other evidence and information available to the Welsh Government and, if appropriate, following further consultation.

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<sup>6</sup> DECC, *Implementing Geological Disposal: A Framework for the long-term management of higher activity radioactive waste*. July 2014

<https://www.gov.uk/government/publications/implementing-geological-disposal>

# CHAPTER 1: BACKGROUND TO CURRENT POLICY ON HIGHER ACTIVITY RADIOACTIVE WASTE DISPOSAL

- 1.1 This chapter discusses the background to the current Welsh Government policy on the disposal of higher activity waste (HAW) and refers to the policies adopted by the UK Government and the other devolved administrations.

## Background

- 1.2 Paragraph 5.2 with Annex 1 identifies that the UK has a substantial legacy of HAW. To date, the UK has not implemented a disposal solution for HAW. A disposal solution for would obviate the need for future intervention and would ensure that no harmful amounts of radioactivity are released to the environment in the future.
- 1.3 In 2003 the UK Government and the devolved administrations (Government) set up the independent Committee on Radioactive Waste Management (CoRWM) to consider options for the management and disposal of the HAW already existing and expected to arise from existing nuclear power stations in the UK (“legacy waste”). In 2006 CoRWM reported<sup>7</sup> to Government recommending geological disposal for legacy radioactive wastes and community involvement based on the principle of voluntarism and an expressed willingness to participate in potentially hosting a geological disposal facility (GDF). CoRWM also recommended safe and secure interim storage and further research and development. CoRWM 2<sup>8</sup> confirmed its support for geological disposal in 2013<sup>9</sup>. In 2010 CoRWM commented on the applicability of DECC’s proposals for geological disposal of HAW in its response to DECC’s consultation on the draft National Policy Statements for Energy Infrastructure and in a statement of its position on new build wastes<sup>10, 11</sup>.

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<sup>7</sup> CoRWM *Managing our Radioactive Waste Safely: CoRWM’s Recommendations to Government* July 2006.

<sup>8</sup> The first Committee on Radioactive Waste Management (CoRWM 1) was established by the UK Government and the devolved administrations for Wales, Scotland and Northern Ireland in 2003 to advise on the future management of higher activity radioactive waste and spent fuel. In 2007 CoRWM was reconstituted (CoRWM 2) to advise on the implementation of Government policy in these areas. Where appropriate CoRWM advises the UK Government and each devolved administration on their separate policies.

<sup>9</sup> Statement on Geological Disposal: The Committee on Radioactive Waste Management’s (CoRWM’s) recommendations on the benefits of geological waste disposal. Published 25 July 2013 <https://www.gov.uk/government/publications/statement-on-geological-disposal>

<sup>10</sup> Response from the Committee on Radioactive Waste Management to the Government consultation on the Draft National Policy Statements for Energy Infrastructure (CoRWM document 2748, 2 March 2010).

<sup>11</sup> CoRWM Statement of its position on new build wastes (CoRWM document 2749, 2 March 2010).



## Government response to CoRWM's 2006 recommendations

- 1.4 Following a public consultation in 2007<sup>12</sup> the UK Government and the devolved administrations for Wales and Northern Ireland issued a White Paper in June 2008, *Managing Radioactive Waste Safely: a Framework for Implementing Geological Disposal*<sup>13</sup>. In the White Paper the UK Government announced its support for a policy of geological disposal that was based on a preferred approach of voluntarism and partnership. Geological disposal would be taken forward in parallel with safe and secure interim storage and ongoing research and development.

### *Northern Ireland*

- 1.5 The Department of the Environment in Northern Ireland (DoENI) supported the Managing Radioactive Waste Safely (MRWS) programme.

### *Scotland*

- 1.6 The Scottish Government did not sponsor the 2007 MRWS consultation or the 2008 White Paper and is implementing its own policy of HAW management<sup>14</sup>. Scottish Government Policy is that the long-term management of higher activity radioactive waste should be in near-surface facilities. Facilities should be located as near to the site where the waste is produced as possible. Developers will need to demonstrate how the facilities will be monitored and how waste packages, or waste, could be retrieved.

### *Welsh Assembly Government response*

- 1.7 In the 2008 White Paper the then Welsh Assembly Government reserved its position on geological disposal and neither supported nor opposed the policy while stating its intention to continue to play a full part in the MRWS programme in order to secure the long term safety of radioactive wastes, to ensure the implementation of a framework appropriate to the needs of Wales and to ensure that the interests of Wales are taken into account in the development of policies in this area. The Assembly Government also supported CoRWM's recommendations regarding the safe and secure interim storage of waste, maintaining the security of such storage against terrorist attack, and the need for research and development to support the optimised management and disposal of waste.
- 1.8 The Assembly Government also stated that should a community within Wales wish to put forward an Expression of Interest in potentially hosting a GDF it should do so to the Welsh Assembly Government, and that if this were to happen the Assembly Government would at that point consider its position in

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<sup>12</sup> Defra, DTI and the devolved administrations for Wales and Northern Ireland: *Managing radioactive waste safely: a framework for implementing geological disposal*. June 2007.

<sup>13</sup> Defra, BERR and the devolved administrations for Wales and Northern Ireland: *Managing radioactive waste safely: a framework for implementing geological disposal*. June 2008

<sup>14</sup> Scottish Government: *Scotland's Higher Activity Radioactive Waste Policy 2011*. January 2011.

respect of the geological disposal programme and the specific Expression of Interest.

1. 9 This remains Welsh Government policy.

### **Consultation by the UK Department for Energy and Climate Change**

1. 10 Following the 2008 White Paper the UK Department for Energy and Climate Change (DECC) received three formal expressions of interest from three local authorities in west Cumbria (in respect of the areas of Copeland Borough Council and Allerdale Borough Council). However these discussions ended in January 2013 following a vote in which Cumbria County Council decided not to proceed further with the MRWS site-selection process (an earlier agreement reached by DECC and councils in west Cumbria, about how the MRWS siting process would operate in west Cumbria, required agreement at the Borough, County and Central Government levels for the process to proceed.).
1. 11 In addition to the three expressions of interest received by the UK in respect of west Cumbria, Shepway District Council in Kent took 'soundings' from local residents about whether to make an expression of interest in the siting process, but ultimately decided against doing so.
1. 12 The UK Government remains committed to geological disposal as the right policy for the long term, safe and secure management of higher activity radioactive waste. The UK Government also continues to favour an approach to site selection based on working in partnership with interested communities.
1. 13 Following the closure of the site selection process in Cumbria, DECC considered changes to the site selection process and issued a consultation paper in September 2013<sup>15</sup>. The consultation ended in December 2013 and the UK Government has published its response to the consultation along with the individual submissions which were received<sup>16</sup>.
1. 14 The Welsh Government considered that the consultation discussed issues about which the people of Wales had a right to be informed and upon which they should have an opportunity to comment. It therefore issued the consultation paper in Wales. This was also consistent with ongoing involvement by the Welsh Government in the MRWS programme. However in issuing the consultation paper in Wales for comment, the Welsh Government made it clear that it was not committing itself to adopting the policies outlined in the consultation paper. Six responses were received from Wales to the consultation.

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<sup>15</sup> DECC, Welsh Government and the Department of the Environment, Northern Ireland: *Review of the Siting Process for a Geological Disposal Facility*. September 2013

<https://www.gov.uk/government/consultations/geological-disposal-facility-siting-process-review>

<sup>16</sup> DECC *Government Response to Consultation: Review of the Siting Process for a Geological Disposal Facility*. July 2014

<https://www.gov.uk/government/consultations/geological-disposal-facility-siting-process-review>

1. 15 The Department of the Environment, Northern Ireland (DOENI) also issued the consultation.
1. 16 DECC considered the outcome of the consultation following its conclusion in December 2013 and issued a White Paper in July 2014<sup>17</sup>. This White Paper discusses policies and makes proposals which refer to England. DOENI has also accepted the application of these policies and proposals to Northern Ireland. However, in line with the Welsh Government position in the consultation paper issued in September 2013, the policies and proposals contained in the DECC White Paper do not, at this time, apply in Wales<sup>18</sup>.
1. 17 In this consultation the Welsh Government is seeking views about options for its future policy on HAW disposal. The Welsh Government will consider the outcome of this consultation before making any decision about adopting a policy on the disposal of HAW and therefore about the extent to which the policies and proposals in the DECC White Paper might apply in Wales. If, following this consultation, the Welsh Government does decide to adopt a policy for the geological disposal of HAW it will consult further about the processes by which this may be taken forward in Wales in the event that a community or communities in Wales should indicate a willingness to enter discussions about potentially hosting a GDF.

### **Possible review of Welsh Government policy**

1. 18 In March 2014 the Welsh Government issued a call for evidence<sup>19</sup> setting down reasons why it might be necessary to review its current policy. The call for evidence sought views on whether the Welsh Government should review its current policy and if it were to do so what options for the disposal of HAW it should consider. The Welsh Government's consideration of the main themes raised in the responses to the call for evidence is set down in Chapter 2.

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<sup>17</sup> DECC, *Implementing Geological Disposal: A Framework for the long-term management of higher activity radioactive waste*. July 2014

<https://www.gov.uk/government/publications/implementing-geological-disposal>

<sup>18</sup> The national geological screening exercise, referred to in the DECC 2014 White Paper, will be applied to Wales in order for the information that it will contain to be available to communities in Wales for them to consider.

<sup>19</sup> Welsh Government, *Call for Evidence: Review of Current Policy on the Disposal of Higher Activity Radioactive Waste*, April 2014

<http://wales.gov.uk/consultations/environmentandcountryside/disposing-of-higher-activity-radioactive-waste/?lang=en>

## CHAPTER 2: WELSH GOVERNMENT CONSIDERATION OF THE RESPONSES RECEIVED TO THE CALL FOR EVIDENCE

2. 1 This chapter contains the Welsh Government's consideration of the main themes raised in the responses it has received to the call for evidence issued on 29 April 2014. The Welsh Government has published the responses it has received together with an analysis<sup>20</sup> quantifying the responses to the questions asked in the call for evidence. This chapter discusses some of the main themes raised in the responses to the call for evidence.
2. 2 The Welsh Government is grateful to the individuals and organisations that responded to the call for evidence. In commenting on the views expressed in response to the call for evidence the Welsh Government has carefully considered those views and has also taken into account expert advice it has received, the policy issues set down in the call for evidence and the need to safeguard the interests of future generations.
2. 3 The Welsh Government has taken no final decisions about whether to adopt a disposal policy for higher activity radioactive waste (HAW) and spent fuel or what that disposal policy should be. However, for the reasons set down in Chapter 3 the Welsh Government is issuing this consultation with the preferred options of adopting a disposal policy and for that policy to be geological disposal. The Welsh Government was helped in reaching that position by the responses it received to the call for evidence and the Welsh Government consideration below of the most significant themes in the responses should be viewed in that context.
2. 4 The Committee on Radioactive Waste Management (CoRWM, see paragraph 1.3) provides the Welsh Government with independent expert advice on radioactive waste management and disposal matters. The Welsh Government sought CoRWM's advice on the points raised in the responses it received to the call for evidence, particularly those of a technical nature. CoRWM's advice is at Annex 3 to this consultation. In places the Welsh Government's consideration below draws on CoRWM's advice. There is a note when this is done.

### The main themes raised in responses to the call for evidence

#### *The Welsh Government should review its policy*

2. 5 *A majority of the responses considered that the Welsh Government should review its current policy, for a number of reasons.*

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<sup>20</sup> <http://wales.gov.uk/consultations/environmentandcountryside/disposing-of-higher-activity-radioactive-waste/?lang=en>

2. 6 *Some responses considered that it was irresponsible of the Welsh Government to support new nuclear power stations at e.g. Wylfa Newydd without adopting a policy which would allow the disposal of the waste they will create.*
2. 7 In the call for evidence the Welsh Government listed the change in its policy towards new nuclear power stations as one of the reasons why it might be necessary to review its current policy towards the disposal of HAW. At paragraph 3.4 of this consultation the Welsh Government acknowledges that adopting a policy for the disposal of HAW would be more consistent with its policy of supporting new nuclear power stations on existing sites.
2. 8 *Some responses considered that it is irresponsible to leave waste above ground as this offers no guarantees against future hazards such as human error and extreme weather, terrorism. Other responses considered that geological disposal could not protect against these issues as well as climate change, societal or economic breakdown, or war.*
2. 9 The Welsh Government notes that CoRWM 1's recommendation that geological disposal is the best long term management option for HAW and spent fuel has been confirmed by CoRWM 2<sup>21</sup>. Geological disposal has also been adopted worldwide by nations taking forward the disposal of HAW or spent fuel [see paragraph 6.9].
2. 10 The Welsh Government has seen no evidence to suggest that ongoing surface management of HAW will provide a safer long term answer to these issues than geological disposal of HAW.

#### *Financial risks to the Welsh Government*

2. 11 *Some responses considered that the Welsh Government was seeking to avoid future financial burdens by not supporting geological disposal. Other responses were concerned that adopting geological disposal would risk the Welsh Government to financial burdens in the future.*
2. 12 If, following this consultation, the Welsh Government adopts a policy for the geological disposal of HAW it will not incur a greater financial burden or the risk of a greater financial burden. It is a UK Government policy, which the Welsh Government supports, that the cost of dismantling nuclear facilities and of disposing of the spent fuel and waste, including the decommissioning wastes, that they will produce should fall to the operator<sup>22</sup>. The cost of managing and disposing of legacy waste is funded by the UK Government via the Nuclear Decommissioning Authority (NDA) and Radioactive Waste Management Ltd (RWM). This includes the cost of the Managing

<sup>21</sup> Statement on Geological Disposal: The Committee on Radioactive Waste Management's (CoRWM's) recommendations on the benefits of geological waste disposal. Published 25 July 2013 <https://www.gov.uk/government/publications/statement-on-geological-disposal>

<sup>22</sup> <https://www.gov.uk/government/consultations/revised-funded-decommissioning-programme-guidance-for-new-nuclear-power-stations>

Radioactive Waste Safely (MRWS) programme and any costs of engaging with potential volunteer communities whether they are in Wales or in England.

2. 13 *Some responses were concerned that the Welsh Government could incur financial liabilities as a result of an accident at a nuclear facility in Wales.*
2. 14 The UK is a Contracting Party to the Paris Convention on Nuclear Third Party Liability 1960<sup>23</sup>. The Convention sets out the framework for dealing with compensation following a nuclear incident. The Convention is implemented in the UK by the Nuclear Installations Act 1965 which places strict and exclusive liability on the operator to meet the costs of nuclear damage. In addition the operator is required by law to have insurance in place to cover its liabilities. The UK Parliament has discretion to pay compensation above the operator's liability limits. In this case the costs would fall to the UK Government and not to the Welsh Government.

#### *Support for new nuclear power stations*

2. 15 *Some correspondents considered that the Welsh Government should reverse its support for new nuclear powers stations.*
2. 16 Neither the call for evidence nor this consultation are about the Welsh Government's policy of supporting new nuclear power stations on existing sites in Wales but about how spent fuel and radioactive waste from both existing and new nuclear power stations and other sources should be managed.
2. 17 The Welsh Government's reasons for supporting new nuclear power stations are set out in its policy statement 'Energy Wales: A Low Carbon Transition'<sup>24</sup>, which recognises the importance of a new nuclear power station at Wylfa in providing a constant, reliable low carbon energy source to complement the range of renewable energy developments in Wales. Its development would also offer significant long term benefits to the economy of Wales.
2. 18 The Welsh Government accepts that Wylfa Newydd will produce HAW and spent fuel. There are no proposals to reprocess the spent fuel from new nuclear power stations and therefore it will also need appropriate management, storage and eventual disposal as waste alongside the HAW that will be produced. The Welsh Government considers that this should be addressed in its review of current policy.
2. 19 However, even if no new nuclear power stations are built there is already a substantial legacy of radioactive waste, built up over the last 60 years, which will need eventual disposal to protect the interests of future generations.

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<sup>23</sup> Paris Convention on Third Party Liability in the Field of Nuclear Energy 1960 and subsequent amendments including the Brussels Supplementary Convention of 1963.

<sup>24</sup> Welsh Government *Energy Wales: a low carbon transition*, 2012

<http://wales.gov.uk/topics/environmentcountryside/energy/energywales/?lang=en>

Intergenerational equity requires the disposal of this waste in ways which avoids the needs for future generations to be involved in its management. This is discussed further in Chapter 3.

*The only safe solution is not to create more radioactive waste*

2. 20 *Some respondents considered that, as, in their view, no safe disposal option exists; the only safe course is not to create more radioactive waste. The Welsh Government should cease to support new nuclear power stations and in particular the new nuclear power station proposed for Wylfa Newydd.*
2. 21 The Welsh Government does not share the view that there is no safe disposal option for HAW and spent fuel. CoRWM 1 carried out detailed and extensive considerations of the options for managing HAW and spent fuel in the future before advising Government that geological disposal was both a safe management option and also the best management option. This has been endorsed by learned societies<sup>25</sup>. The regulators (EA and ONR) have stated from review of RWM's generic disposal system safety case that at this time they see no reason why an operational, environmental or transport safety case could not be made for a geological disposal facility (GDF). The Welsh Government has also noted that all the countries around the World that are taking forward programmes for the disposal of longer lived radioactive waste and spent fuel are doing so using geological disposal.
2. 22 Neither the call for evidence nor this consultation are about the Welsh Government's policy of supporting new nuclear power stations on existing sites in Wales but about how spent fuel and radioactive waste from nuclear power stations and other sources should be managed. Nevertheless the Welsh Government's reasons for supporting new nuclear power stations are discussed at paragraph 3.4.
2. 23 Further, the Welsh Government notes that, even if no new nuclear power stations are built there is already a substantial legacy of HAW, built up over the last 60 years, which will need eventual disposal to protect the interests of future generations. There will also be ongoing generation of waste from non-nuclear sources such as medical and industry, which will need to be disposed of. Even without waste from new nuclear power stations intergenerational equity requires taking action now and thereby not leaving responsibility for decisions on waste disposal to future generations.

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<sup>25</sup> Royal Society, *The long-term management of radioactive waste: the work of the Committee on Radioactive Waste Management*, Policy document 01/06, 2006  
[https://royalsociety.org/~media/Royal\\_Society\\_Content/policy/publications/2006/8341.pdf](https://royalsociety.org/~media/Royal_Society_Content/policy/publications/2006/8341.pdf)  
Chapman, N., and Curtis, C.D., *Confidence in the safe geological disposal of radioactive waste*, Geological Society of London, 2006.

*Yucca Mountain and WIPP demonstrate the failure of geological disposal*

2. 24 *Some responses considered that the closure of the Yucca Mountain project in Nevada, USA, and the accidents earlier in 2014 at the Waste Isolation Pilot Plant (WIPP) in New Mexico, USA, demonstrate the failure of geological disposal.*

2. 25 The Welsh Government has asked CoRWM to comment on these matters. However the Welsh Government considers that the Yucca Mountain project cannot be taken to demonstrate the failure of geological disposal safely to isolate waste as no waste had been deposited there. The project closed because of political issues and the failure to ensure local support for the project. The failure of the Yucca Mountain project does demonstrate the need to work with willing host communities.

2. 26 CoRWM's advice on these matters is:

“At the CoRWM meeting in Thurso held in July, a member of the committee provided a short update on the public reports produced following the discovery of a release of radioactivity at the WIPP facility in New Mexico and the response from the media and others. CoRWM was given to understand that operational matters are currently believed to be cause of the leak at WIPP. Inappropriate waste conditioning is the most likely culprit. The reason for the error is thought to be poor lines of management. The incident is currently under review and CoRWM is unable to provide a fully informed diagnosis of the reasons for the leak but there is nothing to suggest any basic failure in the principle or design for geological disposal at WIPP.

The proposed GDF at Yucca Mountain failed politically. No formal ruling on the safety case of Yucca Mountain has been made, therefore it cannot be said to have failed on safety grounds.”

*No decision needs to be taken now.*

2. 27 *Some responses said that as the majority of waste from nuclear power stations in Wales will not be generated until the existing power stations are finally dismantled the Welsh Government should not take a decision now. Other responses considered that taking decisions now would prevent future generations deciding themselves how to deal with the problem of radioactive waste. Some responses also thought that taking decisions now would pre-empt the possible future development of new technologies to manage or dispose of radioactive waste.*

2. 28 The Welsh Government considers that postponing a decision on whether to adopt a disposal option may not meet the requirements of the Spent Fuel and Radioactive Waste Directive (SF&RW)<sup>26</sup> (which requires Member States to submit the first report on the implementation of their national programme in 2015). Moreover, such an approach avoids taking responsibility now for the waste created by current and past generations which have benefited

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<sup>26</sup> <http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1403100988892&uri=CELEX:32011L0070>



from the electricity generated and the economic opportunities of existing nuclear power stations. The importance of intergenerational equity is discussed at paragraph 2.19 above and is a central theme of the SF&RW Directive. Adopting a policy for geological disposal now (the Welsh Government's preferred option) does not preclude future generations adopting new technologies if their benefits compliment or outweigh geological disposal.

*Government should not coerce or seek to bribe potential host communities*

2. 29 *Some responses were concerned that the MRWS programme would lead to communities being coerced, especially as discussions and the siting processes neared a conclusion. Some responses considered that the decision taken by Cumbria County Council shows the failure of the siting processes.*
2. 30 Government adopted CoRWM 1's recommendations in 2006<sup>27</sup> that geological disposal should proceed on the basis of volunteer host communities. The then Welsh Assembly Government endorsed this approach in the 2008 White Paper. The process established in the 2008 White Paper allowed potential host communities to withdraw from discussions at any point before a final decision is taken and before underground developments are started. This can take a decade or more<sup>28</sup>.
2. 31 The ending of the siting process in west Cumbria demonstrated the robustness of this right of withdrawal.
2. 32 The Welsh Government has issued this consultation with the preferred option of adopting geological disposal as the only viable disposal option for the entire inventory of HAW and with a firm commitment that this will be on the basis of discussions with willing host communities. This is discussed further at paragraph 6.40. The UK Government Department of Energy and Climate (DECC) confirmed its support of this approach in the White Paper issued in July 2014<sup>29</sup>.
2. 33 *Some responses considered that financial support for potential host communities amounted to a bribe.*
2. 34 The DECC White Paper of July 2014 clarifies that once formal discussions have begun, the developer will be responsible for reimbursing the necessary costs generated by community representative engaging in the siting process.

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<sup>27</sup> CoRWM Managing our Radioactive Waste Safely: CoRWM's Recommendations to Government July 2006.

<sup>28</sup> The process established in the DECC 2014 White Paper (currently applicable in England and Northern Ireland), retains this right of withdrawal, and requires a positive test of public support before a community commits to hosting a GDF.

<sup>29</sup> DECC, Implementing Geological Disposal: A Framework for the long-term management of higher activity radioactive waste. July 2014 <https://www.gov.uk/government/publications/implementing-geological-disposal>

The UK Government will also 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 siting process. In addition the community that hosts a GDF will receive significant additional investment, capable of generating intergenerational benefits, to help to maximise the significant economic benefits that are inherent in hosting a nationally significant infrastructure project. This community investment recognises that by agreeing to host a GDF, a community is delivering a service to the population of the UK as a whole.

2. 35 Current Welsh Government policy allows a community in Wales to approach the Welsh Government to seek to open discussions about hosting a GDF. Should a Welsh community seek to open discussions, the Welsh Government expects that the UK Government funding to enable a community to participate in discussions and the community investment identified in the DECC 2014 White Paper will be available on the same basis as it would with a community in England.

*Radioactive waste cannot be disposed of*

2. 36 *Some responses considered that the term disposal cannot be used as HAW will remain harmful for very long periods.*
2. 37 The terms storage and disposal are used in this consultation with specific meanings as defined in the SF&RW Directive<sup>30</sup>:

Article 3 (3): “disposal” means the emplacement of spent fuel or radioactive waste in a facility without the intention of retrieval;

Article 3 (14): “storage” means the holding of spent fuel or radioactive waste in a facility with the intention of retrieval.

Disposal therefore places no expectation for further intervention on future generations.

2. 38 While provision may be made for ongoing monitoring and/or for recovery of the waste, at least for a period, the policy behind the UK Government’s geological disposal programme, and others around the World, is that there should be no need to intervene once the waste is emplaced and certainly not after the facility is closed.
2. 39 The regulators will require a safety case that is consistent with the intention not to intervene after the facility is closed. Any arrangements for monitoring and/or recovery of waste will be reviewed by the regulators to ensure that they do not unacceptably affect the safety case for any proposed GDF. The regulators will also require the safety case for any proposed GDF to demonstrate that the level of containment and isolation of the waste provides

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<sup>30</sup> <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32011L0070&qid=1397211079180>

long-term protection against harmful levels of radioactivity reaching the surface environment.

*Radioactive waste should be managed on the surface*

2. 40 *Some responses considered that the Welsh Government should adopt a policy of ongoing surface or near surface management of HAW (similar to that of the Scottish Government policy of ongoing surface or near surface management<sup>31</sup> [see paragraph 1.6]). Some responses considered that a GDF would be vulnerable to earthquakes.*
2. 41 HAW is currently being stored safely and securely on the surface (e.g. in the ILW store at Trawsfynydd nuclear power station) and interim storage was recognised by CoRWM as being an essential part of managing HAW in advance of any disposal programme. However, ongoing storage is not a disposal option and does not remove the need for intervention by future generations. It is of course for each administration in the UK to decide what policy best suits the needs of the people it serves. After reviewing the evidence available to it the Welsh Government considers that, for Wales, a permanent disposal option better meets the need to protect future generations and deliver intergenerational equity by taking action now and thereby not leaving responsibility for decisions and on waste disposal to future generations.
2. 42 CoRWM has advised on concerns about the vulnerability of a GDF to earthquakes (see also Annex 3):
- “Approval for a GDF under UK regulations would require demonstration of a robust safety case. The production of CO<sub>2</sub> and methane within the waste would be considered as part of the design as would vulnerability to earth movements. In conclusion, CoRWM’s position remains that “geological disposal remains the best available approach for the long-term management when ... compared with the risks associated with other methods of management” (CoRWM Doc 700 Recommendation 1).”
2. 43 *Some responses also considered that surface storage should be near site to minimise the transport of radioactive waste.*
2. 44 The Welsh Government agrees that the transport of radioactive waste should be minimised. Nevertheless some transport may be necessary to allow waste to be processed into safer and more stable forms for interim storage, or, to allow disposal. These activities and the transport required therefore deliver an overall benefit. There are established procedures for transporting radioactive wastes and other radioactive materials and the Welsh Government notes that that the safe transport of radioactive materials has taken place worldwide for over 60 years. The requirements for the safe

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<sup>31</sup> Scottish Government *Scotland’s Higher Activity Radioactive Waste Policy 2011*  
<http://www.scotland.gov.uk/Topics/Environment/waste-and-pollution/Waste-1/16293/higheractivitywastepolicy/hawpolicy2011>

transport of radioactive materials are governed by international standards and European Directives and which are implemented in UK legislation.

*Use of the best geology*

2. 45 *Some responses considered that the Managing Radioactive Waste Safely (MRWS) programme should only consider siting a GDF in areas with the best or most suitable geology and not rely on a mix of engineered and natural barriers.*

2. 46 The Welsh Government has noted these views. However the Welsh Government has also considered the views expressed by CoRWM and the regulators that geological disposal in any context will involve a range of barriers to the release of radioactivity back to the environment: the waste form, its packaging, engineered and geological barriers. A multiple barrier approach is accepted internationally, for example, in IAEA guidance<sup>32</sup>. It will be for the developer to convince the regulators that the mix of barriers proposed in the safety case for any GDF meets the required standard and can provide a safe degree of containment and isolation in the long term. That safety case will include consideration of the suitability of the geology of the proposed site as indicated by extensive testing, including borehole testing.

2. 47 CoRWM's advice on this matter concludes:

“CoRWM has repeatedly emphasised that geology has to be considered in the context of, and as one element contributing to, the safety case. This will inevitably involve consideration of both geology and engineering factors and, if it is not possible to make a safety case in a particular geological setting (i.e. the geology is not ‘good’ enough), this will become apparent.” (Please see Annex 3 for CoRWM's advice in full.)

2. 48 *Some responses considered that the Welsh Government should leave the MRWS programme until the programme limits itself to considering only the best geology.*

2. 49 The Welsh Government does not consider that it is in the best interests of the people of Wales for it to leave the MRWS programme and thereby prevent it from ensuring that the interests of the people of Wales are taken into account in the programme.

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<sup>32</sup> <http://www-pub.iaea.org/books/IAEABooks/8535/Geological-Disposal-Facilities-for-Radioactive-Waste-Specific-Safety-Guide>

*New build waste will be more difficult to dispose of*

2. 50 *Some correspondents stressed that waste from new nuclear power stations would be more radioactive and physically hotter than waste from existing nuclear power stations making it more difficult to manage and to dispose of.*

2. 51 CoRWM's advice on this point is:

“CoRWM does not think that the nature of the fuel will present a problem though, of course, increasing the size of the programme will increase the amount of spent fuel and waste. The spent fuel is likely to be similar in character to that discharged from Sizewell B at the same time, i.e. increases in LWR burn-up have tended to be reflected across the whole fleet. CoRWM has previously commented that “there is considerable international experience of dry storage of PWR fuel to draw on, particularly in the USA, and there has been substantial R&D in a number of countries on geological disposal of PWR fuel” (CoRWM Doc 2500, Interim Storage of Higher Activity Wastes and the Management of Spent Fuels, Plutonium and Uranium, paragraph 4.19).

However, while CoRWM does not think there is an issue over the suitability of new build waste for safe storage and eventual disposal, it does acknowledge that there could be an issue over space and capacity for disposal. This issue will need to be resolved at the time when the inventory for a proposed GDF is being considered.” (Please see CoRWM's advice at Annex 3.)

2. 52 The UK Government's preference is to develop a single GDF for the whole inventory of HAW for disposal. Whether this will be possible is likely to depend on the availability of an appropriate volume of suitable geology at a potential site with a volunteer host community. Consideration of the geological capacity of any proposed site will be part of the safety case.

*The Welsh Government should consider other disposal options alongside geological disposal*

2. 53 *Some responses considered that the Welsh Government should consider a range of disposal options including geological disposal but also near surface disposal.*

2. 54 The Welsh Government is happy for the MRWS programme to keep a range of disposal options under review including e.g. near surface disposal. CoRWM has commented on this suggestion (see Annex 3). The basic requirements of a volunteer host community and a full safety case of course remain.

*Welsh Government should be responsible for “Welsh” wastes*

2. 55 *Some responses considered that the Welsh Government should be responsible for all the radioactive waste and spent fuel arising in Wales including those wastes already transported for management in England.*

2. 56 The Welsh Government considers that this view misunderstands the position of the Welsh Government in the MRWS programme. The Welsh Government has devolved responsibility for policy relating to the disposal of radioactive waste in Wales. Responsibility for policy does not mean that waste arising from activities in Wales needs to be disposed of in Wales, for example, the Welsh Government supports the four country UK strategies for the management and disposal of low level radioactive waste (LLW). The only radioactive waste currently subject to disposal in Wales is low volume very low level radioactive waste (typically protective overalls, wipes etc with negligible amounts of radioactive contamination) which can be disposed of, under an environmental permit, to e.g. municipal landfill sites. All other LLW is currently sent to the UK Low Level Waste Repository near Drigg in Cumbria, or other, suitably permitted, treatment or disposal sites in England.
2. 57 Similarly, HAW arising from activities in Wales (such as the intermediate level radioactive waste (ILW) currently stored at in the ILW store at Trawsfynydd) will eventually be sent for disposal to a UK facility. Depending on the success of discussions with a willing host community and regulatory approval of a safety case, this could be either in Wales, England or Northern Ireland, and a GDF would take waste from both Wales and England and the small amounts of ILW generated by activities in Northern Ireland.
2. 58 This is discussed further in paragraphs 3.13 and 3.14 in the context of the scope and intention of the Welsh Government's review of its current policy.

## **CHAPTER 3: REVIEWING CURRENT WELSH GOVERNMENT POLICY ON THE MANAGEMENT AND DISPOSAL OF HIGHER ACTIVITY RADIOACTIVE WASTE**

- 3.1 This chapter discusses matters which the Welsh Government has taken into account in considering whether it should review its current policy, the reasons why it has decided that a review is necessary and why it has chosen its preferred options.

### **Welsh Government consideration of evidence**

- 3.2 On 29 April 2014 the Welsh Government issued a call for evidence seeking views about whether it should review its current policy of reserving its position on the UK Government policy of geological disposal of higher activity radioactive waste (HAW). This policy would also apply to spent fuel should it be declared as waste. The call for evidence set down reasons why the Welsh Government considered that a review of its current policy on the disposal of HAW (and potentially spent fuel) might be appropriate. The Welsh Government's consideration of the main issues raised in the responses to the call for evidence is set down in Chapter 2. The Welsh Government has also carefully considered again the reasons for a policy review in the call for evidence in the light of the responses to the call for evidence and other evidence available. These matters are further discussed below.

### **Current management and ongoing storage of HAW and spent fuel**

- 3.3 Some HAW, and spent fuel, can remain radioactive, and thus potentially harmful, for hundreds of thousands of years. Modern, safe and secure interim storage can contain this material in the short to medium term, but storage requires on-going human intervention to monitor the material with the likely need in due course to repackage and further to manage the waste to ensure that it does not cause any risk to human health or the environment. Repackaging itself creates the risk of worker exposure to radioactivity and creates more radioactive waste for disposal. Ongoing storage creates the need for ongoing management of HAW: permanent disposal would remove that need.

### **Support for new nuclear power stations in Wales**

- 3.4 In its policy document 'Energy Wales: A Low Carbon transition' the Welsh Government recognises the importance of new nuclear build at Wylfa in providing a constant, reliable low carbon energy source to complement the range of renewable energy developments in Wales. Its development would also offer significant long term benefits to the economy of Wales. The Welsh Government accepts that Wylfa Newydd will produce HAW and spent fuel. There are no proposals to reprocess the spent fuel from new nuclear power stations and therefore it will also need appropriate management, storage and eventual disposal as waste alongside the HAW that will be produced. Current

Welsh Government policy does not support any option for disposing of the HAW or spent fuel that Wylfa Newydd will produce. The Welsh Government considers that that this apparent inconsistency should be addressed by reviewing its current policy<sup>33</sup>.

### **The Spent Fuel and Radioactive Waste Directive (Directive 2011/70/Euratom)**

3.5 The Spent Fuel and Radioactive Waste (SF&RW) Directive (Directive 2011/70/Euratom)<sup>34</sup>, came into force in 2011 and requires Member States to establish and maintain a national policy for the safe and responsible management and disposal of radioactive waste, to be implemented through a national programme, and to report on that policy and programme to the Commission by 23 August 2015. Recital 28 of the Directive states:

“Member States should establish national programmes to ensure the transposition of political decisions into clear provisions for the timely implementation of all steps of spent fuel and radioactive waste management from generation to disposal.”

Article 2. states:

“1. This Directive shall apply to all stages of:

(b) radioactive waste management, from generation to disposal...”

3.6 Management of radioactive waste includes its eventual disposal. Radioactive waste disposal is a devolved function and maintaining a reserved position on the disposal of HAW so as not to have a policy on the long term management of HAW generated in Wales may not meet the Directive’s requirements. The Welsh Government therefore considers that this is another reason for reviewing its current policy.

### **Intergenerational equity**

3.7 Paragraphs 5.14 and 5.15 and Table 1 in Annex 1 show that there is already a considerable volume of HAW and potentially spent fuel, should it be declared as waste, for which there is currently no disposal route in place and which exists or will exist irrespective of whether any new nuclear power stations are built. Further quantities will be generated through the use of radioactive substances in non-nuclear practices e.g. use of radioactive sealed sources. While this waste can be and is being safely and securely managed and stored at present and for the foreseeable future, it represents an ongoing burden for future generations. Taking action now avoids leaving responsibility for decisions on waste disposal to future generations. While it may take several generations to complete the disposal of this legacy waste unless this

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<sup>33</sup> N.b. This consultation is not about Welsh Government policy of supporting new nuclear power stations, like Wylfa Newydd, on existing nuclear sites, but about Welsh Government policy on how wastes from such sites should be managed if they are built.

<sup>34</sup> <http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1403100988892&uri=CELEX:32011L0070>



generation starts the process of disposal the eventual burden will fall to generations further and further into the future.

- 3.8 The SF&RW Directive also stresses the importance of intergenerational equity. Recital 24 states:

“It should be an ethical obligation of each Member State to avoid any undue burden on future generations in respect of spent fuel and radioactive waste including any radioactive waste expected from decommissioning of existing nuclear installations. Through the implementation of this Directive Member States will have demonstrated that they have taken reasonable states to ensure that that objective is met.

Article 1 states:

“1. This Directive establishes a Community framework for ensuring responsible and safe management of spent fuel and radioactive waste to avoid imposing undue burdens on future generations.”

- 3.9 Current generations have benefited from the energy generated by existing nuclear power stations and by the other medical and industrial uses of radioactivity which have created the current HAW legacy. Current generations have also benefited from the economic activity and the employment opportunities provided by nuclear power stations (and not just in the area of the power stations themselves). There is therefore a strong argument that a responsible approach is for the current generation to put in place the means to dispose of legacy HAW. Further, if new nuclear power stations are to be built, it makes no sense for the HAW and spent fuel that they will produce to be excluded from this.

- 3.10 The Welsh Government considers that intergenerational equity is important, needs consideration and is therefore another reason to support a review of its current policy on HAW disposal.

### **Welsh Government decision about a review of policy**

- 3.11 The Welsh Government has carefully considered the evidence submitted in the response to the call for evidence. It has noted that a majority of the respondents considered that the Welsh Government should review its current policy, albeit for a variety of reasons as noted in Chapter 2. The Welsh Government has taken these views into account together with the matters raised in paragraphs 3.3 to 3.10. The Welsh Government has therefore decided that it should review its current policy.

### **Scope of the Welsh Government policy review**

- 3.12 The Welsh Government notes from the responses to the call for evidence that there is some uncertainty about the scope of its policy review. CoRWM's advice to the Welsh Government on the responses notes:

“There appears to be some confusion in the responses over whether the Welsh Government is considering a Welsh disposal option (for Welsh waste) or whether it is seeking to establish Welsh policy in a UK context. CoRWM strongly advises Welsh Government to clarify this issue if it decided to proceed with a review of policy.”

- 3.13 The Welsh Government is seeking to establish Welsh policy in a UK context. Waste arising from activities in Wales forms part of the overall inventory for disposal (see paragraphs 5.14 and 5.15 in Annex 1) which includes waste from Wales, England and very small amounts of ILW from Northern Ireland. As stated in paragraph 1.7 the Welsh Government is part of the Managing Radioactive Waste Safely (MRWS) programme (together with the UK Government and the Northern Ireland Executive).
- 3.14 The Welsh Government has devolved responsibility for policy relating to the disposal of radioactive waste in Wales. Responsibility for policy does not mean that waste arising from activities in Wales needs to be disposed of in Wales, even if the Welsh Government does, following consideration of the outcome of this consultation, decide to adopt a policy for the disposal of HAW.
- 3.15 Under the current Welsh Government policy it is open to a community in Wales to seek to open discussions, through the Welsh Government, with the view to hosting a Geological Disposal Facility. Should a Welsh community come forward under current Welsh Government policy or following any change of Welsh Government policy on geological disposal, discussions would, at least initially, be on the basis of the whole inventory for disposal, and not just HAW (and potentially spent fuel) currently stored in or arising from activities in Wales.

### **Welsh Government preferred option on carrying out a policy review**

- 3.16 In reviewing its policy the Welsh Government has three options: to adopt a policy for a disposal option, to retain its existing policy, or to adopt a policy opposing a disposal option. The Welsh Government has considered these options against the policy issues below.
- The Welsh Government considers that its policy on HAW and potentially spent fuel disposal should be consistent with its policy of supporting a new nuclear power station at Wylfa Newydd (paragraph 3.5).
  - The Welsh Government considers that any future policy should meet the requirements of the SF and RW Directive (paragraph 3.5). Radioactive waste disposal is a devolved function: to ensure compatibility with the Directive the Welsh Government considers that it should adopt a policy for the disposal of HAW and potentially spent fuel. The Welsh Government considers that a policy of ongoing surface or near surface storage, which does not clearly have a final disposal option in mind, does not meet the requirements of the SF & RW Directive. Recital 24 states:

“... The storage of radioactive waste, including long term storage, is an interim solution, but not an alternative to disposal.”

- The Welsh Government considers that it has a responsibility to promote intergenerational equity and that it should therefore adopt a policy leading to the permanent disposal of HAW and potentially spent fuel which will remove the need for future generations to be involved in its management and which will safeguard the health of future generations and the environment.

3.17 The Welsh Government has taken no final decisions about the outcome of this policy review. However following consideration of the evidence, and for reasons set down in paragraph 3.16 above, the Welsh Government is consulting on a preferred option of adopting a policy for the disposal of HAW and potentially spent fuel, which will allow for the safe, permanent disposal of these materials.

**QUESTION 1.** The Welsh Government is reviewing its current policy on the disposal of higher activity radioactive waste and spent fuel declared as waste. In carrying out this review, the Welsh Government has three options:

- should it seek to adopt a policy for disposal for HAW and spent fuel should it be declared as waste?
- should it retain its existing neutral position of neither supporting nor rejecting a disposal option?
- should it adopt a policy opposing a disposal option for HAW and potentially spent fuel?

Please give your reasons.

### Consideration of options for a disposal policy

3.18 The Welsh Government has taken no final decisions about whether this policy review should adopt a specific disposal option for HAW and potentially spent fuel or what that disposal option should be. In the call for evidence the Welsh Government asked whether it should limit its consideration of disposal options to geological disposal or what other options it should consider if it were to adopt a policy for disposal. The Welsh Government has issued an analysis of the evidence it has received<sup>35</sup>. The Welsh Government consideration of the responses is at Chapter 2.

3.19 From the advice it has received the Welsh Government considers that some disposal options such as borehole disposal or near surface disposal might be part of an overall package of disposal measures and should be kept in mind as part of MRWS. However there is no evidence available to the Welsh

<sup>35</sup> <http://wales.gov.uk/consultations/environmentandcountryside/disposing-of-higher-activity-radioactive-waste/?lang=en>

Government that suggests that these options will, by themselves, provide a complete solution.

### **Postponing a decision on a disposal option**

3.20 Some responses to the call for evidence suggested that choosing a disposal option should be postponed to allow future scientific developments to provide better ways of managing HAW (and spent fuel declared as waste) or until such a time as waste from decommissioned nuclear reactors in Wales is ready for disposal. The Welsh Government considers that this is not a viable option. While the Welsh Government supports ongoing research into the management of HAW (see paragraph 5.27 in Annex 1), there is no guarantee that new options for disposing of HAW or spent fuel declared as waste will come forward. Furthermore, while substantial amounts of waste will be created by the final dismantling of the existing nuclear power stations in Wales, in some decades time, there is already a substantial legacy of waste which needs disposal. Postponing a decision also postpones taking responsibility for the safe disposal of these wastes and passes this responsibility to future generations.

### **Geological disposal**

#### *CoRWM's recommendations*

3.21 Paragraph 1.3 noted that the first Committee on Radioactive Waste Management (CoRWM 1) considered in detail the options for disposal of HAW before recommending, in 2006, geological disposal<sup>36</sup>. In July 2013 CoRWM 2 confirmed its support for geological disposal as the best long term management option for HAW specifically endorsing CoRWM 1's recommendation 1 of its report to Government in June 2006:

“Within the present state of knowledge, CoRWM considers geological disposal to be the best available approach to the long-term management of all the material categorised as waste in CoRWM's inventory when compared with the risks associated with other methods of management. The aim should be to progress to disposal as soon as practicable, consistent with developing and maintaining public and stakeholder confidence<sup>37</sup>.”

3.22 The Welsh Government has noted CoRWM's confirmation of its original recommendations. The Welsh Government has noted that across the World, all the countries actively considering or developing options for the permanent disposal of higher activity and long lived radioactive waste are doing so on the basis of geological disposal. While other options (such as near surface disposal) may be being considered for some short lived HAW, the Welsh Government is not aware that any country is considering a disposal option,

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<sup>36</sup> CoRWM Managing our Radioactive Waste Safely: CoRWM's Recommendations to Government July 2006.

<sup>37</sup> Statement on Geological Disposal: The Committee on Radioactive Waste Management's (CoRWM's) recommendations on the benefits of geological waste disposal. Published 25 July 2013 <https://www.gov.uk/government/publications/statement-on-geological-disposal>

other than geological disposal, which will allow for disposal of the whole inventory of HAW and, potentially, for spent fuel.

### **Welsh Government preferred option on the options for the disposal**

3.23 The Welsh Government has carefully considered the evidence submitted in response to the call for evidence and other relevant information. It has taken no decisions about which option for the disposal of HAW it should adopt. However, It appears to the Welsh Government that currently the only viable disposal option for the whole HAW inventory is geological disposal. This is confirmed in the SF&RW Directive. Recital 23 states:

“... It is broadly accepted at the technical level that, at this time, deep 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....”

3.24 For the reasons discussed above, the Welsh Government has therefore decided to consult on the basis of a preferred option of adopting a policy of geological disposal. Before confirming this position the Welsh Government would welcome views on this preferred option.

If, following this consultation, the Welsh Government does adopt a policy supporting geological disposal it does not mean either that a geological disposal facility (GDF) will be sited in Wales or that the Welsh Government will seek to have a GDF sited in Wales. Current Welsh Government policy is to support the recommendation by CoRWM 1 that geological disposal should only proceed on the basis willing participation of a potential volunteer host community or communities. The Welsh Government continues to support this approach which will be included in any future policy. Current Welsh Government policy does not prevent a potential host community from Wales from seeking discussions with the Welsh Government on potentially hosting a GDF. In addition to the willing participation of a potential host community or communities, siting a GDF, whether in Wales or elsewhere in the UK, will require suitable geology and for the developer to produce a safety case which meets the requirements of the Office for Nuclear Regulation (ONR) and the environmental regulator. In Wales the environmental regulator is Natural Resources Wales.

**QUESTION 2.** Should the Welsh Government adopt a policy for geological disposal for the long term management of higher activity radioactive waste and spent fuel declared as waste?

Please give your reasons

**QUESTION 3.** If the Welsh Government does not adopt a geological disposal policy should it adopt a policy for an alternative disposal route for higher activity radioactive waste and spent fuel declared as waste? If so what policy should it adopt?

Please give your reasons.

**QUESTION 4.** Do you have any other comments on the Welsh Government policy for the disposal of higher activity radioactive waste and spent fuel declared as waste?

## **CHAPTER 4: THE NEXT STEPS**

- 4.1 This chapter discusses the next steps for the Welsh Government following this consultation.

### **Managing Radioactive Waste Safely**

- 4.2 The Welsh Government will continue to play an active part in the UK wide Managing Radioactive Waste Safely programme in order to secure the long term safety of higher activity radioactive wastes (HAW), to ensure the implementation of a framework appropriate to the needs of Wales and to ensure that the interests of Wales are taken into account in the development of policies in this area.

### **Consideration of responses to this consultation**

- 4.3 The Welsh Government has issued this consultation with preferred options for adopting a policy for disposal of HAW and spent fuel declared as waste and for adopting geological disposal as, currently, this appears is the only viable means of disposal. However, the Welsh Government has made no final decisions on this matter and will consider the responses to this consultation together with the other evidence before making any final decisions.
- 4.4 In developing policy in this area the Welsh Government will consider and, as appropriate, consult on, matters such as the health impact assessment, the assessment of sustainability, and similar issues such as the impact on equality, rural areas, the rights of the child and the Welsh language as any new policy is developed.
- 4.5 Paragraph 3.14 states that should the Welsh Government adopt its preferred options this will not necessarily lead to a geological disposal facility being sited in Wales. Paragraphs 6.21 to 6.28 outlines the stringent requirements which will need to be in place before a geological disposal facility (GDF) could be sited in Wales, especially the need for a willing host community. If the Welsh Government does confirm its preferred options future work will be needed to set down the detail of these requirements including policies on engagement with potential host communities and other aspects of siting a GDF. These will be needed to give potential host communities clarity on these issues.
- 4.6 If the Welsh Government does adopt geological disposal it will consult on policies for engaging with potential host communities and other arrangements for siting a GDF with the people of Wales before they are finalised.
- 4.7 Radioactive waste disposal is a devolved matter and any planning decisions for a GDF in Wales would be taken through the planning system in Wales. If the Welsh Government does adopt its preferred options it will consider what

implications this may have for the planning system in Wales and will ensure that appropriate planning mechanisms are put in place, and consulted on, to enable any decisions to be taken in an open and transparent way.

- 4.8 The Welsh Government will take forward any new policy on the disposal of HAW and spent fuel declared as waste on the firm basis of securing long term safety for human health and the environment and of working in partnership with potential host communities.



## QUESTIONS

**Question 1.** The Welsh Government is reviewing its current policy on the disposal of higher activity radioactive waste and spent fuel declared as waste. In carrying out this review, the Welsh Government has three options:

- should it seek to adopt a policy for disposal for HAW and spent fuel should it be declared as waste?
- should it retain its existing neutral position of neither supporting nor rejecting a disposal option?
- should it adopt a policy opposing a disposal option for HAW and spent fuel declared as waste?

Please give your reasons.

**Question 2.** Should the Welsh Government adopt a policy for geological disposal for the long term management of higher activity radioactive waste and spent fuel declared as waste?

Please give your reasons.

**Question 3.** If the Welsh Government does not adopt a geological disposal policy should it adopt an alternative disposal route for higher activity radioactive waste and spent fuel declared as waste? If so what policy should it adopt?

Please give your reasons.

**Question 4.** Do you have any other comments on the Welsh Government policy for the disposal of higher activity radioactive waste and spent fuel declared as waste?

## **How to respond**

The Welsh Government will welcome responses to this consultation. Please submit your comments by [closing date], in any of the following ways:

Email:

[RPPmailbox@wales.gsi.gov.uk](mailto:RPPmailbox@wales.gsi.gov.uk)

Post:

Radioactive waste consultation  
Radioactivity and Pollution Prevention Branch  
Welsh Government  
Cathays Park  
Cardiff  
CF10 3NQ

### Additional information

If you have any queries on this consultation, please telephone:

029 2082 3235

The information you send to us will be published in a summary of responses to this consultation. Normally the names and addresses (or part of them) of their authors are published along with the response. If you do not wish to be identified as the author of your response, please state this clearly when you write or e-mail.

## **The way forward**

The Welsh Government will consider the responses to this consultation together with the other evidence and information available to it. Following this process should the Welsh Government adopt a policy for the disposal of HAW and spent fuel declared as waste, including a policy for geological disposal, it will do so on the firm basis of working in partnership with potential host communities and of securing long term safety for human health and the environment. If the Welsh Government does adopt geological disposal further work will be needed to develop policies and processes for the implementation of this policy, for engaging with potential host communities and arrangements for siting any geological disposal facility. In this case the Welsh Government will undertake further public consultation on this matter.

## **ANNEX 1: RADIOACTIVE WASTE**

5.1 This consultation is about the Welsh Government's policy on managing and disposing of higher activity radioactive waste (HAW) and spent fuel declared as waste. This annex gives information about the types of waste under consideration and how HAW is currently managed. HAW may arise from both nuclear and non-nuclear activities.

### **The UK's legacy of radioactive waste**

5.2 For over half a century, the United Kingdom has accumulated a substantial legacy of HAW, initially from military nuclear programmes and subsequently from the generation of electricity in nuclear power stations, from the associated production and processing of nuclear fuel and from the use of radioactive materials in industry, medicine and research. Some of this has already arisen as waste and is being safely managed and stored on an interim basis at nuclear sites across the UK. However, much will only become waste over the next century or so as existing facilities reach the end of their lifetime and are decommissioned; and nuclear sites are cleaned up safely and securely. Apart from waste arising from nuclear sites, both existing and any new nuclear power stations, there will be an ongoing need to make provision for HAW management to accommodate non-nuclear use / application of radioactive materials in e.g. industry, hospitals and universities.

### **What is higher activity radioactive waste?**

- 5.3 HAW comprises several categories of radioactive waste – high level waste (HLW), intermediate level waste (ILW), and the proportion of low level waste (LLW) for which existing disposal options are not suitable.
- 5.4 HAW is produced as a result of the generation of electricity in nuclear power stations, from the associated production and processing of the nuclear fuel, from the use of radioactive materials in industry, medicine and research, and from defence-related nuclear programmes.
- 5.5 In addition to existing wastes, there are some radioactive materials that are not currently classified as waste but would, if it were decided at some point that they had no further use, need to be managed as wastes, and for which a disposal route will be necessary. These include spent fuel, plutonium and uranium.

### **Types of higher activity radioactive waste**

#### *High level waste*

5.6 This is waste in which the temperature may rise significantly as a result of radioactivity, so that this factor has to be taken into account in designing storage or disposal facilities. High level waste (HLW) arises in the UK initially as a liquid that is a by-product from the reprocessing of spent nuclear fuel. High level waste is being converted into a solid form using a treatment process called 'vitrification'.

Current plans are that this solid HLW will be stored for at least fifty years, to allow a significant proportion of the radioactivity to undergo a natural decay process, and for the waste to become cooler, which will make it easier to transport and dispose of.

#### *Intermediate level waste*

- 5.7 Intermediate level waste (ILW) is defined in the UK as waste with radioactivity levels exceeding the upper boundaries for low-level wastes, but which do not require heating to be taken into account in the design of storage or disposal facilities. ILW arises mainly from the reprocessing of spent fuel and from general operations and maintenance at nuclear sites, and can include solid metal items such as fuel cladding and reactor components, and sludges from the treatment of radioactive liquid effluents. As decommissioning and clean-up of nuclear sites proceeds, more ILW will arise. Intermediate level waste is usually encapsulated in a solid cement form, in highly-engineered stainless steel drums, or in higher capacity steel or concrete boxes.

#### *Low level waste*

- 5.8 Low level waste (LLW) is the lowest activity category of radioactive waste considered here. LLW currently being generated consists largely of paper, plastics and scrap metal items that have been used in hospitals, industry, research establishments and the nuclear industry. Although LLW makes up more than ninety per cent of the UK's waste legacy by volume, it contains less than one-tenth of one per cent of the total radioactivity. Much operational LLW in the UK is sent for disposal at the national low level waste repository (LLWR) near the village of Drigg in west Cumbria, where it is encapsulated in cement and packaged in large steel containers, which are then placed in an engineered vault a few metres below the surface. LLW arising from decommissioning of nuclear sites, and from non-nuclear activities from e.g. steel manufacturing in Wales, may also be sent to appropriately regulated landfill sites, metal treatment facilities or incinerators. A small fraction of the total volume of LLW will be managed as HAW due to its radionuclide content or its physical / chemical properties.

### **Other nuclear materials**

#### *Spent fuel*

- 5.9 Spent fuel arises in the reactors of the ten operational reactor sites in the UK. It consists mostly of uranium, although it also includes plutonium and fission products. There are three main types of reactor in the UK, and spent fuel from each is handled differently. Spent fuel from Magnox reactors is reprocessed, spent fuel from Advanced Gas-cooled Reactors (AGR) is either reprocessed or stored awaiting disposal, and spent fuel from the Pressurised Water Reactor (PWR) at Sizewell B nuclear power station is stored awaiting disposal.
- 5.10 There will also be some holdings of spent fuel from research reactors previously operating at sites such as Sellafield and Dounreay that is stored awaiting

disposal. Spent fuel will also arise from the operation of any new nuclear power stations (see paragraph 3.4).

### *Plutonium*

- 5.11 Plutonium is produced during the irradiation of fuel in a nuclear reactor. Reprocessing of spent fuel separates the plutonium from all the other products and converts it into the oxide form in which it is stored. Plutonium is currently stored mostly in metal containers over packed<sup>38</sup> with impermeable material in a secure store.

### *Uranium*

- 5.12 Uranium as a waste arises from either fuel manufacture, enrichment of uranium or from reprocessing spent fuel after irradiation in a nuclear reactor. Uranium is currently stored securely, in different forms, on fuel manufacture, enrichment and reprocessing sites.

### *Nuclear materials arising from the UK defence programme*

- 5.13 The Ministry of Defence may need to dispose of stocks of plutonium and highly enriched uranium from defence programmes and depleted uranium from enrichment activities, as well as spent fuel from submarines. Defence operations including the dismantling of nuclear powered submarines may also give rise to a range of radioactive wastes, some of which may be HAW

### **The radioactive waste inventory: how much higher activity radioactive waste is there?**

- 5.14 The amount of HAW needing disposal is referred to as the 'inventory for disposal'. The volumes of these wastes are regularly reviewed, revised and made publicly available as part of the UK Radioactive Waste Inventory (UK RWI). In the 2013 UK RWI<sup>39</sup> the current estimated volume of HAW needing disposal in the UK is 650,000 cubic metres.
- 5.15 Volumes are subject to change due to a number of factors, including improvements to the estimates of waste that will arise from planned operations and decommissioning programmes. The inventory is less certain about volumes of HAW arising from non-nuclear industries including the use of radioactive sources in hospitals and universities, and also Naturally Occurring Radioactive Materials (NORM) wastes.

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<sup>38</sup> Over packed: Placed within a secondary or additional outer container used for the handling, transport, storage or disposal of waste packages or nuclear materials.

<sup>39</sup> <http://www.nda.gov.uk/ukinventory/>

**TABLE 1 VOLUMES OF DIFFERENT WASTE TYPES<sup>40</sup>**

<b>Waste category</b>	<b>Packaged volume (m3)</b>
High level waste	9,290
Intermediate level waste	456,000
Low level waste	11,800
Spent fuel	66,100
Plutonium	620
Uranium	112,000
<b>Total</b>	<b>656,000</b>

**Notes for Table 1**

The amount of HAW needing disposal is referred to as the 'inventory for disposal'. The volumes of all radioactive wastes in the UK are regularly reviewed, revised and made publicly available as part of the UK Radioactive Waste Inventory (UK RWI). Based on the 2013 UK RWI, and information derived from it, the current estimated volume of all the waste and materials needing disposal in the UK is around 650,000 cubic metres. This is the estimated packaged volume and may change in detail as currently not all package types have yet been assigned. The ca 650,000 m3 volume is the current working assumption used by Radioactive Waste Management Ltd (RWM, see paragraph 6.35).

The information in Table 1 has been provided by the Nuclear Decommissioning Authority.

5.16 The inventory for disposal is currently managed by waste owners:

- The Nuclear Decommissioning Authority;
- EdF Energy;
- Urenco UK Ltd;
- Ministry of Defence;
- GE Healthcare and others

5.17 Nuclear operators provide interim storage of waste on their sites across the UK, and will continue to do so for as long as it takes to deliver a disposal route. Similarly, in terms of HAW sources from non-nuclear sources, the UK provides access to a 'recognised installation' pending disposal.

<sup>40</sup> <http://www.nda.gov.uk/ukinventory/>

## **New nuclear power stations**

5.18 Legacy HAW is HAW that already exists or which will arise from the operation or decommissioning of existing nuclear facilities. In particular, the programme of new nuclear power stations proposed for the UK will give rise, in due course, to HAW needing a disposal route. New nuclear power stations will also give rise to spent fuel. Currently there are no plans to reprocess spent fuel from new nuclear power stations and this will therefore also need a disposal route. The NDA estimates that the current proposals for a 16 Gigawatt programme of new nuclear power stations could add, by 2200, around 12% to the total packaged volume of wastes for disposal and 73% to the total amount of radioactivity. However, the proportion of the total amount of radioactivity resulting from new nuclear power stations as well as the total amount of radioactivity will decline over time due to the effect of natural radioactive decay. This estimate is based on a number of assumptions (such as the timing of new nuclear power stations being built and the level and time for which they operate. These may be subject to change in the future.

## **Current management of radioactive wastes and spent fuel**

### *Interim storage*

- 5.19 In 2006 the independent Committee on Radioactive Waste Management (CoRWM) recommended geological disposal as the best available approach for the long-term management of the UK's HAW (see paragraphs 1.3 below). CoRWM also recommended a continued commitment to safe and secure interim storage.
- 5.20 Interim waste storage is an essential component of HAW management. It is not itself a disposal solution, but it provides a safe and secure environment for waste packages that are awaiting final disposal.
- 5.21 Interim stores for packaged HAW are robust, engineered facilities. They provide safe and secure protection for waste packages, preventing hazardous releases to the outside environment via a number of engineered barriers and environmental controls. Interim stores are resistant to foreseeable incidents such as earthquakes and severe weather, and they perform a security role by being a barrier to intrusion.
- 5.22 Existing interim stores are safe and secure because they are actively managed and maintained. The ILW store at Trawsfynydd nuclear power station is a good example of a modern effective interim store. New stores currently being built typically have a design life of one hundred years, however, if surface storage is required much beyond one hundred years, then eventually the stores will need to be rebuilt and the wastes within them repackaged.

**Figure 1: The intermediate level radioactive waste store at Trawsfynydd**



5.23 It is this requirement for human monitoring, maintenance, rebuilding and repackaging which means that, given the very long timescales that HAW needs to be isolated from people and the environment, interim storage is not a permanent disposal solution.

*Waste packaging and passive safety*

5.24 Early conditioning is a significant part of HAW management. This reduces its hazard and makes wastes passively safe as soon as practicable so that they are physically and chemically stable and stored in a manner which minimises the need for control and safety systems.

In the context of current UK Government policy Radioactive Waste Management Limited (RWM, see paragraph 6.35 below) provides advice on the compatibility of waste conditioning with future geological disposal, with the objective of avoiding the need for repackaging and the 'double handling' of wastes. This is undertaken using an established process, recognised by the Office for Nuclear Regulation and the Environment Agencies.

A system of robust storage arrangements, together with disposability advice, provides confidence that packages will be disposable at the end of the storage period. Progress with packaging of HAW is reported annually by RWM and the Environment Agency .



## **Transportation**

- 5.25 The UK has more than 50 years' experience of transporting radioactive waste and materials safely by road, rail and sea. Nuclear fuel is transported routinely from fuel fabrication plants to nuclear power stations, and spent nuclear fuel is transported from power stations to Sellafield for reprocessing and storage.
- 5.26 This transportation is subject to strict controls and is robustly and independently regulated in order to protect people, property and the environment. There have been no transport incidents resulting in any significant radiation dose to an individual in connection with the transport of radioactive waste and materials between UK nuclear facilities.

## **Ongoing research and development**

- 5.27 In recommending geological disposal as the best available approach for the long-term management of the UK's HAW, and spent fuel declared as waste, CoRWM also recommended that developments in alternative management options should be actively pursued through monitoring of, and participation in, national or international research and development programmes.
- 5.28 Other long-term management options could emerge as practical alternatives to geological disposal for some wastes in future. In line with this, the NDA and RWM continue to review appropriate solutions including learning from and engaging with overseas programmes, which could have the potential to improve the long-term management of some of the UK's higher activity radioactive wastes.
- 5.29 At the moment, no credible alternatives to geological disposal have emerged that would accommodate all of the categories of waste in the inventory for disposal. Therefore, in any realistic future scenario, some form of geological disposal facility will remain necessary.

## ANNEX 2: GEOLOGICAL DISPOSAL

6.1 The Welsh Government has issued this consultation with a preferred option of adopting a policy for geological disposal as the only viable long term method for managing higher activity radioactive waste (HAW) and spent fuel declared as waste. This chapter discusses general concepts of what is meant by geological disposal. The discussion and illustrations in this chapter are intended to inform responses to this consultation and are based on information drawn from the UK Government 2014 White Paper *Implementing Geological Disposal*<sup>41</sup> as this gives information both about geological disposal in general terms and about how it may be implemented in the UK. However, using data from the White Paper for information does not imply that the Welsh Government has decided to adopt policies currently supported by the UK Government.

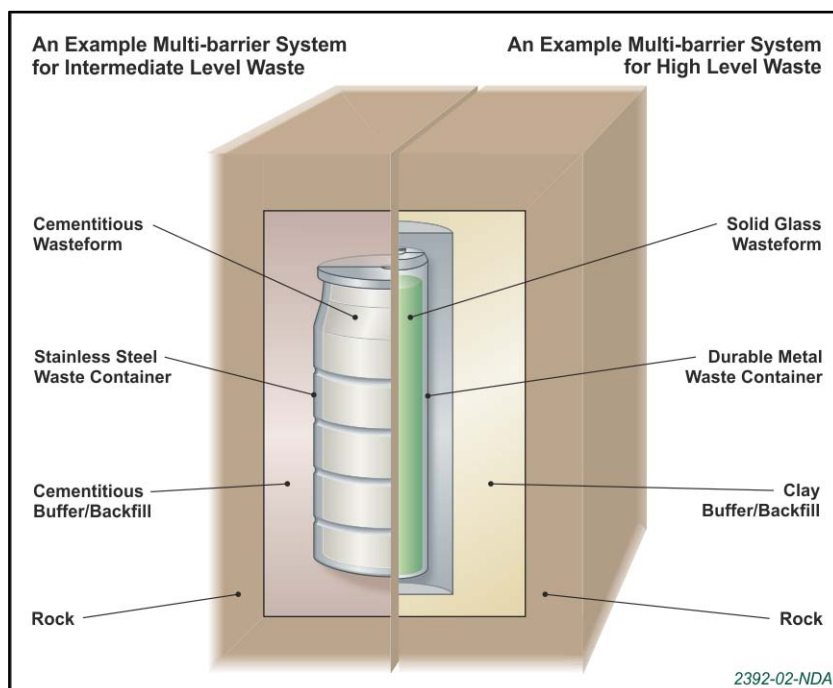
### What is geological disposal?

- 6.2 Storage of radioactive waste implies the need and intention to intervene further to manage the waste. Disposal requires no further intervention by future generations. While it may be possible to make provision for ongoing monitoring for a period and to build in provision for retrieving the waste, the concept of disposal places no requirements on future generations to do this. Geological disposal is intended to dispose of waste permanently, not to store it, thus removing burdens from future generations.
- 6.3 Geological disposal isolates radioactive waste from the surface environment. It contains and isolates the waste in a way that provides long-term protection against harmful levels of radioactivity reaching the surface environment.
- 6.4 This is achieved through the use of multiple barriers that work together to provide protection over hundreds of thousands of years. It is not a case of simply depositing waste underground. The multiple barriers that provide safety for geological waste disposal are a combination of the:
- form of the radioactive waste itself. For example, high level waste (HLW) that arises initially as a liquid is converted into a durable, stable solid glass form before storage and disposal;
  - packaging of the waste;
  - engineered facility that the waste packages are emplaced in;
  - stable geological setting in which the facility is sited.

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<sup>41</sup> <https://www.gov.uk/government/publications/implementing-geological-disposal>

Figure 2: Diagram of multi-barrier system



- 6.5 Unlike other hazardous materials, radioactive materials will decay and become less hazardous over time. The majority of radioactivity will decay within the first few hundred years.
- 6.6 By constructing the disposal facility deep within a setting that has been stable for 'geological' time scales – instead of on or near the surface – it can be demonstrated that the geology will continue to isolate and contain the radioactivity for a very long period, 'thus providing long-term protection against harmful amounts of radioactivity being released into the surface environment.'
- 6.7 Once a geological disposal facility (GDF) is closed, in accordance with a safety case accepted by the regulators, it will no longer require any human intervention. This avoids placing the burden of dealing with these wastes on future generations.

### International situation

- 6.8 Many countries around the world have nuclear power programmes, significant inventories of radioactive waste from the use of radioactive materials in industry, medicine and research, or both.
- 6.9 There is general agreement internationally that geological disposal provides the safest long-term management solution for higher activity radioactive waste. Countries that have decided on a policy of geological disposal

include Belgium, Canada, Finland, France, Switzerland, Sweden and the United States of America.

- 6.10 There are several programmes at an advanced stage in different parts of the world, focussing on very different geological settings, but each designed to achieve the same end of the long term isolation of wastes from the surface. Sweden and Finland are taking forward facilities designed to work in hard, fractured rock environments, while the French and Swiss programmes are utilising designs based in lower-strength sedimentary clay rocks. Other facilities are designed for evaporite (salt) rock environments and there are examples of such facilities in Germany and the United States of America.

### International developments

Geological disposal is the preferred approach internationally for safely and securely managing higher activity radioactive waste in the long-term. There are a number of geological disposal programmes in other countries, which are at various stages of development. Key recent developments in some of these programmes are set out below:

**Canada** – The process to identify a willing host for a GDF for used nuclear fuel was launched in 2010 and 21 communities expressed interest in learning more about the process<sup>a</sup>. The Nuclear Waste Management Organization (NWMO) has completed preliminary assessments of potential suitability for hosting a repository in ten of the 21 communities. Four of these communities were assessed as having strong potential to meet site selection requirements and have been identified for further study. The next step in the siting process, airborne geophysical surveys, are now underway in these areas. The remaining six are not being progressed. Preliminary assessment is still ongoing in the 11 other communities.

a. [http://www.nwmo.ca/sitingprocess\\_whatsnew](http://www.nwmo.ca/sitingprocess_whatsnew)

**Finland** – Posiva submitted its application for a construction licence for a final repository for nuclear spent fuel in Olkiluoto, Eurajoki in December 2012<sup>b</sup>. The regulators plan to produce a safety evaluation of the application and a statement to the Finnish government by the end of October 2014<sup>c</sup>. Waste emplacement, provided a licence is granted by the regulator, is expected to start in 2022<sup>d</sup>.

b. [http://www.posiva.fi/en/media/news/posiva\\_submits\\_construction\\_licence\\_application\\_for\\_final\\_repository\\_to\\_the\\_government.1154.news](http://www.posiva.fi/en/media/news/posiva_submits_construction_licence_application_for_final_repository_to_the_government.1154.news)

c. [http://www.stuk.fi/stuk/tiedotteet/en\\_GB/news\\_840/](http://www.stuk.fi/stuk/tiedotteet/en_GB/news_840/)

d. [http://www.posiva.fi/en/final\\_disposal/general\\_time\\_schedule\\_for\\_final\\_disposal](http://www.posiva.fi/en/final_disposal/general_time_schedule_for_final_disposal)

**France** – A public debate on Andra's Cigéo project for the management of higher activity waste was held in 2013<sup>e</sup>. In May 2014 Andra set out its response and as a result will implement four specific changes to its implementation programme; will clarify its proposals on reversibility; and is making a number of commitments for the project going forward<sup>f</sup>. Subject to approvals, the construction of the disposal facility could begin in 2020 and the commissioning, beginning with a pilot industrial phase, could take place in 2025.

e. <http://www.xn--cigo-dpa.com/en/the-public-debate>

f. <http://www.andra.fr/international/download/site-principal/document/communque-de-presse/press-release-on-the-cigeo-public-debate-follow-up.pdf>

**Germany** – A draft bill was introduced for debate in the German parliament on 17 May 2013 to establish a 24-member commission to find a geological disposal facility for waste from Germany’s nuclear power stations<sup>9</sup>. The commission would be expected to formulate search criteria by 2015, and to have found a location for a facility by 2031. The introduction of the draft bill follows a procedural compromise in April between government and opposition parties in both the German parliament and the upper Bundesrat, in which the sixteen German states are represented.

g. <http://www.dw.de/bundestag-debates-nuclear-waste-disposal/a-16821122>

**Sweden** – In March 2011 SKB (the Swedish Nuclear Fuel and Waste Management Company) submitted a licence application to build a final repository for spent nuclear fuel at Forsmark<sup>h</sup>. The application is currently being reviewed by the Swedish regulators who plan to issue a final review statement with a recommendation to the Government in early 2016<sup>i</sup>. Subject to approval it is hoped that construction will start by 2019<sup>j</sup>.

h. [http://www.skb.se/Templates/Standard\\_31004.aspx](http://www.skb.se/Templates/Standard_31004.aspx)

i. <http://www.stralsakerhetsmyndigheten.se/In-English/About-the-Swedish-Radiation-Safety-Authority1/The-site-for-a-spent-nuclear-fuel-repository1/>

j. [http://www.skb.se/Templates/Standard\\_33926.aspx](http://www.skb.se/Templates/Standard_33926.aspx)

**United States** – In January 2013, the Department of Energy published its Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste<sup>k</sup>. It states that the site selection and implementation process for a facility should be consent-based, transparent, adaptive, and technically sound. Under this framework, the US Administration has planned a programme to construct a repository and begin operations by 2048.

k. <http://energy.gov/downloads/strategy-management-and-disposal-used-nuclear-fuel-and-high-level-radioactive-waste>

The NDA report on international siting processes (published in September 2013) provides more detail on aspects of the siting processes in other countries<sup>l</sup>:

l. <http://www.nda.gov.uk/publication/geological-disposal-overview-of-international-siting-processes/>

- 6.11 While there are many countries that have yet to decide or issue long-term waste management policies, no country has adopted a disposal policy for HAW other than geological disposal.

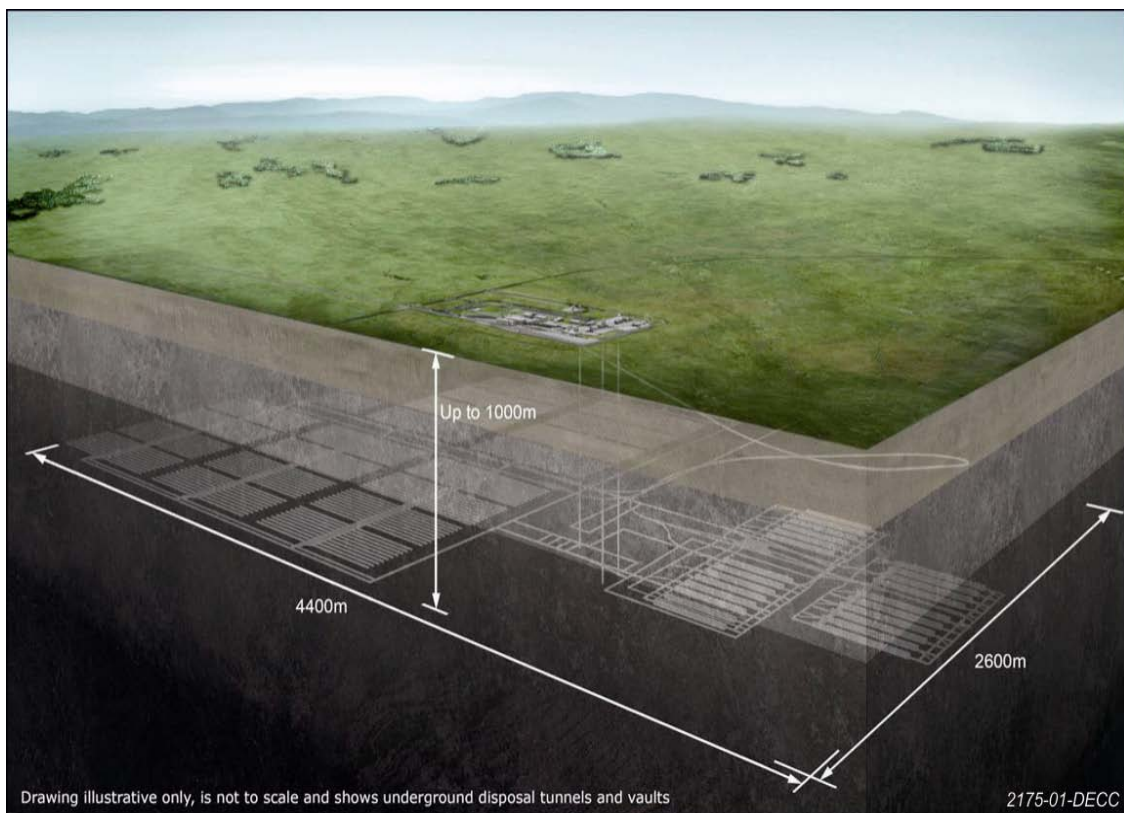
## Facility design

- 6.12 A GDF will have both surface and underground facilities. They will be linked by an access tunnel and / or shaft, depending on the layout of these facilities. The underground facilities do not need to be located directly below

the surface facilities – they could be separated by a distance of several kilometres.

- 6.13 The precise layout and design of the facilities will depend on the inventory and the specific geological characteristics at the site in question. An artist's impression of one potential layout of a GDF is set out below.
- 6.14 The surface facilities of a typical GDF are expected to cover an area of approximately 1 square kilometre. The primary purpose of the surface facilities will be to receive waste packages from the rail and road network, and transfer them to the underground disposal facilities.
- 6.15 The underground facilities will comprise a system of vaults for the disposal of intermediate level waste (ILW), and an array of engineered tunnels, for the disposal of high level waste (HLW) and spent fuel (if it is declared as waste). HLW and spent fuel require different disposal structures from ILW and other radioactive wastes because they generate heat. The disposal vaults and tunnels of a GDF are expected to be between 200 and 1,000 metres underground depending on the geology at the site in question.
- 6.16 The figure below illustrates a disposal facility with two distinct disposal areas, at depths of between 200 metres and 1 kilometre. They are separated such that there are no interactions between the engineered barriers of each disposal area that could compromise safety.

**Figure 3: Diagrammatic illustration of a geological disposal facility**



- 6.17 One or more GDFs may be necessary to accommodate all the waste currently identified in the UK inventory for potential disposal. There is no technical reason why the development of one GDF to manage the inventory for disposal should not be possible but this would depend on whether a large enough volume of suitable rock exists in which the underground facilities can be constructed (in an community willing to host a GDF). If a single GDF is possible it is estimated that it would have underground footprint of around 10 square kilometres to 20 square kilometres, depending on the type of geological setting. If a single GDF could be developed to provide safe containment there could be major cost savings and lower environmental impacts compared with developing more than one site.

### **Retrievability**

- 6.18 Paragraph 6.2 discusses that the purpose of geological disposal is to dispose of waste permanently and not to store it which would require management by future generations.
- 6.19 During the operational stage of a GDF (that is, when it its accepting and emplacing waste), waste that has been emplaced in a GDF could be retrieved if there were a compelling reason to do so. Retrieving emplaced waste would tend to become more difficult as time went by, particularly after the end of its operational stage (that is, once a GDF has been closed permanently).
- 6.20 Permanently closing a GDF at the earliest possible opportunity once operations have ceased provides for greater safety, greater security, and minimises the burdens on future generations. The regulators would expect closure of a GDF without unnecessary delay after disposal operations have ceased and UK Government policy does not intend for waste that has been disposed of in a GDF to be retrieved at a later date.

### **Regulation and safety**

- 6.21 The purpose of geological disposal is to ensure the safety of public health and the environment into the future. The radioactivity regulatory regime in the UK is among the most thorough and stringent in the World. In the UK all aspects of a proposed facility, from preparing waste for disposal, transporting waste to the facility, to design, construction and operation of the facility, and safety in the long-term following closure, will require regulatory approval.
- 6.22 The independent regulators (the Office for Nuclear Regulation (ONR), and the relevant environmental regulator, (Natural Resources Wales, the Environment Agency, and the Northern Ireland Environment Agency) will only allow a GDF to be built, operated and closed if they are satisfied that it will meet their demanding regulatory requirements. These requirements implement the protection standards established nationally and internationally.

- 6.23 As independent regulators, the environmental regulators do not have a formal role in the decision-making process for selecting sites for investigation but may provide advice and comment on matters within their remits.
- 6.24 Environmental regulatory requirements will be applied using a process known as ‘staged regulation’<sup>42</sup>. Staged regulation will provide regulatory control from very early in the development of a GDF and enables the environmental regulator to maintain regulatory control throughout each stage of development from the start of intrusive site investigation, through construction and operation, and eventually to closure. The developer will need regulatory approval before each stage of development can begin and, in particular, disposal of radioactive waste will not be allowed without the appropriate environmental permit. Regulatory approval will also be required for closure of a GDF and subsequent surrender of the operator’s environmental permit.
- 6.25 ONR has no formal regulatory role in selecting a site for geological disposal, but it will advise on safety and transport matters, which would become important as ONR would have a formal regulatory role should a GDF be developed once a site had been confirmed. ONR also has a key role in regulating the storage of higher activity waste on nuclear licensed sites until a GDF is available.
- 6.26 The UK Government has stated that GDF will be a licensed nuclear installation and, as such, it will be ONR’s role to grant a licence for the site, with attached site licence conditions, and then to enforce the requirements of that licence.
- 6.27 ONR will also be responsible for assessing the security and approving security arrangements for the disposal facility, and for securing compliance with those arrangements. It will also be responsible for regulating the transport of radioactive materials from nuclear licensed sites to a GDF.
- 6.28 Building a GDF will require the development and maintenance of a number of safety cases and security plans to demonstrate high standards of safety, security and environmental protection throughout the lifecycle of the facility, all of which will be subject to scrutiny by the independent nuclear and environmental regulators.

## **Costs**

- 6.29 A GDF would be a major infrastructure project and a significant long-term investment for the UK.
- 6.30 The precise costs of developing a GDF will depend on a number of factors, including the type of rock in which the facility is constructed and exactly how

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<sup>42</sup> Staged regulation is a requirement in Wales and England under the Environmental Permitting (England and Wales) Regulations 2010. The extant legislation in Northern Ireland does not allow for staged regulation, but the same process would be applied by agreement.



long it operates before being closed. As the developer, RWM updates on an annual basis the estimated costs of the GDF programme. These figures are made publicly available in the NDA Annual Report and Accounts<sup>43</sup>.

- 6.31 The costs of the development and operation of a GDF are and will be met by the waste owners. In the case of wastes from existing public sector civil nuclear sites, these are public liabilities, owned by the NDA, and so the costs in connection with these are met by the UK Government. The same applies to wastes owned by the Ministry of Defence. Any private companies (in both the nuclear and non-nuclear sectors) which produce higher activity waste will need to meet their full share of waste management and disposal costs. This includes operators of any new nuclear power stations<sup>44</sup>.
- 6.32 The UK Government requires operators of new nuclear power stations are required to have a Funded Decommissioning Programme (FDP)<sup>45</sup> approved by the Secretary of State before nuclear-related construction can begin. Alongside the approval of an Operator's FDP, the UK Government will expect to enter into a contract with the Operator regarding the terms on which the Government will take title to and liability for the Operator's spent fuel and HAW. In particular, this agreement will need to set out how the price that will be charged for this waste transfer will be determined. The waste transfer price will be set at a level consistent with the Government's policy that Operators of new nuclear power stations should meet their full share of waste management costs.

### **Roles and responsibilities**

- 6.33 Radioactive waste disposal is a devolved issue, meaning that the UK Government has responsibility for policy in respect of England, the Welsh Government in respect of Wales, the Scottish Government in respect of Scotland and the Northern Ireland Executive in respect of Northern Ireland. Current UK Government and Northern Ireland Executive policy is to support geological disposal for HAW. This consultation is about whether the Welsh Government should adopt a policy for the disposal of HAW and if so whether this policy should be for geological disposal.
- 6.34 The Nuclear Decommissioning Authority (NDA) is a non-departmental public body that was created through the Energy Act 2004. It is responsible for cleaning-up existing 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 nuclear waste.
- 6.35 Radioactive Waste Management Limited (RWM) is a wholly owned subsidiary of the NDA, which is responsible for implementing Government

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<sup>43</sup> <https://www.gov.uk/government/publications/nuclear-decommissioning-authority-annual-report-and-accounts-2013-to-2014>

<sup>44</sup> <http://bit.ly/1sKzgPt>

<sup>45</sup> [www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/42628/3797-guidance-funded-decommissioning-programme-consult.pdf](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/42628/3797-guidance-funded-decommissioning-programme-consult.pdf)

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 responsible for complying with all the regulatory requirements on geological disposal.

- 6.36 The independent Office for Nuclear Regulation (ONR) is responsible for the regulation of the nuclear sector across the UK. To assure the safety of nuclear installations in Great Britain, ONR grants licences that allow licence holders to use nuclear sites for specified activities. ONR also regulates the safety and security of nuclear installations, and the transport of radioactive materials.
- 6.37 A number of environmental regulators are responsible for environmental regulation of the nuclear sector within their respective jurisdictions. In Wales Natural Resources Wales is responsible for the enforcement of environmental protection legislation, regulating radioactive and non-radioactive discharges and disposals to air, water (both surface and groundwater) and land, including disposal by transfer to another site. This responsibility sits with the Environment Agency in England, the Scottish Environmental Protection Agency in Scotland and the Northern Ireland Environment Agency in Northern Ireland.
- 6.38 The ONR and the appropriate environmental regulator, who work closely together, must be consulted in any application for development consent for a GDF. The appropriate environmental regulator must be consulted in any application for development consent for borehole investigations to characterise potential candidate sites. The environmental regulators will be responsible for regulating borehole investigations, either through legislation (in England and Wales) or by agreement (in Northern Ireland. (For reference to the Welsh planning system please see paragraph 4.7.)
- 6.39 The Committee on Radioactive Waste Management (CoRWM) provides independent advice and scrutiny to Government (UK, Wales, Scotland and Northern Ireland) on the plans and programmes for the future management of HAW including delivering geological disposal and also including the safe and secure interim storage that precedes disposal.
- 6.40 Communities sit at the heart of the voluntarist siting approach and are able to enter into formal discussions with the developer about the GDF siting process, and having a right to withdraw from these formal discussions at any time. Under current Welsh Government policy a community in Wales wishing to initiate these discussions should do so by contacting the Welsh Government.

## ANNEX 3

### Welsh Government commissioning request to CoRWM- 24 June 2014

We are grateful for CoRWM's provision in its work plan to assist the Welsh Government in its consideration of its policy on HAW management and disposal.

We have so far had about twenty responses<sup>46</sup>. As we agreed I attach those which are available (we are waiting for translation of a few Welsh language responses). We have anonymised the responses where asked.

Although we were not seeking responses in respect of the Welsh Government policy of supporting Wylfa Newydd, as expected we have received extensive comments about this. This is a political issue and we would not expect CoRWM to wish to comment on this or on the associated comment that our policy should be to avoid the production of new volumes of radioactive waste by opposing new nuclear power stations.

Some responses also call on the Welsh Government to adopt a policy of ongoing storage and surface management similar to that of the Scottish Government. Again, this is a political issue and we would not expect CoRWM to wish to comment on that.

Frequent themes include:

- Geological disposal is unsafe ("failure" at Yucca Mountain and the recent accidents at WIPP are referred to as examples) and cannot protect future generations. NFLA refers to production of CO<sub>2</sub> and methane within the waste mass leading to the escape of radioactivity. Other comments include the vulnerability of geological disposal facilities to earth movements. If possible a comment on the nature of the WIPP accident would be useful please (e.g. was it a failure of geological disposal or an operational matter)?
- NFLA refers to the recommendations by CoRWM about the suitability of geological disposal as a permanent management option for higher activity radioactive waste and the later endorsement of these recommendations by CoRWM 2 (these are referred to in CoRWM's own response. The NFLA comments do not coincide with our interpretation of CoRWM's recommendations and we would be grateful for clarification on this matter please.
- Reference is made to the use of the "best" geology rather than "acceptable" geology and doubt is cast on the use of engineering to present a viable safety case. We would be grateful for CoRWM's comments on this please.
- Concerns are expressed about the risk of faster than expected leakage of radioactive wastes back to the surface environment. We would be grateful for CoRWM's consideration of this matter please.

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<sup>46</sup> A total of 24 responses were received, all of which were forwarded to CoRWM for their consideration.

- The safety of future generations is paramount and CoRWM's comments on the concerns raised in the first two bullet points would be welcome please.
- Other responses also refer to CoRWM's recommendations.
- Although we would not expect CoRWM to comment on the policy of supporting new nuclear power stations, comments have been made about the suitability of new build waste (particularly high burn up waste) for safe storage and eventual disposal. We would welcome CoRWM's views on this please.
- FoE Cymru (and others) suggest that the Welsh Government should not consider adopting a policy for HAW disposal until such wastes in Wales need disposal, after the end of the care and maintenance phase of the current nuclear power stations in Wales. The Welsh Government is very concerned about intergenerational equity and would welcome CoRWM's comments on this matter.
- There are concerns about the reasons behind CoRWM's proposal to visit Anglesey in September. Depending on our decision whether to proceed with a full policy review and the timetable adopted for this, we may not publish the responses, our analysis and a consultation before CoRWM's visit. However, CoRWM's comments on this matter would be welcome please.
- The response from Magnox supports consideration of management options for HAW other than geological disposal including near surface disposal. Marion Hill also supports this in her response. Research and consideration of other disposal routes for suitable HAW remains part of MRWS considerations. CoRWM considered a wide range of management options before its recommendations in 2006. However we would welcome CoRWM's comments on the scope for other long term management options across the range of HAW.
- Some respondents express concern about the transportation of wastes and stress the need to store on site.
- PAWB ask that their response to the DECC consultation on the siting processes for a GDF should be considered alongside their current response and I have attached this. They have also attached a paper on high burnup fuel produced by the late Huw Richards (I believe that this dates from 2007-08).

Although I have highlighted a few themes these are not exhaustive and they are not intended to constrain CoRWM's consideration of or comments on the responses. I mentioned above that we are waiting for some responses to be translated and these and any other responses we receive will be forwarded later this week.

Please may I ask for CoRWM's response on these matters by 25 July?

As CoRWM is the Welsh Government's expert advisor on the MRWS programme and on HAW management and disposal, we welcome CoRWM's expert input on these matters. In keeping with the spirit of transparency in Government we propose

that CoRWM's comments will be attached to our analysis of the responses to the call for evidence.

**CORWM RESPONSE TO QUESTIONS FROM ROBERT WILLIAMS RE  
RESPONSES TO WELSH GOVERNMENT CALL FOR EVIDENCE: REVIEW OF  
CURRENT POLICY ON THE DISPOSAL OF HIGHER ACTIVITY RADIOACTIVE  
WASTE**

Lynda Warren, Gregg Butler

1. *Geological disposal is unsafe ("failure" at Yucca Mountain and the recent accidents at WIPP are referred to as examples) and cannot protect future generations. NFLA refers to production of CO<sub>2</sub> and methane within the waste mass leading to the escape of radioactivity. Other comments include the vulnerability of geological disposal facilities to earth movements. If possible a comment on the nature of the WIPP accident would be useful please (e.g. was it a failure of geological disposal or an operational matter)?*

At the CoRWM meeting in Thurso held in July, a member of the Committee provided a short update on the public reports produced following the discovery of a release of radioactivity at the WIPP facility in New Mexico and the response from the media and others. CoRWM was given to understand that operational matters are currently believed to be the cause of the leak at WIPP. Inappropriate waste conditioning is the most likely culprit. The reason for the error is thought to be poor lines of management. The incident is currently under review and CoRWM is unable to provide a fully informed diagnosis of the reasons for the leak but there is nothing to suggest any basic failure in the principle or design for geological disposal at WIPP.

The proposed GDF at Yucca Mountain failed politically. No formal ruling on the safety case of Yucca Mountain has been made, therefore it cannot be said to have failed on safety grounds.

Approval for a GDF under UK regulations would require demonstration of a robust safety case. The production of CO<sub>2</sub> and methane within the waste would be considered as part of the design as would vulnerability to earth movements.

In conclusion, CoRWM's position remains that "geological disposal remains the best available approach for the long-term management when ... compared with the risks associated with other methods of management"  
(CoRWM Doc 700 Recommendation 1).

2. *NFLA refers to the recommendations by CoRWM about the suitability of geological disposal as a permanent management option for higher activity radioactive waste and the later endorsement of these recommendations by CoRWM 2 (these are referred to in CoRWM's own response). The NFLA comments do not coincide with our interpretation of CoRWM's recommendations and we would be grateful for clarification on this matter please.*

The NFLA appears to have misunderstood CoRWM's position and has misrepresented CoRWM. We have written to them to clarify the position.

3. *Reference is made to the use of the “best” geology rather than “acceptable” geology and doubt is cast on the use of engineering to present a viable safety case. We would be grateful for CoRWM’s comments on this please.*

CoRWM has repeatedly emphasised the need for suitable geology and has made it clear that there is no such thing as ‘best geology’. As stated in CoRWM’s Recommendations to Government in 2006, CoRWM’s “General approach to site selection is not to seek the best possible site from a geological point of view ... but rather to identify a site that meets the necessary geological and other criteria” (CoRWM Doc 700, Chapter 15 Geological Disposal paragraph 29).

The 2006 Report also addressed concerns over the possibility of over-reliance on engineering to make up for less good geology. CoRWM recognised that there was a real possibility of a cynical perception that the implementing body would seek to make the best of the geology at a site where it had devoted considerable time and money to investigation rather than seek an alternative site. It concluded that the way to address such views was to provide a clear demonstration that this was not the case and that the best way to do this was to involve host communities from the outset (CoRWM Doc 2006, Chapter 18 Addressing Uncertainties, paragraph 23). This approach was adopted by Government in the MRWS process and CoRWM remains convinced that it is correct.

Deliberations on the MRWS process in West Cumbria focused largely on the suitability or otherwise of the geology. In response to what it perceives to be an over-emphasis on just one aspect of disposal, CoRWM has repeatedly emphasised that geology has to be considered in the context of, and as one element contributing to, the safety case. This will inevitably involve consideration of both geology and engineering factors and, if it is not possible to make a safety case in a particular geological setting (i.e. the geology is not ‘good’ enough), this will become apparent.

4. *Concerns are expressed about the risk of faster than expected leakage of radioactive wastes back to the surface environment. We would be grateful for CoRWM’s consideration of this matter please.*

CoRWM’s answer to this question is again to refer to the safety case. The safety of disposal is assessed by producing a safety case which includes consideration of rates of radionuclide transport back to the surface environment.

5. *The safety of future generations is paramount and CoRWM’s comments on the concerns raised in the first two bullet points would be welcome please.*

CoRWM remains of the view that geological disposal is still the best option for the long-term management of higher active waste not least because it will provide safety for future generations.

The regulatory controls operating in the UK will not allow a GDF to proceed unless and until the safety case has been satisfactorily made.

6. *Other responses also refer to CoRWM's recommendations.*

Agreement with, and continuing support for, CoRWM's recommendations is included in a number of the responses but there are also references to CoRWM that do not accurately reflect, or contradict, CoRWM's views. Most of these are dealt with elsewhere in this response but it is worth emphasising two general points:

- a mistrust of CoRWM's role in relation to the delivery of a GDF which seems to arise from a misunderstanding of CoRWM's remit; and
- a misunderstanding of the concept of geological disposal especially in relation to its robustness against earth movements.

CoRWM believes that there is a need for more efforts in raising public awareness of the issues surrounding radioactive waste disposal in general and geological disposal in particular.

7. *Although we would not expect CoRWM to comment on the policy of supporting new nuclear power stations, comments have been made about the suitability of new build waste (particularly high burn up waste) for safe storage and eventual disposal. We would welcome CoRWM's views on this please.*

The issues surrounding the long-term management of new build waste, particularly high burn up waste were raised by Huw Richards in 2008. The NDA provided a detailed response to the issue and CoRWM also responded at the time.

CoRWM does not think that the nature of the fuel will present a problem though, of course, increasing the size of the programme will increase the amount of spent fuel and waste. The spent fuel is likely to be similar in character to that discharged from Sizewell B at the same time, i.e. increases in LWR burn-up have tended to be reflected across the whole fleet. CoRWM has previously commented that "there is considerable international experience of dry storage of PWR fuel to draw on, particularly in the USA, and there has been substantial R&D in a number of countries on geological disposal of PWR fuel" (CoRWM Doc 2500, Interim Storage of Higher Activity Wastes and the Management of Spent Fuels, Plutonium and Uranium, paragraph 4.19).

However, while CoRWM does not think there is an issue over the suitability of new build waste for safe storage and eventual disposal, it does acknowledge that there could be an issue over space and capacity for disposal. This issue will need to be resolved at the time when the inventory for a proposed GDF is being considered.

8. *FoE Cymru (and others) suggest that the Welsh Government should not consider adopting a policy for HAW disposal until such wastes in Wales need disposal, after the end of the care and maintenance phase of the current nuclear power stations in Wales. The Welsh Government is very concerned about intergenerational equity and would welcome CoRWM's comments on this matter.*



CoRWM notes that HAW has been produced in Wales at least since the Trawsfynydd reactors were commissioned and these wastes are an integral part of the UK's inventory requiring disposal.

As part of its work on options assessment, CoRWM spent a considerable amount of time deliberating on equitable issues surrounding radioactive waste management including the question of intergenerational equity. It hosted an expert workshop and used the output from this to inform its final recommendations on options for managing waste. An overview of the issues raised is contained included in the 2006 Report (CoRWM Doc 700 Chapter 6 An Ethical Problem and Chapter 13 Confidence in Geological Disposal, paragraphs 2-5).

CoRWM made the following comments in its Report on Implementing a Partnership Approach (CoRWM Doc 2146, paragraph 42): "Decisions taken in the present may affect communities far into the future. It is, therefore, important that decisions are based on the ethical implications of intergenerational equity. Democratic decision making requires that, where possible, decisions should be left to those most affected by the consequences. Consequently it is desirable to avoid taking decisions now which cannot be reversed by a later generation. On the other hand, the security and safety of future generations may be better protected by taking decisions now that are not capable of being reversed in future. Given the uncertainties it is impossible to be prescriptive and decisions must be taken having regard to all the circumstances prevailing at the time.

It follows that there is no simple right or wrong answer as to what is the best course of action for future generations. Once it has been accepted that geological disposal can meet a safety case, the only issue for consideration is the balance to be drawn between taking action now to deal with a problem, thereby denying subsequent generations the opportunity to apply their own management solutions, or impose a burden on them and put them at risk by leaving the waste accessible in long-term storage so that they can make the decisions and bear the responsibility.

In conclusion on this question, CoRWM remains convinced that the benefits of achieving safe disposal in a GDF outweigh the loss of flexibility for future generations. However, as acknowledged in CoRWM's original recommendations, this conclusion is dependent on satisfactory progress with geological disposal. This is why CoRWM remains convinced that a robust programme of interim storage must play an integral part in the long-term management strategy (CoRWM Doc 700, Recommendation 2).

The process of identifying and assessing a site for geological disposal will take many years. CoRWM was emphatic in its 2006 report that "the aim should be to progress to disposal as soon as practicable" (Recommendation 1) and it remains of the view that it would be wrong to delay work in the hope that something better might come along.

9. *There are concerns about the reasons behind CoRWM's proposal to visit Anglesey in September. Depending on our decision whether to proceed with a full policy review and the timetable adopted for this, we may not publish the responses,*

*our analysis and a consultation before CoRWM's visit. However, CoRWM's comments on this matter would be welcome please.*

CoRWM is aware that its forthcoming visit to Anglesey has led some to conclude, incorrectly, that we are coming because either we or some other party have chosen Wylfa as a candidate site for a GDF. CoRWM does not think that it will make any difference whether or not the Welsh Government publishes anything before the visit. CoRWM visits nuclear communities both to educate its members and to listen to local opinion.

We intend to try to reassure people by explaining that our terms of reference are about scrutiny and the provision of advice. We have already produced material on CoRWM's role for use in West Cumbria and we plan to disseminate this more widely, including during our visit to Anglesey.

10. *The response from Magnox supports consideration of management options for HAW other than geological disposal including near surface disposal. Marion Hill also supports this in her response. Research and consideration of other disposal routes for suitable HAW remains part of MRWS considerations. CoRWM considered a wide range of management options before its recommendations in 2006. However we would welcome CoRWM's comments on the scope for other long term management options across the range of HAW.*

CoRWM's option assessment considered a range of disposal and storage options but concluded that geological disposal was the best available approach. One of the reasons for this is that a GDF could, potentially, take all types of waste, albeit in segregated vaults, whereas other disposal options can only be used for some categories of waste. It did, however, note that there could be other practicable solutions for some wastes and concluded that these should not be ruled out.

For example, it recognised that "there are rapid developments in science and technology so practicable alternatives may become available in the period up to the closure of a repository ... An example is boreholes where there could be benefits from the enhanced isolation and security offered for some wastes, but there is not sufficient knowledge to put the option forward at this stage" (CoRWM Doc 700 Chapter 14 CoRWM's Recommendations, paragraph 7). It went on to recommend leaving open the possibility of other long-term management options, for example borehole disposal (Recommendation 5).

It also considered near surface disposal in its long list of options. However, it concluded that "only a small proportion of the ILW inventory volume (about 1%) can be categorised as short-lived and so would potentially be suitable for near surface disposal. Furthermore, the impact of attempting to segregate more waste for near surface disposal would be likely to be very modest" (CoRWM Doc 700.Chapter 2 Identifying the radioactive wastes and materials that the UK has to manage, paragraph 17). CoRWM made a recommendation about reactor decommissioning waste. Recommendation 8 states that, in determining what reactor decommissioning wastes should be consigned for geological disposal, due regard should be paid to considering other available and publicly acceptable management options, including those that may arise from the low level waste review. CoRWM

goes on to make “a caveat regarding reactor decommissioning waste (RDW) some of which is likely to be short-lived ILW. CoRWM was not required to make recommendations about siting of facilities but notes that, if the option of disposing of low level waste (LLW) on site is publicly acceptable and is pursued, consideration should be given as to whether a safety case could be made for including appropriate RDW in order to avoid transport” (Chapter 14, CoRWM’s Recommendations, Recommendation 8 and paragraph 10).

Ultimately, the choice of disposal option will probably be decided on a combination of cost, inventory and safety case issues. Nevertheless, CoRWM remain convinced that geological disposal should be the preferred option and that there will be limited opportunities for alternative options to be employed. During its recent visit to Dounreay, it was told that only a very small proportion of the decommissioning waste, accounting for about 1% of the radioactivity, was suitable for near surface disposal.

11. *Some respondents express concern about the transportation of wastes and stress the need to store on site.*

CoRWM recognises the importance of transport to stakeholders but has not carried out any recent work on this topic. Transport is discussed in CoRWM’s 2009 Report on Interim Storage of Higher Activity Wastes and the Management of Spent Fuels, Plutonium and Uranium (CoRWM Doc 2500). This recommends that more information is made available to the public on how the security of storage and transport of radioactive waste is assured (Recommendation 3) and further recommends greater efforts to ensure sufficient stakeholder participation in decision making processes relating to conditioning, packaging, storage and transport of higher activity wastes (Recommendation 4).

12. *PAWB ask that their response to the DECC consultation on the siting processes for a GDF should be considered alongside their current response and I have attached this. They have also attached a paper on high burnup fuel produced by the late Huw Richards (I believe that this dates from 2007-08).*

PAWB’s response to the DECC consultation is mainly about the issue of new build rather than radioactive waste and CoRWM has no comment. As for the paper on high burn-up fuel, see response to question 7 above.

13. *Additional comments*

CoRWM notes that the responses to Welsh Government’s Call for Evidence have tended to go much further into the issues than was necessary in order to answer the questions posed. Many of the responses relate to a review of the policy rather than the question of whether there should be a review or not.

It was probably inevitable that the question of radioactive waste management would be inextricably linked with the issue of new build for some people. This association has undoubtedly coloured the responses and has made it more likely that opponents to new build would respond.

There appears to be some confusion in the responses over whether the Welsh Government is considering a Welsh disposal option (for Welsh waste) or whether it is seeking to establish Welsh policy in a UK context. CoRWM strongly advises Welsh Government to clarify this issue if it decided to proceed with a review of policy.

**Consultation  
Response Form**

Your name:

Organisation (if applicable):

email / telephone number:

Your address:

Responses to consultations are likely to be made public, on the internet or in a report. If you would prefer your response to remain anonymous, please tick here:

