Call for Evidence

Review of Current Policy on the Disposal of Higher Activity Radioactive Waste

Responses

October 2014

CONTENTS

Introduction

Responses to the consultation have been published below. A number of responses (7) were received in Welsh and the translation is provided below.

Where requested, details of the respondents have been withheld.

The main response have been published – where supporting materials were provided, they have not been published here, although they were considered.

The questions are below – these have not been repeated in the body of responses.

Question 1: Should the Welsh Government review is current policy on HAW disposal?

Question 2: CoRWM carried out extensive work before recommending geological disposal in its report in 2006, and confirmed that recommendation in 2013. In the light of this, if the Welsh Government reviews its current policy, should it limit its consideration of disposal options for HAW to geological disposal?

Question 3: If the Welsh Government should consider disposal options other than geological disposal, what should these be?

Question 4: Do you have any other comments on the Welsh Government policy for the disposal of higher activity radioactive waste?

Snowdonia National Park Authority

1. Yes for the reasons given in the consultation and in the absence of a definitive policy. The current policy approach is ambiguous and gives no certainty on how the waste will be treated in Wales.

2. In the absence of other compelling evidence the consideration should be limited to HAW geological disposal. However the facility is likely to be one larger facility and this should be located as close as possible to the bulk of the current waste to avoid further transportation. Such a facility should therefore be located in or close to Cumbria.

3. We have insufficient knowledge to suggest potentially viable and safe alternatives. However movement of waste should be kept to the minimum.

4. If the policy is likely to change and if the Welsh Government were to support HAW disposal in Wales it should beforehand consider the siting process and whether it agrees with the suggestions in the DECC consultation September 2013 and any changes that may result from the consultation. As a National Park Authority we would not wish to see any kind of facility located in a statutory designated landscape. In this context the Welsh Government will need to carefully consider the potential environmental consequences of locating any kind of disposal facility in Wales and whether this is likely/desirable taking all matters in to consideration.

Iwan Evans

Snowdonia National Park Authority

Nuclear Free Local Authorities (NFLA)

Q1. The NFLA Welsh Forum agrees that the Welsh Government should review its policy. Although the Welsh Government has reserved its position on geological disposal, it has been playing a full part in the MRWS process. This process has clearly failed.

The Welsh Government should examine why the MRWS process failed.

The UK Government's recent consultation following this failure focussed solely on finding a site for a geological repository rather than looking at why the process had failed.

In the NFLA Welsh Forum's view one of the main reasons why the process has failed is because the Government has ignored most of CoRWM's original recommendations.

Geological disposal purports to involve immobilising radioactive waste within multiple, engineered barriers, and then isolating it deep inside a suitable rock formation to ensure that no harmful quantities of radioactivity ever reach the surface environment. But radioactive chemicals can migrate from a repository by dissolving in underground water or by being carried to the surface through rock fractures as a gas. This involves complex chemical and geological processes.

The government and its agencies have so far failed to demonstrate an ability to gather enough accurate information to enable a sufficiently rigorous calculation of the extent to which radioactive chemicals will escape from a GDF – and hence they are unable to provide a robust safety evaluation and give adequate assurances on health impacts and environmental contamination that a GDF may pose to affected communities.

It is impossible to demonstrate with any scientific credibility that radiation doses to people from a nuclear waste repository would be at an acceptably low level into the far distant future, if there is such uncertainty on how nuclear waste will behave underground. For instance, methane and carbon dioxide will be produced in bulk in a GDF and the extent to which these gases are radioactive will depend on how much radioactive carbon is in the waste. Originally it was thought that these gases would combine with cement placed around waste drums, but now it is thought that this won't happen with methane. This serves to illustrate the huge uncertainties involved in estimating the behaviour of radioactive chemicals underground.

The Radioactive Waste Management Directorate (RWMD) has listed 900 outstanding scientific and technical issues which need to be resolved.

However, because 400 of these were internally raised and work on resolving them is already in-hand they were removed, leaving 500 issues listed in a March 2012 RWMD report. The process of resolving the 900 issues needs to be much more open and transparent.

CoRWM was aware of the uncertainties surrounding the implementation of geological disposal. It expressed the view that there needs to be a focus on the safe and secure management of wastes in robust interim stores, not just for the period awaiting the opening of a Geological Disposal Facility (GDF), but also because of a risk of delay or failure in the repository programme. The possibility that storage might be required for the long term or even indefinitely needs to be considered.

CoRWM was clear that deep 'disposal' of radioactive waste is far from a proven technology. It recommended an intensified programme of research and development into the long-term safety of geological disposal, but also a robust programme of interim storage.

CoRWM also said it ***did not*** want its recommendations to be seen as a green light for new nuclear reactors.

"*New build wastes would extend the timescales for implementation possibly for very long but essentially unknowable, future periods. Further, the political and ethical issues raised by the creation of more wastes are quite different from those relating to committed – and therefore unavoidable – wastes. Should a new build programme be introduced, in CoRWM's view it would require a quite separate process to test and validate proposals for the management of wastes arising*"

It is also worth remembering that spent fuel from new reactors may require storage for up to 100 years after the end of generation, to enable an adequate cooling period before it can be emplaced in a GDF. This means, for example, that interim storage may be required on Anglesey for up to 160 years if new reactors are built at Wylfa.

The NFLA Welsh Forum believes the UK and Welsh Governments should instead be consulting on strategies for interim storage and the implications new nuclear reactors will have for long term storage, including the need to find appropriate and secure locations for spent fuel stores into the far future. The first step in any new process must be to develop a comprehensive programme of research and development into examining the uncertainties of disposal, research into the concept of retrievability and improving robust interim storage. Technical and scientific uncertainties as well as ethical issues should be examined in a process which is accessible and open to scrutiny.

Optimum or adequate geology?

Another reason why the process failed was because of a lack of discussion and agreement about whether the key factor was to look for the best type of geology to contain radioactive waste, or whether the geology just needs to be adequate with more reliance placed on engineered barriers.

The NFLA notes that the leader of Cumbria County Council at the time of the decision to withdraw from the process was Councillor Eddie Martin. He said:

"*The key question for us … is whether or not Cumbria is the optimum location*."

Clearly the County Council's view was that Cumbria is not the optimum location.

The Government's view is that "*there is no 'best' or 'most suitable' generic type of geology*" and that "*engineered elements can be tailored*" to meet the requirements of different geologies. It was clear in the West Cumbria Managing Radioactive Waste Safely Partnership Report that the Nuclear Decommission Authority's (NDA) Radioactive Waste Management Directorate (RWMD) (now Radioactive Waste Management Ltd) is only looking for a site which is "*sufficiently good*". RWMD's view was that "*although characterising and demonstrating safety is more challenging for a comparatively complex site* [as sites in West Cumbria would be geologically speaking] *than for a simpler site this does not prevent complex sites from being considered*".

A recent letter from the former leader of Cumbria County Council, Eddie Martin, in his role as Chair of the newly formed local group Cumbria Trust, to CoRWM members discusses the importance of the geological barrier and the current emphasis there appears to be from RWM Ltd on engineered barriers. Eddie Martin concludes that:

"*With so much scientific uncertainty and, indeed, scientific conflict of opinion there are clearly multiple assurances yet to be made and many caveats yet to be heeded before the public can be entirely confident that a GDF, anywhere in the UK, is the optimum solution to the permanent disposal of HLW … We remain unconvinced, therefore, that engineered solutions can be tailored to fit the geology*."

The Cumbria Trust, like the NFLA, has consistently argued for a national geological survey to identify the most geologically suitable potential sites for radioactive waste disposal in England (and Wales) as, indeed, did the vast majority of responders to DECC's recent consultation exercise.

In the NFLA Welsh Forum's view the Welsh Government should withdraw its support from the current MRWS process until it is made clear that the objective is to look for the best available geology for the job rather than

making use of mediocre geology and relying more heavily on engineered barriers.

Q2. It is clear from CoRWM's 2006 report that geological disposal is viewed by CoRWM as the "least worst" option. Its ***second recommendation which is often overlooked*** is that:

"…*uncertainties surrounding the implementation of geological disposal, including social and ethical concerns, lead CoRWM to recommend a continued commitment to the safe and secure management of wastes that is robust against the risk of delay or failure in the repository programme*".

The idea that geological disposal is the best available policy, but is still a far from ideal solution to the problem, is the reason why CoRWM said the creation of more wastes raises new ethical issues.

Whilst it may not be necessary to look again at most of CoRWM's long list of options, it is for this reason that the NFLA Welsh Forum would urge the Welsh Government to look in detail at the development of the well considered policy to managed Higher Activity Waste in Scotland. It emphasises that other solutions are available.

Scottish Government Higher Activity Waste Implementation strategy

In January 2011 the Scottish Government published its Higher Activity Radioactive Waste Policy.This states 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. All long-term waste management options will be subject to robust regulatory requirements.

The Scottish Government has been developing a Strategy to implement the policy. To achieve this it convened a Project Management Board which included members from a wide range of stakeholders including the Scottish Councils Committee on Radioactive Substances (SCCORS) and the NFLA Scotland Forum.

It is expected that the Scottish Government will publish a consultation document on its proposed implementation strategy during the summer.

How Wales compares with Scotland

Scotland has two Magnox nuclear power stations at Hunterston and Chapelcross and two AGR stations, at Hunterston and Torness, as well as a nuclear research site at Dounreay. Scottish policy also covers some waste at the Rosyth Royal Dockyard, but not the HAW which is expected to arise from

dismantling submarines at the base, which is being dealt with in a different policy process led by the Ministry of Defence.

Similarly, Wales is the site of two Magnox stations, but there are no AGR stations or nuclear research sites located in the country.

In Scotland the total reported volume of radioactive waste at 1 April 2013 and in estimated future arisings is 264,000m^3. Most waste is from Dounreay and the Magnox power station sites at Chapelcross and Hunterston. In summary:

Scotland	Volume at 1st April 2013 plus estimated future arisings.	Packaged Volume
HLW	Nil	Nil
ILW	25,600m^3	41,200m^3
LLW & VLLW	237,000m^3	LLW 271,000m^3
		VLLW 1040m^3

In Wales the total reported volume of radioactive waste at 1 April 2013 and in estimated future arisings is 131,000m^3. In Wales nearly all waste is from the Magnox power station sites at Trawsfynydd and Wylfa. There is a small amount of ILW generated at the Cardiff GE Healthcare plant. In summary:

Wales	Volume at 1st April 2013 plus estimated future arisings.	Packaged Volume
HLW	Nil	Nil
ILW	14,200m^3	22,300m^3
LLW & VLLW	117,000m^3	LLW 133,000m^3
		VLLW 40m^3

So the HAW arisings in Wales (22,300m^3), once packaged, will be around half the volume of the HAW arisings in Scotland (41,200m^3). (13)

A significant portion of HAW waste in Scotland will not arise for many years because under current planning assumptions Magnox reactors will be left in place for several decades to allow radioactivity to decay before they are dismantled. The most significant HAW produced at Scottish sites will be irradiated graphite and this will not arise until after 2080. Graphite accounts for 45% of Scotland's HAW.

In Wales, Trawsfynydd will be only the second UK site to enter the care and maintenance phase, in 2016. Final Site Clearance is expected at Trawsfynydd in 2073. (14) Final Site Clearance at Wylfa isn't expected until 2091. (15) Unlike Scotland, Wales has no raffinate or plutonium contaminated waste, so an even higher proportion of HAW arising will accounted for by irradiated graphite which will not arise until 2070-2090.

By the time the care and maintenance phase begins at Trawsfynydd (2016) and Wylfa (2025) all the early arisings of HAW will have been placed in interim storage.

A recent NDA options paper pointed out that dissolution of Fuel Element Debris (FED) is not considered to be an appropriate treatment for FED at Trawsfynydd, due to progress already made in the construction of interim waste storage facilities. (16)

FED is not generated at Wylfa because desplittering of spent fuel elements is not undertaken at the site**.**

Q3. The NFLA Welsh Forum recommends that the Welsh Government looks in detail at Scottish Government policy on HAW. (17)

The 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.

Although the term "near-surface disposal facilities" is used, the word 'disposal' is used simply to indicate that waste is being placed in a facility without the intention to retrieve it. But this does not mean the waste cannot be retrieved if that proves necessary – it just means there is no present intention to retrieve it. (paragraph 2.04.26) The Chair of CoRWM pointed out at a recent meeting in Workington, Cumbria, that the term "disposal" is used in Scotland as a legal term to mean the transfer of waste.

"*...Scottish Government Policy at the present time is that long-term* ***storage is still the primary*** *long-term management option*" (paragraph 2.04.03) (emphasis added by NFLA). (18)

Conclusions

In this response, the NFLA Welsh Forum has made five specific arguments on the review of Welsh Government HAW policy:

- HAW arisings in Wales, once packaged, will be around half the volume of the HAW arisings in Scotland. A significant proportion of this waste will not arise until Final Site Clearance at the two Welsh reactor sites in 2073 and 2091 in any case. By the time the care and maintenance phase begins at Trawsfynydd in 2016 and Wylfa in 2025 all the early arisings of HAW will have been placed in interim storage, so there is no need to rush decisions and, for instance, start emplacing waste in a deep geological repository with inadequate geological barriers.

- The Welsh Assembly Government should investigate why the MRWS process has failed. NFLA believes the process has failed partly because it has ignored most of the recommendations of CoRWM in particular that there should be an intensified programme of research and development into the long-term safety of geological disposal, as well as research on a robust programme of interim storage. There are currently too many uncertainties about how packaged nuclear waste will behave underground.

- The MRWS process also failed because it did not start with a debate about whether we should be looking for the most suitable geology for radioactive waste disposal. Experience from Cumbria suggests that the public wants to see the best geological barriers AND engineered barriers, not simply adequate or poor geology with a greater reliance on engineered barriers. At the very least he Welsh Assembly Government should withdraw from the MRWS process until is it made clear that the objective is to look for the best available geology for the job rather than making use of mediocre geology and relying more heavily on engineered barriers.

- The Welsh Assembly Government should implement CoRWM's recommendation that a quite separate discussion should be held on the political and ethical issues raised by creating new wastes by building new reactors. In any case spent fuel from the new reactors proposed for Wylfa will need to be stored for up to 100 years before it can be emplaced in a geological disposal facility.

- **The NFLA Welsh Forum recommends that the Welsh Government adopts the Scottish Government policy on HAW:**

  "…*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*."

Yours sincerely,

Sean Morris

NFLA Secretary

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(1) Defra, BERR and the devolved administrations for Wales and Northern Ireland: Managing radioactive waste safely: a framework for implementing geological disposal. June 2008. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/68927/7386.pdf

(2) CERRIE (2004) Report of the Committee Examining the Radiation Risks of Internal Emitters.http://www.cerrie.org/

(3) Managing Radioactive Waste Safely: A Framework for Implementing Geological Disposal, DEFRA, BERR and the Devolved Administrations for Wales and Northern Ireland, June 2008 http://www.official-documents.gov.uk/document/cm73/7386/7386.pdf

(4) C-14: How we are addressing the issues, Nirex February 2006, Technical Note No: Number: 498808[See p12 (Fig 1)]

(5) Consultation: Review of the Siting Process for a Geological Disposal Facility, DECC September 2013 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/239237/Consultation_Review_of_the_siting_process_for_a_GDF_FINAL.pdf

(6) Geological Disposal: RWMD Approach to Issues Management, RWMD March 2012 http://www.nuclearwasteadvisory.co.uk/wp-content/uploads/2013/02/Geological-Disposal-RWMDapproach-to-issues-management-March-2012.pdf

(7) Re-iteration of CoRWM's position on Nuclear New Build, CoRWM, September 2007 http://webarchive.nationalarchives.gov.uk/20130503173700/http://corwm.decc.gov.uk/assets/corwm/pre-nov%202007%20doc%20archive/doc%20archive/tier%202%20(7)%20-%20implementation/tier%203%20-%20implementation%20advice/2162%202%20-%20corwm%20position%20on%20new%20build%20reiterated.pdf

(8) The arrangements for the management and disposal of waste from new nuclear power stations: a summary of evidence, DECC November 2009 http://www.umweltbundesamt.at/fileadmin/site/umweltthemen/umweltpolitische/SUP/SUP_UK_NPS/Waste/wasteassessment.pdf

(9) Speech by Eddie Martin to Cumbria County Council 30th January 2013. http://councilportal.cumbria.gov.uk/documents/s17776/Minutes%2030012013%20Cabinet.pdf

(10) The Final Report of the West Cumbria Managing Radioactive Waste Safely Partnership, August 2012 http://www.westcumbriamrws.org.uk/images/final-report.pdf

(11) A letter to the members of CoRWM (Committee on Radioactive Waste Management) from CT chairman Eddie Martin. Cumbria Trust 10th May 2014. http://cumbriatrust.wordpress.com/2014/05/11/a-letter-to-the-members-of-corwm-committee-on-radioactive-waste-management-ct-chairman-eddie-martin/

(12) Scotland's Higher Activity Radioactive Waste Policy, Scottish Government, January 2011 http://www.scotland.gov.uk/Resource/Doc/338695/0111419.pdf
(13) 2013 UK Radioactive Waste Inventory: Waste Quantities from all sources, DECC & NDA, Feb 2014 http://www.nda.gov.uk/ukinventory/documents/upload/2013-UK-Radioactive-Waste-Inventory-Waste-Quantities-from-all-Sources.pdf
(14) See http://www.nda.gov.uk/sites/trawsfynydd/
(15) See http://www.nda.gov.uk/sites/wylfa/index.cfm
(16) Optimising the number and location of: Interim Intermediate Level Waste (ILW) storage facilities on Magnox Limited and EDF Energy sites and FED Treatment (Dissolution) Facilities in Magnox Limited, Preferred Option for Comment NDA, November 2013 http://www.nda.gov.uk/documents/upload/Optimising-the-number-and-location-of-facilities-on-Magnox-Ltd-and-EDF-Energy-Sites-Preferred-Option-for-Comment-November-2013.pdf
(17) Scotland's Higher Activity Radioactive Waste Policy, Scottish Government 2011. http://www.scotland.gov.uk/Publications/2011/01/20114928/0
(18) For the NFLA assessment of Scottish Policy see: http://www.nuclearpolicy.info/docs/radwaste/Radioactive_Waste_Briefing_27_Scottish_policy.pdf

Friends of the Earth Cymru (FOE Cymru)

1. A significant proportion of Welsh HAW will not arise until Final Site Clearance at the two Welsh reactor sites (Wylfa and Trawsfynydd) in 2073 and 2091 respectively. By this time (due to the "care and maintenance phase" which begins at Trawsfynydd in 2016 and Wylfa in 2025), all the early arisings of HAW will have been placed in interim storage. It is clear therefore that it is premature to reassess the Welsh Government's position until such time as appropriate planning needs to be in place to meet the HAW needs from Welsh reactors. Friends of the Earth Cymru would be surprised if a lead-in time of 59 years would be the minimum necessary.

2. The Welsh Government should learn the lessons from the UK Government's failed process to get agreement from local communities in the UK to accept HAW. It failed not least because the UK Government ignored most of the main recommendations of the first Committee on Radioactive Waste Management (CoRWM). There are currently too many uncertainties about how packaged nuclear waste will behave in a deep-underground facility. These uncertainties need to be clarified before the Welsh Government can come to an evidence-based policy position – which it is required to do under its Sustainable Development Scheme1.

3. At the very least the Welsh Government should withdraw from the MRWS process until is it made clear that the objective is to look for the best available geology for the job, rather than making use of mediocre geology and relying more heavily on engineered barriers.

4. The Welsh Government should implement CoRWM's recommendation that a wholly separate discussion should be held on the political and ethical issues raised by creating new wastes by building new reactors. In any case DECC has clarified that spent fuel from the new reactors proposed for Wylfa will need to be stored on Anglesey for 100 years after closure (160 years from now2) before it can be emplaced in a geological disposal facility (GDF).

5. Friends of the Earth Cymru recommends that the Welsh Government adopts the Scottish Government policy on HAW: *"…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*"3.

Gareth Clubb
Friends of the Earth Cymru

1 http://wales.gov.uk/docs/desh/publications/090521susdev1wales1planeten.pdf p 11
2 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/47801/1984-aos-site-report-wylfa-en6.pdf page 12
3 http://www.scotland.gov.uk/Resource/Doc/338695/0111419.pdf para 1.19

Copeland Borough Council

Dear Sir / Madam
Copeland Borough Council welcomes the decision by the Welsh Government to review your current position on the policy of the disposal of higher activity waste.

Copeland Borough Council is a relatively small rural borough Council which has within its boundary the Low Level Waste Repository, the only national facility to store and dispose Low level Radioactive Waste (LLW) and Sellafield which stores 70% of the UK High Level Waste and is one of the most challenging decommissioning projects in Europe. We also volunteered to participate in the process to find a Geological Disposal Facility (GDF) in the Managing Radioactive Waste Safely.

Taking into consideration this information you will understand our interest in insuring that there is robust policy in place to deal with the legacy of nuclear waste currently contained within the UK and to manage any future arising's.

In addition to these current radioactive waste activities Copeland has also been chosen as one of the 8 sites to host a new nuclear power station alongside the Wylfa site on the Isle of Anglesey.

The communities within Copeland deal with the legacy of hosting the vast majority of the UK's nuclear waste. The effective management of waste has consistently been inhibited through the absence of comprehensive waste management planning at a national level and assumption by others that West Cumbria will always provide a solution of last resort. Whilst the skills, expertise and experience which exists in Copeland should be utilised to the maximum benefit, there are clear historic lessons to ensure the cost effective and efficient management of existing and future radioactive waste streams.

In order to enable future growth in the nuclear industry we must adequately plan to manage the disposal of higher activity radioactive waste, to fail to do so is irresponsible and unsustainable. Nuclear power plant developers must submit a Funded Decommissioning Plan (FDP) as part of the application process. Planning for the decommissioning and management of the waste streams is as import as planning for the build and operation of a power plant, it is a welcomed change and a good example of positive forward planning.

Nuclear Energy will be a significant contributing factor to securing the UK electricity supply and is recognised as a vital part of the electricity market mix. In order to comprehensively plan for all aspects of the nuclear industry it is imperative that the Welsh Government sets a clear and transparent policy on the management of higher activity radioactive waste.

CoRWM has advised that the safest method of disposal of higher activity waste is through the use of deep storage in a GDF. In reaching this conclusion they undertook a technical assessment of options, ethical considerations, engaged with stakeholders and reviewed best practise from overseas. The Council believes that that the recommendations put forward by the committee are based on sound scientific fact and reasoning. The committee is an advisory body, members are appointed with a range of expertise and knowledge to offer in scientific, social, economic and environmental and as such the Council has full faith in the robustness of the assessment undertaken and confidence in the recommendations made by CoRWM.
This was an onerous and long process and the Council is unaware of any new information that has challenged their recommendation. If the Welsh Government decided to adopt a policy that is against CoRWM recommendations it would need to be based on a vigorous assessment of all available information and provide a robust argument as to why they have decided to go against the recommendations of the CoRWM committee.

I hope that the Government will take the above comments into due consideration when determine any future approach to adopting a policy on the disposal of higher activity radioactive waste. We are all jointly responsible for the safe management of nuclear waste to insure the decisions we make today don't leave a negative legacy for our future generations.

Yours Sincerely

Cllr Elaine Woodburn
Leader of the Council

PAWB

Q1. Yes. It is unacceptable to delay a decision on a higher activity radioactive waste (HAW) disposal policy until an expression of interest is received from a community willing to consider a disposal facility.

The whole idea of geological disposal should be weighed up before the possibility arises. We consider that this could lead to the conclusion that geological disposal is not an acceptable means of disposing of HAW. Despite the CoRWM report, we believe that this is the only reasonable conclusion as there are already examples of geological storage facilities that have failed. We refer to the Yucca Mountain in the US where the most powerful Government in the world has abandoned the idea after years of spending vast amounts of money. In the same country, problems arose in an underground storage facility in the state of New Mexico where radioactivity leaked into the environment despite it having being stored in a way that was supposed to prevent that from happening. We must remember that this happened after a very short period of time in the context of the thousands of years that radioactive waste must be stored safely.

Another obvious reason for developing a clear policy is that the Welsh Government has declared its policy of supporting the construction of a new nuclear power station in Wylfa, Anglesey. This is in contradiction to the previous policy. Therefore it is totally irresponsible to support a station that will, by definition, be producing new HAW without also considering what to do with the new waste. Our position is that it is immoral to produce further HAW without solving the problem of safe waste disposal. We must also remember that there is already waste produced at Wylfa and Trawsfynydd in the nuclear power stations that already exist.

Q2. The best option for the waste problem is not to produce it in the first place. We believe that the Westminster Government's policy of trying to get communities to volunteer to host a storage facility is flawed. Cumbria County Council has rejected the idea. The Government's response was to attempt to change the rule so that another layer of Local Government was responsible for the decision. Therefore despite CoRWM's work it is quite apparent that no community wishes to volunteer. PAWB's concern is that ultimately it might be possible to force a community to receive waste, although a financial incentive may be offered to sweeten the pill.

It is also fair to say that the Westminster Government disregards surveys that show that a particular area's geology is unsuitable, as they have said that an engineering solution can be found to such problems. Considering the thousands of years that a storage facility must be safe, we believe that this is irresponsible and we also believe that this is the view of communities in Wales. Even in Anglesey, where a new station is to be built, the local Assembly Member, Member of Parliament and County Council were in strong opposition despite the fact that they all support building a new station.

PAWB has responded to the Westminster Government's Department of Energy and Climate Change consultation. We recommend that you read that response which is very pertinent to this consultation. CoRWM also responded to that consultation, and we can see that they are exploring the possibility that more than one storage facility is needed in Britain. If this is adopted by the Westminster Government, the process of searching for a storage site would extend to more than one site.

PAWB's unwavering belief is that no new nuclear power station should be built until an acceptable solution is found to the problem of safe HAW disposal. As explained earlier, an underground storage facility is unacceptable. Other methods should be examined. Governments and the nuclear industry should provide thoroughly researched solutions. In PAWB's opinion, possible solutions should include not producing further waste at all.

Although the industry has produced waste for over half a century, there has been no solution offered that gives assurance that it will be effective for thousands of years. At present, nuclear waste management in Sellafield costs thousands of millions for the taxpayer, a fact that has been criticised by a parliamentary committee. Although the intention is for the nuclear industry to shoulder the financial burden, we believe that there is astounding naivety in the idea that those companies responsible for producing waste will still be in existence to meet those costs. If the responsible company ceases to exist, the costs will be shouldered directly by the taxpayer. Even if the companies will still be in existence, the cost will be reflected in the public's electricity bills.

We believe that the Welsh Government should seriously consider the possibility that it could be made bankrupt itself if a problem occurred at any time with a storage facility, or any other problems with radioactivity. In Japan, TEPCO have turned to the Government there to meet the costs of the permanent problems following the disaster at Fukushima. It is highly unlikely that the Welsh Government could afford such money. Is the Welsh Government completely certain that it, and in turn, the people of Wales, would not face the financial consequences?

Q3. As far as other methods are concerned, then of course every possibility should be considered. This is work for technical experts and having offered solutions, the options should be explained so that the lay person can assess the options and respond accordingly through consultation.

In our opinion, keeping waste above ground on the site where it is produced is unacceptable. This is the exact solution offered by Wylfa if a new station is built. We understand that the waste will be much hotter and more dangerous than the waste produced in the current station, and it would be on site for over a century. We also understand that in terms of surface area, it will extend over the equivalent of three football pitches. This would be highly dangerous to the residents of the Island. We do

not believe that the safety of such storage could be guaranteed, in light of human error, technical or mechanical faults, extreme weather conditions and unfortunately these days, terrorism. The current situation in Ukraine highlights these very real concerns.

Q4. PAWB is concerned that the nuclear industry has too much of an influence on both the Westminster Government and the Welsh Government. Here are examples. 1. People from the industry are working on secondment for the Department of Energy and Climate Change. 2. The Office for Nuclear Regulation has recently awarded a contract to the Jacobs company, one of the companies it is supposed to regulate (Independent, 27 May 2014). 3. We are also concerned about the trip to Japan by Anglesey's Assembly Member and Member of Parliament following an invitation by Hitachi.

We seek assurance from the Welsh Government that the nuclear industry will have neither direct nor indirect influence over decisions regarding waste.

PAWB is suspicious of the decision to hold a meeting of CoRWM on Anglesey in September. Aside from London and Cardiff the only other locations are Cumbria and Thurso. In light of the opposition from all local democratically elected representatives to waste disposal, we cannot see the need for CoRWM to come to the island to explain its work. We suspect that the Westminster Government is concerned that Cumbria may not volunteer to host a nuclear storage facility therefore they are searching for other possibilities.

Finally, PAWB believes that the Welsh Government should reconsider its policy of supporting Wylfa or any other station built adjacent to the present station. We believe that the dangers posed by the industry, its cost to taxpayers, the possibility that public money will be diverted from sustainable means of energy production are much more important than the promise of jobs for one section of the population for a generation or two. As important as it is, waste is but one factor in the bigger picture. It is not possible to separate the policy of supporting the construction of a nuclear power station from the problem of dealing with the waste. The policy should be integrated in one logical and clear document containing all aspects.

Llanddyfnan Community Council

Representations from Llanddyfnan Community Council, Anglesey:

I am completely opposed to the scheme. I believe that excavating through the complex geology of Anglesey is dangerous in itself, notwithstanding the effects on the water supply and where clean water rises to the surface.

I trust that the limestone geology of Cambridgeshire is more suited to deep excavation, in terms of the rock's characteristics and its water retaining qualities. (OD)

1 A review should be held and a new policy statement declared. Reason: Seven years have passed since the previous consultation

2 Underground storage should be supported. Reason: This is the only secure way according to experts

3. No. Reason: As we are likely to have a new Wylfa, the waste should be stored as closely as possible to the power station.

4. No. Reason: No further comments (CM)

This consultation coincides with the intention by CoRWM, the body that is trying to find a solution regarding how to treat radioactive waste safely, to hold a public meeting on Anglesey on September 4. The Welsh Government is possibly going to create a policy in an area where they do not currently have a policy, and it is possible that CoRWM is coming to Anglesey in the hope that the island might volunteer to host the nuclear waste produced by the British State over the last fifty years in an underground storage facility.

Llanddyfnan Community Council supports the opposition of Rhun ap Iorwerth AM, Albert Owen MP, and Anglesey County Council to the idea of locating nuclear waste in an underground storage facility on Anglesey. The presence of underground nuclear storage would undermine the area's tourism industry and the whole image of the island as an outstanding area. We believe that there are too many risks involved in storing radioactive waste underground for thousands of years.

Unlike Rhun ap Iorwerth AM, Albert Owen MP, and Anglesey County Council and the Welsh Government, Llanddyfnan Community Council does not support producing waste that is twice as hot and twice as radioactive through two potential new reactors by Hitachi/Horizon in Wylfa B. The simple answer for this Higher Activity Radioactive Waste is not to produce it in the first place. The British State has an enormous headache in terms of trying to deal with the safe storage of the past fifty years' radioactive waste without creating hotter, more radioactive and more dangerous waste from possible new nuclear power stations such as Hinkley Point C, Sizewell C, Wylfa B and Oldbury B. (DM)

Phillip Steele

Q1. The Welsh Government should put a stop to the whole policy of supporting the Wylfa B project, which intends to create waste that is twice as radioactive as the current waste. It is illogical and irresponsible to continue with this scheme before resolving the problem of waste storage.

Q2. The Committee on Radioactive Waste Management (CoRWM) did a great deal of work before recommending in its report in 2006 that such waste should be disposed of geologically, and it confirmed that recommendation in 2013. In consideration of this, should the Welsh Government decide to review its current policy, should it limit its options for HAW disposal to geological disposal only?

The underground Yucca Mountain project in the USA has been cancelled. An underground store at WIPP in New Mexico has also been shut down after serious radioactive leaks. And this is after only a few years. Problems with storing waste underground on a long-term basis go much further than geology and technology – there will be too many unknown factors in the future, e.g. the economy, environment, climate, war, social cohesion.

Q3. Storing radioactive waste on-site is not safe either – e.g. Fukushima. Undersea storage such as in the 50s and 60s is illegal (but still happens anyway). Therefore what other options are there?

There is only one logical option – do not create such waste in the first place.

Q4. Experiences in Cumbria suggest that the process of selecting sites for underground storage is unfair. The Welsh Government should oppose taking part in false consultations

Magnox

Magnox considers it good practice to review policies and strategies periodically and where there are trigger events to ensure that they continue to be relevant. On this basis, Magnox would support the Welsh Government review of its current policy on HAW disposal.

The Committee on Radioactive Waste Management (CoRWM) considered a broad range of options for the long term management of HAW. In 2006 CoRWM recommended geological disposal as the end-point solution for the majority of the UK's HAW, supported by safe and secure waste storage arrangements and a programme of underpinning research.

CoRWM made a specific recommendation (CoRWM 8) that consideration should be given to alternative waste management options for HAW arising from reactor decommissioning [Ref. 1]. Government (for England, Wales, Scotland and Northern Ireland) accepted CoRWM recommendation 8 and stated that a review should be undertaken of whether a safety case could be made for the other non-geological disposal of reactor decommissioning wastes, including on-site or near site disposal in order to minimise transport [Ref. 2].

The white paper on the framework for implementing geological disposal [Ref. 3] also recognised the need to take account of developments in interim storage and disposal, as well as possible new technologies, including application of the waste hierarchy, which could reduce the amount of waste requiring geological disposal. Magnox is therefore of the view that a range of alternative waste management and disposal options should be considered as part of the Welsh Government's review of its current HAW policy. The scope of radioactive wastes considered should be for the full range of suitable HAW for alternative options and not be restricted to reactor decommissioning wastes only.

Magnox believes that disposal options to be included in the review should be risk informed in line with the environment agencies' regulatory guidance [Ref. 4]. Alternative near-surface options for the disposal of suitable HAW could include disposal facilities at the surface of the ground, or at depths down to several tens of meters below the surface.

Magnox is of the view that disposal to an appropriately engineered facility should not include the intention to retrieve the waste as the facility will be designed such that the risk in the future will be in accordance with regulatory standards and requirements, and that burden to future generations should be minimised by timely closure of the facility.

It is likely to be decades before geological disposal, or any other alternative disposal options for HAW could be implemented. Safe and secure interim storage of radioactive
waste is therefore of paramount importance.

Magnox notes Government's intent that due regard be given to public acceptability of alternative waste management options. Any decision of the Welsh Government to adopt

an alternative disposal policy to that of geological disposal will require public and stakeholder engagement. Furthermore, during the implementation phase of the alternative disposal policy (i.e. siting of disposal facilities) local communities will need to be engaged to ensure stakeholder views are taken into account. The effort and time to support such engagement will need to be incorporated into any decision making programme.

Many countries safely practise the near surface disposal of reactor wastes that would be categorised as HAW in the UK, and in some cases have done so for a number of decades. Examples are set out in Ref 5.

Magnox will continue to work with the Nuclear Decommissioning Authority to support the development and implementation of their strategy for the long term management and disposal of HAW.

References

1. Committee on Radioactive Waste Management (CoRWM), Managing our Radioactive Waste Safely, CoRWM's Recommendations to Government, July 2006

2. UK Government and the Devolved Administrations, Response to the Report and Recommendations from the Committee on Radioactive Waste Management (CoRWM), 2006

3. Defra, BERR and the Devolved Administrations, Managing Radioactive Waste Safely, A Framework for Implementing Geological Disposal, A White Paper by Defra, BERR and the Devolved Administrations for Wales and Northern Ireland, June 2008

4. EA, NIEA and SEPA, Near-Surface Disposal Facilities on Land for Solid Radioactive Wastes: Guidance on Requirements for Authorisation, February 2009

5. The Scottish Government, Scotland's Higher Activity Radioactive Waste Policy, International Near-Surface Facilities, January 2011

Dylan Morgan

I would like to submit comments as a member of PAWB (People Against Wylfa B) on the Welsh Government's consultation on how to deal with Higher Activity Radioactive Waste.

I understand that the Welsh Government does not currently have a view on this subject, while CoRWM, the body established to try and find the solution to managing and storing nuclear waste safely, has recommended to the United Kingdom Government that underground burial is the solution to storing this dangerous waste.

We do not share CoRWM's view that underground burial is the solution to storing nuclear waste safely. The most dangerous and long-lasting waste remains dangerous for 250,000 years. That is an extremely long time, and it is impossible to predict whether any burial site could be completely safe over such a period. The earth's crust is not static. It is affected by water and eroded by the weather, not to mention earthquakes. The north west of Wales has been an active area in terms of earthquakes for some time. The biggest ever earthquake in Britain, measuring 5.4 on the Richter scale, was recorded in the north of Llyn during the summer of 1984. Who can predict the location and strength of earthquakes over a period of 250,000 years?

A fully operational underground burial site for nuclear waste does not exist anywhere in the world. The United States federal Government failed in its attempt to establish a burial site for radioactive waste in Yucca Mountain, Nevada after many years of significant expenditure. The United Kingdom government does not appear to be any closer to identifying a possible burial site. Cumbria County Council was persuaded by anti-nuclear campaigners and the local tourism industry not to go ahead and allow geological testing in the area to measure the suitability of the geology for a nuclear waste burial site. That is why CoRWM have decided to hold public meetings this year in three 'nuclear' areas, namely Workington in Cumbria, Thurso near Dounreay nuclear station, and on Anglesey. The reasoning is probably to try to sweet-talk one of these areas into welcoming a burial site. I agree with the opposition of Anglesey County Council, Rhun ap Iorwerth AM, and Albert Owen MP who all believe that Anglesey should not become home to a burial site accepting all of the United Kingdom's nuclear waste for the last half century.

However, I totally disagree with Anglesey County Council, Rhun ap Iorwerth AM, Albert Owen MP, and the Welsh Government's support for GEHitachi/Horizon's wish to build two boiling water reactors on the Wylfa site. Horizon has acknowledged that hotter, more dangerous and more radioactive waste would have to be stored on the Wylfa site for up to 160 years. How could any responsible government support such a dangerous scheme? The independent nuclear engineer Dr John Large has outlined to us that Hitachi's intention would be to use far more intense uranium in their boiling water reactors. In turn, that intense fuel would produce waste at least twice as radioactive and twice as hot as the radioactive waste produced in the current nuclear stations. Even if a burial site existed at the moment, it would be

impossible to add waste from any new station due to the waste's level of radioactivity and heat.

The best solution to the radioactive waste problem is to refrain from producing it at all. I call on the Welsh Government to reconsider its support for the Wylfa B project as it would create a far more complex waste problem. I appeal to the Welsh Government not to put pressure on any area of Wales to volunteer to accept a radioactive waste burial site. The nuclear industry is the imperial creation of the United Kingdom, and the civil and military aspects of that industry are closely related. This is not the technology that we in Wales should be cultivating in the twenty first century, but rather the variety of renewable energy technologies available. Rhodri Morgan and Jane Davidson said many times that Wales could produce twice as much electricity than we need nationally from renewable sources only. That is the way forward for the current generation, and certainly for future generations.

Elaine Powell

Question 1

How do you manage higher radioactive waste ?

So far after 50 odd years of nuclear power and its higher activity waste there has yet been no solution found except burying it deep underground.

It is unacceptable to go ahead with new nuclear build before this problem has been solved. You cannot expect any community to welcome this sort of waste, even with the carrot of extra finances.

Also you cannot know ever know if it will be safe after 100 or 200 or 1000 years. There have been cases where radioactive waste has seeped out from underground storage and it has only been stored a few years! This happened in New Mexico.

Therefore how can you consider a new build on Anglesey without a solution to this problem It has to be illegal and immoral.

Question 2

Westminster is trying to get communities to volunteer to store the waste. Why should they think that any community would want this? Cumbria council has rejected the idea Is the government going to compulsorily enforce a community to store this waste? Although it appears that some of our local councillors, our MP and AM support the new build they do not support the storage of this high grade waste.

I believe that the best option is to abandon the idea of new nuclear builds because the problems are insurmountable at the present time. In the future there may be solutions and there may be better options for energy production. Just imagine that over 1000 years ago a similar toxic waste had been stored somewhere underground. All the possible scenarios of battles, rebellions, plague would have wiped out any memory of this store . Future generations would have stumbled upon it unwittingly. We cannot predict the future but we can make good ethical decisions to enable the future generations less contaminated land.

The cost in managing waste is horrendous and a burden to the tax payer.

I believe that the Welsh government could find itself bankrupted by a serious problem at a repository of waste and that’s without the possibility of an accident at the plant itself. Have you the Welsh government considered these possible and probable financial consequences?

Question 3

Storing waste above ground where it is being produced is not acceptable. This is what will happen if Wylfa Newydd goes ahead. This waste would also be hotter and more radioactive than what is being produced at the moment. This would be satored on the site for 160 years on land the size of 3 football pitches. I expect this would be on land which Horizon is now acquiring and preparing. I feel that the safety of such waste storage cannot be guaranteed for those 160 years. Just think what might have happened in those in between times. Terrorism is on the increase and David Cameron has only just said in the past few days that this will be the UK's biggest threat in tears to come. What a great target a nuclear power station would be. Apart from switching off the power it would kill off the land and its peoples for centuries.

Question 4

I am concerned that the nuclear industry has too much influence on both the UK and the Welsh governments.

For example I understand that people from the nuclear industry have been seconded to work in the Department of Energy and Climate Change.

I am extremely concerned to learn that a delegation made up of our AM, our MP and Leader of the Council and 2 Welsh government civil servants are going to Japan by invitation by Hitachi. What can this possibly mean? I hope they visit Fukushima but I expect that is not on the itinery.

In conclusion I believe that the Welsh government should reconsider its support for Wylfa Newydd. It is a dangerous industry, will cost billions of pounds, will be exposed to acts of terrorism, has an insoluble problem of waste disposal and storage and diverts money from renewable and sustainable forms of power generation. The negatives far out weigh the promise of jobs for a few hundred local people and for a couple of generations. We cannot afford to gamble with our beautiful land. Let's make jobs from renewables in which smaller businesses can flourish. The big players are not interested in the local land or community. Their only interest is money.

Elaine Powell

Greenpeace

As an individual and life long resident of Anglesey and a member of Greenpeace, I wish to express my views in contrast to that held by the above (CoRWM) in relation to the suggested storage of radio active waste on Ynys Mon, namely:

1) That geological occurrences and reports on the island over the years right up to the present day have proved that no method of burial for radio active waste can ever be held secure. It is utter folly for this consultation to produce such nonsense and lies.

2) That madness is rampant in the persons of Rhyn Ap Iorwerth AM, Albert Owen MP along with the majority of an ailing County Council for dazzling mind boggling hypocrisy concerning any claim to the welfare and safety, not to mention future generations of the island and further afield. Other than three councillors and one MEP, not one dared ask what would be deemed as 'unfashionable questions' concerning these matters. A legacy which will return to haunt them and the Welsh Government should they proceed along such a path. It is acknowledged by Hitchai itself that waste from Wylfa B would be twice as radio active than from any other nuclear plant in the UK.

In summary, the only possible resolution from such a catastrophe, not to mention an induced suicide on our behalf, by a defunct establishment, is to resort to responsible investment of tidal and renewable alternatives.

NuLeaf

1. Introduction

NuLeAF (the Nuclear Legacy Advisory Forum) is a Special Interest Group of the Local Government Association (LGA). NuLeAF is supported by 110 local authorities and 3 national park authorities across England and Wales. Our remit encompasses all aspects of the management of the UK's nuclear waste legacy. Our primary objectives are:

- to provide a mechanism to identify, where possible, a common local government viewpoint on nuclear legacy management issues;
- to represent that viewpoint, or the range of views of its member authorities, in discussion with national bodies, including the Welsh and UK Government, the NDA and the regulators;
- to seek to influence policy and strategy for nuclear legacy management in the interests of affected communities; and
- to develop the capacity of its member authorities to engage with nuclear legacy management at a local level.

NuLeAF was a key partner in the former Managing Radioactive Waste Safely (MRWS) process and has been closely involved in shaping the new policy through discussions with DECC, RWM Limited and other parties.

Our views on Geological Disposal are set out in a NuLeAF Policy Statement, published in 2008[1]. We have also published a Briefing Paper on the recent review of the siting policy for a Geological Disposal Facility (GDF) in October 2013[2].

The policy of the Welsh Government with respect to the disposal of higher activity radioactive waste is an issue of particular importance to our member authorities. Local authorities were central to the former approach on the disposal of such wastes through the MRWS process, and are certain to be at the heart of the new policy, based on a review by DECC and the Welsh and Northern Irish administrations, due for announcement this summer.

2. The disposal of Higher Activity Wastes: the view of CoWRM

The Committee on Radioactive Waste Management (CoWRM), in their 2006 report to Government,[3] stated that the great majority of CoWRM members had sufficient confidence in the long-term safety of geological disposal to recommend it to Government as the end point of a strategy for long-term management.

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[1] http://www.nuleaf.org.uk/wp-content/uploads/2014/02/2007-01-25-Policy-Statement-3-Geological-Disposal-.pdf

[2] http://www.nuleaf.org.uk/wp-content/uploads/2014/02/BP-24-Review-of-the-Siting-Process-for-a-Geological-Disposal-Facility.pdf

[3] Committee on Radioactive Waste Management, 'CoRWM's Recommendations to Government', Document 700, July 2006, Chapter 13.

This confidence took into account the following:

- In those countries that have made firm decisions on long-term waste management, all have decided that geological disposal is the best way forward.
- Based on reconstruction of historic records, there is high confidence in the scientific community that there are areas of the UK where the geology and hydrogeology will be stable for a million years and more into the future.
- Work on natural analogues shows that geologies with a low water flow will retain radionuclides over very long periods.
- After taking into account the various uncertainties that exist, regulators have been satisfied that risk targets can be met in all countries where individual sites have been examined.
- 'Worst case' estimates suggest that the maximum level of radiation exposure would occur around 200,000 years into the future at levels close to current maximum levels of background radiation. By contrast, 'most likely' case estimates suggest negligible human doses over the relevant period of several hundreds of thousands of years.
- As a result of a combination of design and geology, it is thought very unlikely that radioactivity will reach the biosphere in quantities large enough to cause significant harm over many hundreds of thousands of years.

CoWRM acknowledged however that:

- The suitability of any individual site could not be affirmed until detailed site investigations had taken place.
- Some stakeholders are not convinced of the above case for confidence in long-term safety and question the interpretation of evidence, whether or not all assumptions are reasonable, and whether all relevant scenarios have been considered.
- There is no way in which the debate between supporters and opponents of geological disposal can be definitively resolved now because incontrovertible evidence does not exist.

In summary, and drawing on the above analysis, CoWRM's view is that geological disposal should be supported as the best available approach in the current state of knowledge, but that there must be flexibility to leave open the possibility of other practical alternatives. There must also be a commitment to undertake research and development to reduce the uncertainties about long term safety of deep disposal.

3. NuLeAF's view on geological disposal

NuLeAF recognises that there is a spectrum of views among our member authorities as to the degree of confidence that can be placed on the long-term safety of geological disposal. We also recognise the real risks that are posed by alternatives to geological disposal and that these must be borne in mind in framing any policy or approach.

In general terms our view of geological disposal is in line with that set out by CoWRM. That is, we offer qualified support for geological disposal while leaving open the potential for other options if evidence in future suggests they may be preferable.

It is also of vital importance that any commitment to deep disposal is based around a framework that:
(a) commits to the principle of volunteerism and the right of communities to withdraw from the process;
(b) recognises fully the national contribution that any host local authority/community is playing by providing substantial socio-economic gains, including a firm commitment to a community benefits package
(c) is based on the best available science and evidence in relation to geology, hydrology and the application of engineering and is managed to the highest possible environmental standards;
(d) is open and transparent and engages effectively with all important stakeholders.

The failure of the UK Government to provide the necessary assurances to Cumbria County Council contributed to the collapse of the MRWS process. Any new policy must place the views of potential host communities at its heart and ensure real social, economic and environmental benefits are delivered.

I hope these comments are of use.

Yours faithfully

Philip Matthews
Executive Director

CND Cymru

Introduction:

CND Cymru welcomes this Consultation by our Welsh Government and is pleased to be given the opportunity to respond. The Background to the Welsh Government Consultation paper clearly spells out some of the realities about radioactive waste to be faced on this issue.

CND Cymru represents a large constituency of members who not only campaign about the issues of peace, nuclear disarmament and justice but, as one of the leading parts of the group who originally attained the 'Nuclear Free Wales' agreement from 22 Local Authorities, have also long opposed the development of nuclear technology for energy production.

The development of such methods for nuclear power production – and nuclear weapons has caused much suffering across the world at every stage from mining, processing, transportation and waste handling to energy generation and deployment. The writer of this response has visited contaminated zones of post Chernobyl Belarus and Ukraine and witnessed the horrific effects of radionucleides on the health and economy of communities and their environment. The potential dangers to current and future generations must be stopped now.
Wales should have no part in this dirty business and all nuclear energy production should be halted immediately.

CND Cymru members are very aware that the Section 121 of the 1998 Government of Wales Act that established devolved government in Wales gave the Welsh Assembly Government "*a duty to promote Sustainable Development in all aspects of its work, and to develop, review and report on a scheme to integrate the principles of sustainability throughout its policy making agenda"*.
CND Cymru is proud that Wales is amongst the very first places on the planet where the pursuit of Sustainable Development exists as a statutory responsibility.

The UN Bruntland Report (1988) defines sustainability in this context as *"development that meets the needs of the present without compromising the ability of future generations to meet their own needs".*

Given this definition, nuclear energy production is not sustainable and contradicts the 1998 Government of Wales Act.

Response to Review Questions:

Q1. Such a review is essential and CND Cymru welcomes all discussion around this issue provided all information given to elected representatives and their constituents is honest, factual and not simply led by economic considerations.

This Review offers an opportunity for Wales to join Scotland in its decisions and 'lead the way'.

Q2. No. 'Geological Disposal' is an 'out of sight out of mind' policy which puts the materials in the way of groundwater and subject to earth disturbances in the future for the 'hundreds of thousands of years' those wastes remain highly dangerous.

Q3.

- All radioactive wastes should be stored above ground at the site they are produced and all creation of further nuclear waste halted immediately.
- Any storage site should of course be reasonably sited away from dangers of sea level rises or flooding, but transportation of such material should be kept to an absolute minimum.
- Nuclear wastes should be packaged in easily repackagable containers, very clearly marked regarding their lethality with hieroglyphs or other easily understood symbols.
- Containers should completely isolate the radioactive contents from the biosphere, rocks and water.
- Sites where these are stored should be at the place of their production – or where they are now.
- Realistic and absolutely ring-fenced public funding /resources should be made available to pay for the maintenance and guarding of this material for hundreds of thousands of years. All precautions against privatisation of such a site and its maintenance should be made.
- Information about the position and dangers of such radioactive waste repositories should be made very public to current and far future generations.
- The word 'disposal' is inaccurate and should not be used in this context. Radioactive waste is not 'disposable' and unlike any other waste humans currently have to deal with.

Q4. Production of any radioactive wastes from nuclear energy production, reprocessing, use for depleted uranium bomb and bullet casings and for the manufacture and deployment of nuclear weapons should be halted now. Transportation of radioactive wastes or its 'disposal' on any other community, whether by means of offering 'sweeteners' or other coercion should be illegal.

Wales could join Scotland in leading the way to a genuinely sustainable future. Radioactive wastes are a reality – that, because of the ignorance of our forbears we must deal with, but it is essential that Wales plays no part in leaving an even greater lethal legacy to our children.

Anonymised Response 1

Question 1: Yes, the Welsh Government should review its policy on the disposal of higher activity radioactive waste (HAW). It is important that the Welsh Government has a policy on HAW that covers fully the long-term management of these wastes, including their disposal. This is desirable for compliance with the fundamental principles of radioactive waste management, with the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, and with the European Union Directive on the Responsible and Safe Management of Spent Fuel and Radioactive Waste.

Question 2: No, the Welsh Government should not limit its consideration to geological disposal in the narrow sense in which the term was used in the 2006 Recommendations of the Committee on Radioactive Waste Management (CoRWM) and the 2008 Managing Radioactive Waste Safely (MRWS) White Paper (Cm 7386). In both these cases what was meant by "geological disposal" was emplacement in a mined repository at a depth in the range from about 200m to about 1km. Experience has shown that there are other options that involve emplacement of HAW underground that merit attention, at least for some types of waste. Such options are the subject of R&D in various countries and should be considered in the MRWS programme in England and Wales.

Question 3:The Welsh Government should consider all types of geological disposal facility (mined repositories, natural caverns, disused man-made caverns or mines, deep boreholes) at all depths that provide an adequate barrier to the escape of radionuclides and sufficient protection from disturbances at the surface of the earth. Not all types of facility at all depths will be suitable for all types of HAW. For example, disposal in a cavern at a depth of about 100m would only be appropriate for short-lived and low toxicity wastes, whereas disposal in a deep borehole (depth over 1km) should only be considered for long-lived HAW with a relatively low volume (e.g. spent fuels from new build reactors).

The Welsh Government may also wish to consider near-surface disposal of short-lived and low toxicity HAW (i.e. disposal at a depth up to a few tens of metres). This option is used routinely in other countries for short-lived HAW from the operation of light water reactors (e.g. ion exchange materials).

Question 4:

My other comments are as follows.

Origin of the Wastes

The Welsh Government policy needs to cover:

- the potential disposal in Wales of HAW originating from nuclear facilities in Wales
- the potential disposal in England of HAW originating from nuclear facilities in Wales
- the potential disposal in Wales of HAW originating from nuclear facilities anywhere in the UK.
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There should be explicit questions about these topics in any consultation document on the proposed policy.

Siting Process for a Geological Disposal Facility

The Welsh Government policy should indicate in any consultation document whether it is proposing to support the new MRWS process for siting a geological disposal facility and, if so, whether there would be any prospect of making changes to the process if it is applied in Wales. This could be a difficult issue because there may be respondents from Wales who did not take part in DECC's consultation on the new siting process on the grounds that it had little relevance to them but who now wish to comment. It will be important to take account of their views, whilst not re-opening the whole consultation on the new MRWS siting process.

Anonymised Response 2

Q1. Yes. Given that the Welsh Government changed its position on nuclear power in 2013, it would be logical to carry out a review into the disposal of the higher activity wastes that may result from the building of new nuclear power stations in Wales. Such a review would not carry any presumption of a change in position.

Q2. Yes. CoRWM is clear in its statements that it favours deep geological disposal of waste; in these circumstances, there is no reason to consider more exotic alternatives. Consideration of alternative strategies would represent a move away from UK policy and could be argued to be a misuse of public funds.

When addressing the potential deep geological disposal of higher activity wastes, it is possible that some communities may seek to volunteer to obtain some inward investment to the area, it would be in the best interests of the Welsh Government to have a policy that would support this.

Q3. No comments

Q4. As different groups have different understandings of the term Higher Activity Radioactive Waste it may be advisable to include a definition of the waste types falling under consideration.

John Nicholson

Question 1 The very question itself is flawed, and shows the lack of understanding of the issues. It is possible to dispose of materials where they can be broken down or degraded so as to present acceptable levels of danger or threat to the environment or human health. However, nuclear waste cannot be broken down in such a way. It become less of a danger, but through a very slow process of decay lasting hundreds of thousands of years. 'Disposal' is simply not an option.

The question suggests that there is an option to get rid of this material in an acceptable way so it can be forgotten about. This also is a most dangerous and unacceptable proposition. This material needs to be visible and accessible. It should therefore be stored on the surface and in such a way that it can be moved if necessary should there ever be a new form of threat, be that through natural processes or a threat from war or terrorism.

The best option is not to have any nuclear waste, and it is my strong view that the cost of maintaining the safety of nuclear products should fall totally upon the polluter – namely the nuclear industry. My guess is that if the nuclear industry had to meet the full cost of dealing with its wastes, and that cost was carried by the cost charged for the energy produced, then the nuclear option for power generation would not be economically viable.

Until recently, I had believed that the Welsh Government had maintained its opposition to all and any nuclear developments in Wales. I believe that Wales should demonstrate a strong commitment to oppose any form of nuclear development in Wales other than the use of nuclear isotopes for beneficial medicinal purposes. It would be very good if Wales joined with Scotland on this issue. We do not need nuclear power if equivalent investment (and political commitment) was put into fully renewable forms of energy production. We need to dispel the many myths that the nuclear lobby puts out about the cost and inefficiency of alternative forms of energy. As it is, Britain is falling way behind in the development and use of better forms of bio-energy production from plant derived materials.

Question 2: I am especially concerned about suggestions that the Welsh Government is considering geological 'disposal' of nuclear materials. I have a broader knowledge than most people about geology, and did geology at A level when at school. I have also been a mine and cave explorer, in North and South Wales. It is very obvious when exploring mines just how much movement there has been and still is in the rocks beneath our feet that we think are 'stable'. It is also clear from the strata that there have in relatively recent geological history been major upheavals of rocks causing dramatic changes in levels, and also changes in atmospheric composition and sea level. All these changes have happened in relatively recent times. With the exception of the pre-Cambrian rocks on Anglesey the majority of the rock structures in Wales are new rocks. These rocks are still moving and being worn away. Even around the coast of Anglesey there have been

major earth quakes in living memory. I experienced the last major earth quake positioned off the North coast of Anglesey when I was in Bristol. Even so far away buildings shook and plaster cracked. It is blatantly stupid to consider any form of geological deposition in the young hard rocks of Wales. Safety should be sought in old soft rocks.

It is also the case that throughout Wales there is a high water table. Where ever you go under the surface in Wales the rocks are wet. The water may find ways through cracks to to underground streams in limestone areas, but the fact is that any underground 'depository' would be vulnerable to flooding by ground water, and this would then cause the elements to leach out.

The right sort of place for this sort of underground STORAGE (as opposed to 'disposal') is in old sand beds, where the effect of any local geological or seismic movement is dispersed as far as is possible. At great depth, such sand stone or sandy strata are dry, so there is not the same problem of ground water leaching. There are such geological formations in parts of France.

Question 3: I state again there is no such thing as 'disposal'. We should firstly ensure that no new nuclear material is created in Wales.

When Wylfa is finally closed then any waste should be treated at the cost of the nuclear industry that created the problem in the first place. All other industries are required by law to take the full responsibility for the proper disposal or transfer of their wastes in such a way that prevents any threat to the environment or to human health. The nuclear industry should not be allowed to escape that same liability. I do not have a problem if nuclear materials can be re-used for beneficial purposes in science or medicine, but only where there are adequate controls on volume and levels of threat. Finding new uses for materials that would otherwise fall to be treated as waste is a legitimate and desirable pathway under Article Three of the European Waste Framework Directive. I do not have a problem if industries in Wales do their part in the absorption of nuclear materials through beneficial ways.

In my view, nuclear material should be moved as little as possible, and should be stored on the surface but above levels of threat by wind, water or the sea. There is record in Norway of 200-300 foot high Tsunamis in the North Atlantic in relatively recent geological time.

Question 4: I do not support the break up of the United Kingdom and voted against the formation of the Welsh Assembly. However, I do support the move towards much more visionary policies on many issues that have emerged in Wales before they have been considered in England. My hope is that Wales and Scotland will both continue to lead the way in implementing policy decisions based upon protecting and enhancing the value of human life and protecting the quality of the environment.

The nuclear industry in the UK is moribund. Many people (like me) ensure that we buy our power from suppliers who do not support the nuclear of fossil fuel industry. I

can meet and exceed my own energy needs and I export electricity to the local grid. Everyone could do this if there was the political will to implement the right support and remove the many restrictions that prevent small scale local power and heat generation. Localised power generation can respond well to changes in local demand and thereby reduce the instability of the national grid. A far more stable and reliable power supply network would be possible if we abandon our concept that we need a small number of very large power stations. It is my view that at least a third of the population could more than meet their own energy needs in the next ten years. The rest could be supported by small local power stations creating energy from what ever form of renewable energy that is best for the locality.

Manon Huws

Dear Sir/Madam

Q1. Yes. It is irresponsible to leave a policy on such a serious issue so open-ended. It makes the Government in Wales appear lacking in power and leadership. The people of Wales do not want [radioactive] waste disposed of anywhere in Wales! Fact! The Welsh Government must stand with the opinion of the people. The fact that it is keeping the door open for discussion will make the people of Wales lose all faith in their leaders. The people of Wales do not want to receive nuclear waste for any form of bribe. The country's leaders must discover other means of raising money. It is patently clear that money is the only reason the government is keeping the door open on the issue. In the long term, the responsibility for the waste will be a heavy financial burden in any event.

Q2 The government in Cardiff should not be considering keeping waste (either geologically or above ground in any way) for the purpose of attracting money. Is the Welsh Government responsible for the profit made from the present nuclear power stations? Is the Welsh Government responsible for the waste created thus far? No! Therefore it is patently clear that Westminster is putting pressure on Cardiff to get rid of its dirty problem.

In terms of the waste already created it should be kept in appropriate containers that could be accessed easily if they needed to be treated or moved. They should be monitored and clearly marked with the level of their radioactivity noted. The public should know about the storage facilities and research should continue in order to try and resolve the issue of HAW before even considering producing more of it.

Q3. I believe I have answered this question in the response above.

Q4. I believe I have answered this question already. The Welsh Government has an opportunity to rejuvenate Wales by lending money in order to establish green alternative energy companies that produce no waste. The way in which the government is selling out our country to outside businesses and considering providing HAW storage shows a lack of vision and lack of leadership.

Yours sincerely

Manon Huws

CoRWM

CoRWM welcomes the Welsh Government's decision to consider whether to review its current policy on HAW disposal and to issue this call for evidence.

Question 1: CoRWM agrees that, given the reasons stated in paragraph 18 of the Call for Evidence, now is an appropriate time for the Welsh Government to review its current policy on HAW disposal.

Question 2: CoRWM carried out extensive work before recommending geological disposal in its report in 2006, and confirmed that recommendation in 2013. In the light of this, if the Welsh Government reviews its current policy, should it limit its consideration of disposal options for HAW to geological disposal?

As noted in the Call for Evidence, CoRWM confirmed its support for geological disposal as the best long term management option for HAW in July 2013 and this is still the case.

Question 3: It is CoRWM's view that geological disposal, supported by a robust programme of interim storage, is currently the only feasible disposal option for most HAW.

Question 4: CoRWM thinks that it is extremely important for the Welsh Government to clarify its position on radioactive waste management so that it can play a strong role in the development of policy at the UK level.

CoRWM welcomes the Welsh Government's decision to consider reviewing its policy and is keen to support any subsequent policy development in so far as this is within its remit of advising Government and scrutinising work undertaken. CoRWM's proposed Work Programme for 2014-15 has already allocated 20 per cent of its resources to Wales but, depending on the involvement required, further support may be required.

Natural Resources Wales

Natural Resources Wales (NRW) was created in 2013 with a mission to ensure that the environment and natural resources of Wales are sustainably maintained, enhanced, and used, now and in the future. Regulation of business and industry are amongst its statutory responsibilities. This includes the regulation of the disposals of radioactive wastes from nuclear sites, as well as other premises in Wales. All permits relating to sites generating or disposing of radioactive waste in Wales are issued by NRW. Compliance with these permits at nuclear sites is carried out by the Environment Agency specialists on behalf of NRW, however, enforcement is undertaken by NRW**.**

Q1: Natural Resources Wales supports the review, as it is prudent to reconsider policy positions in the event of new developments or evidence. The Welsh Government has expressed support for the development of new nuclear power facilities in Wales, including the proposed Wylfa Newydd site, which is proposed to be sited adjacent to the existing Wylfa nuclear power station on Angelsey.

Natural Resources Wales considers that Welsh Government needs to ensure that suitable and effective arrangements exist for the management of higher activity radioactive wastes generated in Wales by existing, and future nuclear facilities and also that from Welsh industry and the medical sector. Wales has benefited socially and economically from the use of these radioactive substances, and we agree that Welsh Government has an obligation to participate in the development of a strategy for the management of these wastes.

Natural Resources Wales is aware of the work carried out by CoRWM and the position adopted by Scottish Government, and we will look, following discussion with the Environment Agency, Office for Nuclear Regulation and the Nuclear Decommissioning Authority, to highlight to Welsh Government the most recent relevant information, which may inform subsequent calls for evidence.

Q2: Natural Resources Wales has a service level agreement with the Environment Agency which provides us with a service and we work other bodies. Natural Resources Wales has reviewed the CoRWM recommendations from 2006 and its statement of 2013, and suggests Welsh Government consider including in its review the need for interim and long-term storage prior to geological disposal. This is particularly relevant given the forecast time to create a geological disposal facility, and that possibly even the next generation of nuclear power stations may have been decommissioned before the facility is available, including Wylfa Newydd.

Q3: As mention above, Natural Resources Wales suggests that Welsh Government review the CoRWM recommendations as part of its evidence gathering, and reviews the options for interim and long-term storage prior to geological disposal. For example CoRWM recommends that these are not disposal options, but mechanisms for managing wastes over periods that may extend to a further 40 or 50 years. As disposal is “the placing waste in a facility with no intention of retrieving it”, other

options such as placement in near surface repositories are clearly not disposal, but long-term storage options, as they are based on the premise of retrievability.

Q4: It is not clear to Natural Resources Wales how the Spent Fuel and Radioactive Waste Directive (Council Directive 2011/70/Euratom) will bear on Welsh Government, as the obligations are on Member States; nevertheless, it is likely that Welsh Government will have to contribute positively to the UK programme. Additionally, as a geological disposal facility would be a novel and unique facility in the UK, Natural Resources Wales considers that the Welsh Government should review its position on management of higher activity radioactive waste as required by the Directive. Furthermore, it is essential that Welsh Government is in a position to engage with the relevant UK Government departments, regulators and operators to play an effective role in UK radioactive substances policy and strategy development.

If a geological disposal facility were to proceed, the design and management of such a facility and any related interim storage facilities, would need to inspire confidence amongst all affected communities from the earliest stages. Welsh Government would need to consider as part of its review the need for clear Government policy and effective regulation in providing community confidence.

If a community in Wales were to volunteer and be selected for hosting a geological disposal facility, this would require partnership working throughout the UK to enlist the widest knowledge, expertise and skills base as possible in relation to such a facility. Should a site in Wales be selected, Natural Resources Wales would work with other regulators in the UK, including the Office of Nuclear Regulation and the Environment Agency, as well as nuclear operators and relevant bodies such as the Nuclear Decommissioning Authority and Radioactive Waste Management Ltd. Natural Resources Wales would welcome Welsh Government support with regard to this, in the event of any community in Wales volunteering to host a geological disposal facility.

It is equally important that Welsh Government recognises that the resources of England and Wales would need to be deployed in the event of selection of a site in Wales for such a UK national facility. This may require formal agreements in order to allow respective bodies to forward plan resources, and support skill retention and resilience. It will continue to remain for Natural Resources Wales to make the final decisions with respect to the permitting of such a facility in Wales under the Environmental Permitting (England and Wales) Regulations 2010.

Emyr Roberts
Chief Executive
Natural Resources Wales

Dr Carl Iwan Clowes

Q1. Yes, and it is unacceptable that there is no policy until a community expresses an interest in hosting a disposal facility. I believe it is immoral to put pressure on communities with bribery so that they accept the waste now in the knowledge that there will be radioactive waste within the community that will affect generations to come for thousands of years.

Despite the opinion of CoRWM, there are a number of examples of geological storage facilities that have failed in circumstances that were supposed to be completely safe. We only have to turn to the experience at Yucca Mountain in the US in order to see how big the challenge is in securing such storage.

Contrary to the policy in 2008, the Welsh Government supports the construction of a new nuclear power station at Wylfa, Anglesey. This change in policy without certainty as to what will happen to the waste, is completely irresponsible. This would not happen in any other industry as any other industry would have to prove beyond doubt how they intended to dispose of their waste safely before being granted permission to proceed. The Welsh Government's support for something that has no assurances in terms of the means of waste disposal, and that could endanger future generations, is totally irresponsible.

Q2. Definitely not. Geology changes and in 1984, this area witnessed the largest recorded earthquake on the British mainland, at 5.4 on the Richter scale.

The nuclear industry has been creating radioactive waste for over fifty years and the report published this week in the Financial Times makes clear how serious the situation is:

"The Nuclear Decommissioning Authority said it had raised its best estimate for the undiscounted cost of the clean-up over the next 120 years to £110bn, a 7 per cent increase, with Sellafield alone accounting for £79.1bn of that"

Therefore the best option for waste is not to produce it in the first place.

In a survey conducted by researchers at the Department of Social Sciences in Bangor (before Fukushima) on the opinions of the island's residents and surrounding areas, a clear majority believed the focus should be on renewable energy for our energy requirements, and Wylfa Newydd would create jobs, but at what cost? The survey showed again that only a third of the population was in favour of nuclear energy for the creation of jobs compared to two thirds in favour of renewable energy.

Q3. The response to this should be the same as that of Scotland's, to keep the legacy waste above ground. As well as any change to the geology over the centuries, what of the implications of climate change, a rise in sea levels, terrorism etc... the situation regarding the waste will need to be monitored and this means it should be visible.

Unfortunately, if Wylfa Newydd goes ahead it will be necessary to keep the waste onsite for 160 years as it will be too hot to move. What is the point of creating an underground storage facility that will not be put into practical use for over a century? In terms of the old waste, the legacy waste, this should continue to be sent to Sellafield for as long as needs be.

Q4 There are other options for producing electricity as Schleswig-Holstein have proved in Germany. This year for the first time the state will be producing more electricity through renewable methods than it consumes. This is the future, and as Wales shies away from that agenda we are in danger of losing focus on the potential afforded by renewable energy together with endangering our futures at the same time.

I received a letter from the Welsh Government in 2009 and I quote:

"The Welsh Assembly Government's long held view on new nuclear power stations is that with the level of interest in renewable and other generating technologies in Wales either proposed or underway, Wales would have no need for new nuclear build in its energy future.

Currently, Wales' electricity consumption is around 24TWhr per year, the Welsh Assembly Government believes with sufficient innovation and investment, the right Government framework and public support, Wales could produce over 33TWhr per year of electricity from renewable sources.....".

As well as that the letter goes on to say:

" the Minister wrote to Lord Hunt of King's Heath OBE, Minister of State in the DECC expressing her support for a call for a public inquiry into the request for justification for the proposed new nuclear reactors on the grounds of concern over the safety and security of the management of future nuclear waste".

It is of greatest pity that the Welsh Government has steered away from this direction. The Welsh Government should reconsider its policy of support for Wylfa Newydd and its resulting waste.

Yours sincerely,

Dr Carl Iwan Clowes M.B Ch.B, MFCM, DTM, M.Sc., FFPH, OBE

Nuclear Decommissioning Authority (NDA)

Q1.NDA believes the current policy should be reviewed for the reasons set out by Welsh Government in the consultation document. Principally, because a reserved position leads to some uncertainty and the long term management of radioactive waste would benefit from greater certainty, as would the development of nuclear power stations in Wales.

Q2. The NDA's strategic objective for the management of higher activity waste (HAW) is as follows; '*To treat and package retrieved HAW and place it in safe, secure and suitable storage facilities until it can be disposed of, or be held in long-term storage in the case of a proportion of HAW in Scotland*'. Therefore, NDA believes CoRWM's recommendation of geological disposal supported by safe and secure waste storage arrangements and a programme of underpinning research is an appropriate approach for the long term management of higher activity waste in England and Wales.

CoRWM carried out an extensive work programme to underpin its recommendations and engaged widely with both experts and the public and in NDA's opinion there would be no reason for the Welsh Government to repeat this process. CoRWM's recommendation of geological disposal is also consistent with the 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.

The Nuclear Energy Agency - a specialised agency within the Organisation for Economic Co-operation and Development stated in 2011 that "there are no credible alternatives to geological disposal".[4] In pointing to a strong international consensus that geological disposal is the preferred approach, they also stated that geological disposal is "technically feasible; it can be made safe for current and future generations" and that "Whatever further technical advances may be gained, the need for geological disposal for some classes of waste will persist".

This strong international consensus is also reflected in EU Council Directive (2011/70 Euratom) which establishes a Community framework for the responsible and safe management of spent fuel and radioactive waste. This states that "Deep geological disposal represents the safest and most sustainable option as the end point of the management of high-level waste and spent fuels considered as waste."

However, in recommending geological disposal as the best available approach for the long-term management of the UK's higher activity radioactive waste, CoRWM

[4] Geological Disposal of Radioactive Wastes: National Commitment, Local and Regional Involvement: A Collective Statement of the OECD Nuclear Energy Agency "Radioactive Waste Management Committee", adopted March 2011

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. In line with this, Radioactive Waste Management Ltd (RWM) on behalf of NDA is undertaking appropriate horizon scanning activities, 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. At the moment, no credible alternatives have emerged that would accommodate all of the categories of waste in the inventory for disposal.

NDA notes that the lifetime inventory of higher activity waste in Wales is very different from England and the other large international programmes where the inventory is significantly smaller with a higher proportion of reactor decommissioning wastes.

NDA therefore believes that Welsh Government should not limit its Policy to geological disposal only and consider the best way forward to help support a publicly acceptable solution for the long-term management of higher activity radioactive waste.

Q3. CoRWM in their 2006 recommendations recognised that near surface disposal of certain higher activity wastes such as those arising from reactor decommissioning may be viable. There is a much greater proportion of reactor decommissioning waste in Wales when compared to England. Therefore if the Welsh Government wished to consider alternatives to geological disposal this would appear to be a potential option for the relevant areas of higher activity waste management although the entire higher activity waste inventory in Wales is unlikely to be suitable for near surface disposal, for example spent fuel from Wylfa Newydd.

EU Council Directive (2011/70 Euratom) also noted that '*The typical disposal concept for low and intermediate-level waste is near surface disposal*', however we would like to highlight the normal long-term approach for long-lived ILW is deep geological disposal. An example of a planned deep facility is in France where there is a plan to commission a "*repository by 2025 in Meuse/Haute-Marne, subject to government approval and after a public debate*".[5]

One other disposal option which was identified by CoRWM in 2006 was borehole disposal. While work on deep borehole disposal of spent fuel and nuclear materials is continuing internationally this concept has not yet been demonstrated to be a practical alternative to geological disposal. However, like near surface disposal, even if demonstrated to be practical in the future, deep borehole disposal is likely to be

[5] http://www.andra.fr/international/pages/en/menu21/waste-management/waste-classification/intermediate-level-long-lived-waste-1641.html]

more suited to only some elements of the higher activity waste inventory for example spent fuel.

In summary, it is NDA's view that Welsh Government should consider the possibility of alternative disposal options for a proportion of the higher activity radioactive waste inventory, which is consistent with current UK Policy.

Q4. There are potential environmental and economic advantages of developing common solutions for wastes arising in England, Wales and Northern Ireland which could be foreclosed if Welsh Government chose to pursue separate solutions for radioactive waste in Wales from those being pursued in other parts of the UK. This is particularly important in the light of the relatively small amount of radioactive waste that arises from nuclear activities in Wales.

The Welsh Government should be explicit about the scope of any review of Welsh radioactive waste policy for example whether it includes: the management of spent fuel and nuclear materials from the operation of Welsh reactors which is currently in storage in England or destined for England, reactor decommissioning wastes from New Nuclear Build and GE Healthcare wastes.

EDF Energy

EDF Energy is one of the UK's largest energy companies with activities throughout the energy chain. Our interests include nuclear, coal and gas-fired electricity generation, renewables, and energy supply to end users. We have over five million electricity and gas customer accounts in the UK, including residential and business users.
While EDF Energy does not have any nuclear facilities in Wales, we hope that our views will be a useful contribution to the consultation. This is based upon our long term involvement in nuclear matters both in other parts of the UK and abroad and, as noted in the consultation document, the interconnectedness of these issues.
In summary, with regard to the consultation, our views are as follows:

For its current sites in England and Scotland, EDF Energy believes that the final disposal of Higher Activity Radioactive Waste (HAW) is most appropriate using geological methods, and that a small number of geological disposal facilities is preferable to disposal/long term storage at current nuclear sites.

While there has been limited progress regarding disposal arrangements since 2008, we are of the view that, given the reasons outlined in the consultation, there is sufficient justification for a review of current policy on HAW disposal at this time. This is particularly relevant given the proposals for nuclear new build in Wales.

EDF Energy supports the UK Government's intention to construct a central Geological Disposal Facility (GDF) for HAW. We believe that the analysis carried out by CoRWM and others has made the case that geological disposal is the most appropriate and lowest risk way forward and that there are no significant developments which challenge that conclusion.

Question 1

It is noted that the Welsh Government's policy has not changed since 2008.

In terms of policy development for Higher Activity Radioactive Waste (HAW) disposal in the UK since 2008, while there has been limited progress towards identifying a Geological Disposal Facility (GDF) site, there has been significant progress in terms of developing the framework to deliver a GDF via the setting up of Radioactive Waste Management Ltd (RWM). The period has also seen the Scottish Government adopt a 'near surface storage' approach for which there are arguments for why the Welsh Government would wish to consider this development.

As suggested in the Call for Evidence, there are other possible reasons why a review at this time would be appropriate. We believe that all of these have merit. In particular, we consider that, given the proposals for nuclear new build in Wales, it would be beneficial to carry out a review of the policy. This will help give a clear baseline for any new build projects and will help give the developers of such projects clarity with respect to waste arrangements.

Question 2

It is EDF Energy's view that the extensive work carried out by CORWM and others has clearly identified geological disposal as, on balance, the most appropriate disposal method. We are concerned that should the Welsh Government choose to review other options, it is likely to cover the same ground as CoRWM's work, consult many of the same participants and provide little new information.

It could be argued that the Scottish Government's 'near surface storage' approach provides a different option. However, while EDF Energy is fully engaged in the development of the Scottish Government's policy and will implement whatever is the final form of this policy for its Scottish sites, we would highlight that this policy does not currently provide disposal of all Scottish HAW wastes, just long term storage for some types of HAW in a manner primarily geological in nature.

Question 3

As noted in the response to Question 2, EDF Energy sees limited benefit from revisiting the CoRWM assessment. In addition, from EDF Energy's understanding of developments elsewhere in the world through its parent EDF S.A., as well as from involvement with various international organisations (e.g. IAEA, WANO, etc), there do not appear to be any significant developments since the 2013 CoRWM update.

Question 4

While EDF Energy does not have any facilities located in Wales, we welcome the Welsh Government's commitment to playing an active role in securing the long term safety of radioactive wastes. The inter-linked nature of the nuclear industry, past, present and future is such that development of policy in this area can not be carried out in isolation. We would also note the key role of the Nuclear Decommissioning Authority (NDA), both with respect to the Welsh nuclear sites and across the UK as a whole.

Anonymised Response 3

Q1.

1.1 What current policy on HAW *disposal*? Where is *the policy document*, the Impact Assessment, or the evidence base? Disappointingly, this Call for Evidence (cited as "Call", throughout) refers neither to any record of public consultation on draft policy, nor to any Senedd debate on the matter. Whereas, at least four paragraphs in Call appear to suggest no such disposal policy exists in Wales!

1.2 Consider, first, Call paras 1 and 7, respectively. Plainly, the UK Government has formulated policy on HAW disposal, albeit in favour of geological disposal.

a. Call para.1 informs merely that the Welsh Government neither supports nor opposes the UK Government's disposal policy. Could such fence sitting properly merit the imprimatur of a policy of any kind, on anything?

b. Furthermore, Call has patently written out of existence an entire 49-year history of relentless production and export of Made-in-Wales spent nuclear fuel (SNF) HAW by the truck load, every week, from at least two large civil HAW creation sites. Namely, the now defunct Trawsfynydd[6] Magnox Nuclear Waste Generating Power Station (in the Snowdonia National Park, in Gwynedd), and the Wylfa[7] Magnox Nuclear Waste Generating Power Station (in the north of Anglesey). So complete is this apparent cover-up that an innocent Martian, haplessly chancing upon Call, would never glean that Wales has ever produced any HAW to date!

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[6] The twin Magnox reactors at Trawsfynydd began supplying electricity, thereby producing spent nuclear fuel (SNF), in January 1965. Both reactors ceased operating in February 1991 and were permanently shut down in July 1993. Although reactor closure marked the end of a 26-year history of SNF-HAW production inside the Snowdonia National Park in Gwynedd, the intensely radioactive reactor cores, other reactor internal structures, and the spent fuel cooling ponds comprise residual HAW remaining on-site. These large structures are expected to be dismantled and disposed as, and when, a permanent geological disposal facility (GDF) for HAW ever becomes available to accept this additional residual Made in Wales HAW. The entire production of Welsh Magnox SNF at Trawsfynydd was transported, out of sight, by train to the UK national Sellafield complex (the rebranded name of the notoriously accident prone Windscale nuclear waste processing site), in Cumbria, for processing and temporary storage. This Welsh SNF component has thus long been awaiting the siting, construction and operation of a suitable Geological Disposal Facility, somewhere in England!

[7] The twin Magnox Reactors at Wylfa began supplying electricity to the National Grid in 1971. The resulting spent nuclear fuel has since been trucked away by road to a rail siding on the outskirts of Valley (on Anglesey), for transhipment by rail to Windscale/Sellafield/Seascale in West Cumbria, adding to the Trawsfynydd SNF inventory. Magnox Reactor 2 at Wylfa was permanently shut down on 25th April 2012. Magnox Reactor 1 is scheduled for permanent closure either in September 2014 or December 2015: http://www.magnoxsites.co.uk/site/wylfa/#achievements .

1.3 In the second instance, Call para.1 expressly states further: 'Nor does the Welsh Government support any other disposal option for HAW'. This assertion arguably implies outright rejection of permanent disposal of Welsh HAW. That, in turn, would imply the Welsh Government has an undisclosed policy on HAW care and maintenance, in surface or near-surface storage facilities, for perpetuity. If so, Call fails to disclose and discuss (for instance, candidate sites and history, as well as regulatory inspection and monitoring measures).

1.4 Thirdly, according to Call para.11, there was no need at all to consider its (non) policy on geological disposal of Welsh HAW, if no community in Wales ever expressed interest as potential Geological Disposal Facility (GDF) host volunteer.

a. That leaves Wales free to press on with actively creating more and more HAW on Anglesey, for as long as it can get away with exporting Made in Anglesey HAW to some nuclear waste dump in someone else's back or front yard, elsewhere in the world beyond Welsh borders. On this basis, there clearly arises no need whatever to articulate or implement any Wales based solution for Made in Wales HAW.

b. Curiously, Call is devoid of information on active measures to date (under the 2008 putative policy on HAW disposal) to enable, encourage, facilitate or actively invite community councils throughout Wales to be brave and put themselves forward as potential GDF host volunteers for Made in Wales HAW. In the absence of active outreach by the Welsh Government, how else was this volunteering strategy (Call para.11) supposed to work in practice, outside the Cardiff Bay Bubble? No explanation is provided. That would suggest an approach characterised by deliberate disengagement on the longer term fate of Made in Wales HAW.

1.5 In the fourth instance, Call para.18 (first bullet point) claims incredulously that disposal of Made in Wales HAW has become an issue for consideration only subsequent to the putative 2008 policy! This paragraph provides an astonishing reason. Namely, that HAW has only become an issue in Wales now that the Welsh Government actively supports proposals to build three massive new nuclear waste generating reactors at Wylfa[8]. Such reasoning is tantamount to being economical with the truth.

[8] The Horizon Nuclear Power consortium is currently planning to build new nuclear waste generation capacity of up to 3600MW at Wylfa: see para.C.9.4 in DECC (2011) *National Policy Statement for Nuclear Power Generation (EN-6)*. Volume II of II – Annexes. Presented to Parliament pursuant to section 5(9) of the Planning Act 2008. URN 11D/717. Department of Energy and Climate Change. July 2011. (Last available at http://www.decc.gov.uk/assets/decc/11/meeting-energy-demand/consents-planning/nps2011/1943-nps-nuclear-power-annex-volII.pdf.) In comparison, the combined generating capacity of the twin Magnox reactors was around 900MW. In other words, the proposed new HAW creating reactors at Wylfa would be quadruple in size compared to the Magnox capacity.

a. HAW has been produced in North Wales continuously since 1965, starting with the Trawsfynydd nuclear waste generating reactors. HAW creation plainly predates enactment of devolution for Wales. Only in some parallel universe might the reason advanced in Call hold passing currency.

b. Call adduces no evidence whatever of the Welsh Government ever opposing the authorisation of any serial extension of the operating life of the Wylfa Magnox reactors on Anglesey, in particular since achieving devolution in 1999. Each extension of reactor operating life, beyond an original reactor design life of 25 years (commencing 1970), evidently resulted in creation of even more avoidable inventories of Made in Wales SNF-HAW on Anglesey. This is quite an astonishing omission. There exists a glaring failure to explain why extended creation of SNF at Wylfa manifestly failed to merit HAW disposal considerations by the Welsh Government, throughout the interregnum 1999 to 2013, and even down to the present day.

c. Moreover, Call fails to evidence outright opposition by the Welsh Government to either the nomination (in 2009), or the formal approval by the UK Parliament (in 2011) of the Wylfa site on Anglesey as a preferred location for new HAW generating nuclear reactors in Wales by the end of the year 2025[9].

d. As it happens, dalliance with opportunism is pointedly exposed by the Welsh Government's own most significant decision to date, on Made in Wales HAW. On 16th July 2003, the Welsh Assembly Government granted planning consents for the construction of a new Intermediate Level Radioactive Waste Store, to replace the then existing waste stores on site, at Trawsfynydd. According to the consents decision[10], the new on-site store was required until such time a national facility for the long term management of Intermediate Level Waste or other alternative means of off-site storage or disposal became available.

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9 DECC (2011) *National Policy Statement for Nuclear Power Generation (EN-6)*. Volume I of II. Laid before Parliament for approval – June 2011. URN 11D/716. Department of Energy and Climate Change. Last available at http://www.decc.gov.uk/assets/decc/11/meeting-energy-demand/consents-planning/nps2011/

para.4.1.1 The following sites are those that the Government has determined are potentially suitable for the deployment of new nuclear power stations in England and Wales before the end of 2025: Bradwell; Hartlepool; Heysham; Hinkley Point; Oldbury; Sizewell; Sellafield; and Wylfa.

10 WAG/DTI (2003) *Decision under the Town and Country Planning Act 1990 (Sections 77 & 266) on an Application by Magnox Electric PLC for the construction of a new Intermediate Level Waste Store to replace existing stores on site, and reduction in height of former reactor buildings and their re-roofing and re-cladding at Trawsfynydd Nuclear Power Station, Trawsfynydd*. Joint decision by Carwyn Jones AM, Chair, Planning Decision Committee 2003/1 and Nigel Peace, Authorised by the Secretary of State for Trade and Industry to sign in that behalf. 31 July 2003. National Assembly for Wales Reference A-PP049-07-016. Available at http://www.assemblywales.org/bus-home/bus-third-assembly/bus-committees/bus-committees-previous-committees/bus-committees-second-pdc-home/bus-committees-second-pdc-agendas/n000000000000000000000000000011911.pdf?langoption=3&ttl=PDC(2)%202003-1%20Decision%20Letter%20Trawsfynydd

1.6 Finally, Call concedes somewhat obliquely and grudgingly at para.18 (the second bullet point) that lack of policy on eventual disposal of Made in Wales HAW falls foul of Euratom's Directive 2011/70/Euratom. So, there it is, eventually after seventeen paragraphs! *There currently exists no proper Welsh Government policy on eventual disposal of Made in Wales HAW*.

1.7 In summary, a hapless Martian would be forced to conclude the Welsh Government's 2008 touted reserved position lacks recognisable policy anchor. Secondly, no Martian would ever learn from Call that Wales has actively been creating annually increasing quantities of civil HAW (including SNF) since 1965.

1.8 The Welsh Government needs to recognise upfront that for the past 49 years, all Welsh SNF-HAW has conveniently been exported to West Cumbria, for temporary storage and processing at Windscale/Sellafield/Seascale, pending a solution on eventual fate. That waste requires assured permanent and environmentally safe isolation from geologic biospheres and water courses, and surface environments, for up to 250,000 years, while its radioactive contents decay to the levels of natural background radiation prevalent at the surface across Wales. Moreover, the entire might of the United Kingdom has failed so far to confirm a single underground cavern in which to dump the Welsh radiotoxic waste.

1.9 Call para.3 suggests a government locked in myopic mindset, welded to immutability of proposed elevated creation of new HAW at Wylfa, for the foreseeable future. The Welsh Government appears to believe Wales (and the world) would be better off swapping emissions of carbon dioxide from fossil fuel power stations for elevated production of Welsh HAW from new nuclear power stations. Passing reference in Call para.4 to contingent risk appears to hide a veritable can of worms[11]. Call fails to acknowledge the range of potential consequences turning on ecological uncertainties inherent in any proposition endeavouring to ensure isolation of HAW radiotoxic content from the biosphere over the course of hundreds of thousands of years.

1.10 In conclusion, Q1 stands emphatically answerable affirmatively.

a. The Welsh Government has plainly long languished in slumber on the intractable problems of annually mounting inventories of HAW contemporaneously already being Made in Wales since 1965.

[11] Such nuclear waste blind sight appears to find an echo, for example, in myopic favouring of diesel over petrol for fuelling private vehicular transport. As noted by Christopher Power in *Bloomberg Business Week* (issue dated June 9 – June 22, 2014, p22: 'London Leads the EU In Car Pollution'), although diesel engines burn fuel more efficiently and emit less carbon dioxide (CO_2), a by product of burning diesel is nitrogen oxides, amongst a cocktail of other aerosol and particulate pollutants. However,

> "Successive governments knew more than 10 years ago that diesel was producing all these harmful pollutants, but they myopically plowed on with their anti-CO_2 agenda," says Simon Birkett, founder of Clean Air in London, a nonprofit. "It's been a catastrophe for air pollution, and that's not too strong a word."

b. It failed a test of legitimate expectation in 1999 on properly formulating policy and justification for continuing creation of SNF and other HAW on Anglesey, as well as on the eventual fate of all HAW that ever has been Made in Wales.

c. The Welsh Government has, at all times since devolution, possessed full planning powers on disposal in Wales of all radioactive waste made in Wales.

d. As grudgingly admitted at Call para.18 (the second bullet point), *there currently exists no proper Welsh Government policy to speak of, on eventual disposal of Made in Wales HAW, in accord with* Euratom's Directive 2011/70/Euratom. Plainly, the Directive is compelling the Welsh Government to be seen to be doing something. Otherwise, it could not be bothered with dealing with Welsh HAW within Wales, regardless of quantity, so long as it was all quietly trucked out of Wales for disposal out of sight elsewhere in the rest of the world.

e. Still, better late than never that the Welsh Government should venture into considering rectifying a policy lacuna on HAW disposal. Not the least, given its active support for the continuous creation of Made in Wales HAW, and its absolute enthusiasm for vastly greater HAW creation for the foreseeable future (at proposed new nuclear waste generating power reactors at Wylfa, on Anglesey).

1.11 The Welsh Government further needs to consult the public directly on specific questions, bearing on volunteerism for a Wales GDF, as follows.

a. If not a single community in Wales came forward to volunteer hosting a GDF, should any new nuclear waste producing power stations be built or operated anywhere in Wales?

b. If new nuclear waste producing power stations should be built and operated in Wales, but no community is prepared to volunteer hosting a GDF, what then should be done with the resulting Made in Wales HAW?

(i) Legally require the community hosting new nuclear reactors in Wales to *store* HAW permanently on the same site as the nuclear power station, in **surface or near surface storage facilities**?

(ii) Send away Welsh HAW for permanent *storage* elsewhere in Wales, in **surface or near surface storage facilities**?

(iii) Legally require the community hosting new nuclear reactors in Wales to ensure the resulting Made in Wales HAW is environmentally safely and permanently *disposed off* in a **local GDF** on the same site as the nuclear power station? In which case, should the GDF be built before construction work on new

nuclear reactors could begin? But, if local geology proved unsuitable for siting a GDF, should that automatically bar the construction and operation of new nuclear reactors in that location? In which case, in turn, should the reactor host community be required to secure successfully an alternative option, prior to construction work beginning on new HAW producing reactors?

(iv) Send away all Welsh HAW for environmentally safe and permanent *disposal* in a **GDF** located and operating **elsewhere in Wales**?

(v) **Export Welsh HAW** for permanent surface storage, near surface storage or disposal in a **GDF, anywhere in the world outside Wales**?

(vi) If it would be acceptable to export Welsh HAW for permanent storage or disposal outside Wales, would it be equally acceptable to **import HAW** from around the world for **permanent storage or GDF disposal in Wales**? Should Wales not take full advantage of earning valuable foreign exchange, by providing such global facilities?

1.12 It is equally important to provide credible information illustrating how the 2008 policy on GDF volunteerism in Wales was actually implemented. In that regard, the following information warrants disclosure.

a. All dates, locations and events since 2008 to date, at which the First Minister and all other Ministers in the Welsh Government, as well as senior civil servants and policy advisors, respectively, expressly invited and reminded Welsh communities up and down the country, of opportunity to declare interest in volunteering to host a GDF for Welsh HAW.

b. If none of this activity occurred, or occurred only in limited sense, how was that justified at the time?

Q2.

2.1 On the one hand, the Welsh Government has ebulliently promoted and supported further enhanced creation of new SNF-HAW at Wylfa. On the other hand, the Welsh Government appears to have lacked political courage to extol equally strongly, the environmental necessity for, and the socio-economic benefits (both locally and in supply chains) of siting and operating a GDF in Anglesey, or elsewhere in Wales, for all Made in Wales HAW.

2.2 After 49 years of continuous indigenous production, there still does not exist a Wales based environmentally safe permanent contemporary solution for the entire inventory of all Made in Wales HAW to date. How does that fact square up to global leadership on sustainable development? There is a need to be candid with the public, concurrently, on the bargain encapsulated in building new HAW producing reactors at Wylfa. Namely,

a. that any plan, proposal or strategy for reducing carbon dioxide emissions by building new nuclear reactors, *ipso facto* means swapping carbon dioxide emissions for incrementally rising levels in HAW production;

b. that Wales wholly lacks environmentally secure permanent contemporary solution for biospheric isolation of Welsh HAW for hundreds of thousands of years into a far distant future; and,

c. that relying on a mythical notion of passive volunteerism (that is, a laid back, approach) means waking up and taking note only if, and when, someone stirs in a parallel universe of potential Welsh GDF host communities. If nothing stirs, there'd be no Wales GDF for the rising quantities of Made in Wales HAW under prevailing new reactor proposals.

2.3 An important starting point when considering disposal options is tackling a cover-up in Call on characterisation of the true size of the inventory of all inclusive Made in Wales civil HAW, since 1965. For a complete picture, any defence related HAW would also need identifying.

a. By definition, a Welsh HAW inventory could be expected to comprise the global totality of Made in Wales HAW. But Wales has exported its entire SNF production to West Cumbria. This outcome carries the hazard of normalising a mind set under which it is perfectly acceptable to expect the people of Cumbria to bear whatever risk and benefits Welsh HAW presents. Can it be right that people in Anglesey or other parts of Wales won't, or don't, bear the same risk and benefits from HAW originally produced by nuclear reactors hosted by communities in Wales?

b. A return of all Made in Wales HAW to date would appear the only proper and fair means of auditing a realistic estimated of all inclusive inventory of Welsh HAW. Characterising the full size of an all inclusive

Welsh HAW inventory is clearly essential for considering longer term management or disposal options in Wales, in accordance with CoRWM recommendations, under any new Welsh Government policy.

c. The Welsh Government could institute measures to promptly start the process for internalising all civil Welsh HAW externalities to date (commencing 1965). That includes bringing back home (either to Trawsfynydd, Wylfa, or some alternative location in North Wales) all Made in Wales HAW exported to England to date. This could be achieved in the form of radiologically equivalent quantity of substitute waste, say in the form of solid HAW from England.

2.4 The principle of radiologically equivalent substitute waste[12], namely nuclear waste which can be returned to overseas customers (in lieu of commercial contracts for reprocessing of spent nuclear fuel originally imported from self same overseas customers), is currently being considered by the UK Nuclear Decommissioning Authority (NDA). The proposal represents another means of giving practical effect to the polluter pays principle across national borders. Namely, the producers of original HAW always remain fully responsible for its ultimate management and disposal, albeit in the form of radiologically equivalent substitute HAW. It just so happens that the NDA also own all Magnox nuclear site assets, both at Trawsfynydd and at Wylfa, respectively.

2.5 Thus, an all inclusive inventory could clearly identify deficits attributable to direct exports of civil HAW from Anglesey and Gwynedd to Windscale/Sellafield/Seascale, commencing 1965. These deficits should be made good through return of radiologically equivalent substitute solid HAW from England. This would give the public in Wales a truer picture of the problem urgently warranting solving in Wales.

2.6 In view of lack of proper current policy, the Welsh Government would be preparing an initial draft policy on longer term management and disposal within Wales of all Made in Wales HAW. In that regard, it would ill serve public interest to limit policy considerations at this stage solely to geological disposal options. Consideration of a full range of options for an all inclusive inventory all Welsh HAW produced to date, as well as proposed future production, is seemingly warranted. In other words, the next round of consultations should include:

a. an all inclusive inventory of all Welsh HAW created to date. In the case of civil HAW, since 1965;

b. discussion of a full range of options on long term management, and permanent surface or near-surface storage, as well as geological disposal (GDF);

[12] DECC (2014) *Consultation on the Management of Overseas Origin Nuclear Fuels Held in the UK*. URN 14D/010, March 2014. Department of Energy and Climate Change. London. Available at www.gov.uk/decc.

c. detailed information on the current state of knowledge on sub-surface geology of Anglesey and of other potential locations throughout Wales, ranging in depth from 200 metres to 1000 metres; and,

d. identification of all potential sites for the location in Wales of surface or near surface storage facilities for Welsh HAW.

2.7 In the final analysis, should the Welsh Government decide stay the course on disengaged volunteerism, it would be unjust (in terms of honouring legitimate interests of future generations: free from the shackles of inherited legacy HAW) to continue along this avenue under an open ended time frame. The Welsh Government's stated approach on GDF volunteerism is patently akin to waiting endlessly at a bus stop where no bus ever arrives. In sharp contrast, there was no question of a similarly laid back volunteerism approach in 2009, when there was no exclusive invitation to local communities throughout the country, to declare interest in volunteering to host new HAW producing nuclear reactors in Wales!

a. Consideration could be given as to whether an extension of a further year or two might be reasonably sufficient for any candidate host community to declare their hand. The reason? Evidently, local communities have already been conscientiously considering volunteerism since notification in 2008, according to Call para.11.

b. Should there still be no takers within a specified extension period, the Welsh Government would be obligated to consider instituting a Wales GDF National Planning Policy Statement, subject to normal consultation process. The Welsh Government could consider designating a GDF for Wales, particularly should the momentum for new HAW creating nuclear reactors at Wylfa continue unabated. Mindful of intergenerational equity, GDF site designation would need to be approved **prior to** commencement of construction work on any proposed new nuclear waste generating reactors anywhere in Wales.

c. There is a need to recognise and apply the proximity principle, according to which waste is best treated/recovered/disposed near the site of production. Just as Wylfa has been showered with commendations as a centre of excellence for producing Made in Wales HAW, it is equally incumbent on the political ruling classes in Anglesey and in the Cardiff Bay Bubble, to apply all their combined energies to establishing Wylfa, or an alternative location either in Anglesey or elsewhere in Wales, as a centre of excellence for permanent storage or disposal of all Made in Wales HAW, **prior to** commencing construction work on any proposed new nuclear waste generating reactors at Wylfa.

2.8 A full explanation is also required as to why exclusive host community volunteerism was jettisoned when nominations for sites for the construction of new nuclear reactors were canvassed in 2009. Why is exclusive host community volunteerism absolutely a preferred requirement when it comes to identifying Welsh HAW disposal sites but not when it came to identifying

sites for new HAW producing reactors in Wales (constraints of suitable geology and access to cooling water, aside)?

Q3.

3.1 Pros and cons of all options identified by CoRWM clearly warrant consideration in the context of Wales as an administrative legal entity in its own right. Not the least, in view of the planning jurisdiction of the Welsh Government over disposal in Wales of Made in Wales waste.

3.2 There would appear to be a need for setting a time table in respect of at least two material considerations, during the period leading up to the proposed date of commencement of construction of new HAW producing nuclear reactors at Wylfa. Namely, to update the state of knowledge on detailed sub-surface geology of Anglesey[13] in particular, but not exclusively; and, to accommodate, if necessary, a requirement for a Wales GDF National Planning Policy Statement in the Wales national interest.

a. The Welsh Government should disclose all geological information it has collated or commissioned in relation to its implied 2008 policy on non-disposal management in Wales of Welsh HAW over the longer term (observation para.1.3 hereof, referring).

b. Updated geological information could provide the necessary basis for a Wales GDF National Planning Policy Statement, should passive volunteerism continue to yield nil takers (Call para.11), at the end of a specified period of notified extension (observation paras 2.7.a & b, hereof, referring).

c. An update of geological information would warrant completion within a timeframe necessary for facilitating consultation on, and approval of, a Wales GDF National Planning Policy Statement. Both matters would need to **precede** the proposed date of commencement of construction on new nuclear reactors at Wylfa by the Horizon Nuclear Power consortium.

d. Action to break the ground on a Wales GDF or, alternatively, permanent surface or near-surface storage facility(ies), for Welsh HAW **prior to** the start of construction work on the first of the proposed new HAW producing nuclear reactors at Wylfa, would mitigate to an extent an inequitable intergenerational burden. Namely, it falls to the producer generation benefiting from HAW production to directly also ensure during its lifetime that all HAW produced under its watch is environmentally safely and permanently stored or disposed of. Mitigation aims to ensure that HAW is not passed on to any future generation to deal with as a legacy burden. It goes without saying that

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[13] NIREX (1988) *The Way Forward. A Discussion Document*. The Development of a Repository for the Disposal of Low and Intermediate-Level Radioactive Waste. United Kingdom Nirex Ltd. Harwell.

In 1988, NIREX ranked five geological environments in Britain, in order of preference, as suitable for further investigation for potential sites for a nuclear waste repository. Hard rocks in low relief terrain topped the list of preference (para.5.2.5). According to Nirex (para.5.2.6), this type of strata occurs "on the Scottish mainland, some of the islands off the west coast of Scotland, and small parts of Wales, including Anglesey."

nearly a half of the existing inventory of Welsh legacy HAW has already transmuted into a veritable burden on succeeding generations[14].

3.3 Furthermore, it is extremely important to consider in detail (in the next round of consultations) intergenerational equity issues, bearing inextricably on longer term storage management and/or permanent disposal of HAW. In that regard, The Way Forward should command formulation of a set of principles to provide steer on HAW production, management and disposal in Wales. An unrefined reference to six principles suggested below should not be taken as exhaustive. Likewise, a focus on civil nuclear reactors (as shorthand) should not be taken as excluding vicarious other modes of creating HAW.

3.3 a. **A presumption against authorising production of new or additional HAW, anywhere in Wales, in the absence of existing, environmentally safely operating, permanent surface or near-surface storage facility or GDF in Wales**. The principle is directed at mitigating the bequeathing of HAW radiotoxic legacies to future generations. Under this principle:

(i) the Welsh Government could give practical effect to a long neglected recommendation from the UK Royal Commission on Environmental Pollution, made in 1976[15]:

> 'There should be no commitment to a large programme of nuclear fission power until it has been demonstrated beyond reasonable doubt that a method exists to ensure the safe containment of long-lived highly radioactive waste for the indefinite future.'

(ii) the start up of all new nuclear reactors (including proposed new nuclear reactor projects), would be suspended until such time as the safe operation of permanent surface or near-surface storage facilities or a GDF had been demonstrated satisfactorily;

(iii) a reasonable period for demonstrating safe operation could be up to 100 years or more, in order to allow adequate time for:

- suitable rectification, maintenance and monitoring measures to be determined, tried, tested and implemented; and,
- the development of enhanced scientific understanding of the likelihood and implication of postulated interactions between radiation emitting heat sources contained in near-surface

[14] Conventionally, successive generations arise every 25 years.

[15] RCEP (1976) *Nuclear Power and the Environment*. Royal Commission on Environmental Pollution, Chairman Sir Brian Flowers. Sixth Report. Cmnd 6618. HMSO.

stores, or implanted in deep repository caverns, and ambient bio-hydro-geo-chemic processes over millennial time scales.

3.3 b. **A presumption in favour of full internalisation of all externalities, historical and future, regarding all HAW produced at Trawsfynydd, Wylfa and elsewhere in Wales, over the respective operating lifetime of each HAW generating reactor**. The principle aims to give practical effect to the polluter pays principle across national borders. Namely, the producers of original HAW always remain fully responsible for its ultimate management and disposal. Under this principle:

(i) all Made in Wales HAW exported to Cumbria, since 1965, would be recalled (in the form of radiologically equivalent substitute HAW: observation para.2.4 hereof, referring) for environmentally safe permanent management or disposal in Wales, in recognition of the ultimate responsibility of the communities in Wales that hosted its creation in the first instance;

(ii) all new additional HAW created or produced in future at any location in Wales, would be retained on-site for environmentally safe permanent management or disposal in Wales;

(iii) the creation or production of new additional Made in Wales HAW would be suspended in the absence of proven, contemporaneously environmentally safely operating, permanent management or disposal facility(ies) in Wales;

(iv) the prejudicial option of seeking refuge in convenience would be ditched forthwith as an option. If Made in Wales HAW (legacy or new) is good enough to be dumped elsewhere in the world beyond Offa's Dyke, then likewise, HAW made elsewhere in the world beyond Offa's Dyke is equally good enough to be dumped in a GDF in Anglesey or elsewhere in Wales, with no quibbles. The latter prospect may well delight the political ruling classes, as it would fetch a welcome boost for the island's persistently depressed GVA, for example. Wales could lead the world on this, banking on highly lucrative HAW disposal vaults. That may even provide "jobs for life" [16], perhaps forever.

3.3 c. **A presumption in favour of the HAW producing generation fully discharging direct responsibility for ensuring the totality of all HAW created under its watch is fully and safely consigned to a permanent storage or disposal facility, within the lifetime of the self same producer generation**. Under this principle, no producing generation has any right whatever to pass the buck to any other

[16] A quote attributed to the Member of Parliament for Anglesey, as reported in the *North Wales Chronicle*, 13 March 2014 ('MP's event highlights the need for nuclear in the UK and Wales'):

"… The nuclear industry can provide 'jobs for life' – few industries can make that boast."

generation for ensuring environmentally safe permanent storage or disposal of any HAW created under its watch. The principle would require:

(i) those producing SNF and other HAW to ensure its environmentally safe permanent storage or disposal, within the lifetime of each producing generation respectively;

(ii) ensuring contemporaneous permanent storage or disposal of HAW by the producing generation. Deferment beyond 25 years would be neither acceptable nor tolerable, amounting to bequeathing a poisoned chalice to succeeding generation(s). Deferment for up to 100 or more years manifestly treats future generations as slaves to the HAW producing generation.

3.3 d. **A presumption in favour of permanent storage or disposal of HAW as close to the site of HAW production as feasible.** According to this principle, communities hosting HAW producing reactors would be expected to discharge completely their direct producer responsibility by hosting permanent surface or near-surface storage facilities, or a GDF, in close proximity to the site of production. In this particular context, host communities comprise joint enterprise consisting of the host ward/district and the reactor operator. Under this principle:

(i) communities seeking and enjoying the benefits of HAW creation must bear direct responsibility for ensuring environmentally safe permanent storage or disposal of all HAW produced by host nuclear reactors as near to the site of production as feasible;

(ii) in so far as communities hosting HAW producing nuclear reactors value and welcome multiplier benefits, the self same communities are likewise obligated to recognise and value equally the multiplier benefits accruing from hosting permanent storage or disposal facilities in their midst.

3.3 e. **A presumption permitting HAW producer host communities (meaning in this particular context, joint enterprise consisting of the host ward/district and the reactor operator) to contract directly with neighbouring community(ies) to host permanent storage or disposal facility, prior to receiving statutory authorisation to create or continue creating further HAW**. Under this principle:

(i) in the particular circumstances where geology, or other material infrastructure or technical factor, frustrated the siting of permanent local HAW storage or GDF, HAW producer communities would be able to recruit and contract other neighbouring communities to permanently store or dispose all HAW production as near to the production site as feasible;

(ii) such HAW production host communities would be compelled to directly demonstrate assured availability of fully functioning and operational storage or disposal facility, in the nearest neighbouring community, **prior to** grant of statutory authorisation for the construction or start up of new HAW producing nuclear reactors, or resumption of HAW production at existing reactors (for example, through extension of reactor operating life);

(iii) HAW producer communities (as defined) would be wholly responsible for seeking and securing suitable partner communities as storage or disposal hosts. Further, it would be the responsibility of producer host and storage/disposal host communities, respectively, to negotiate legally binding contracts, subject to punitive regulatory penalty for any default by either party, or their agent, at any time.

3.3 f. **A presumption in favour of HAW Responsibility Levy (HAWRL) on public sector funded retirement pensions, and pension funds, of Assembly Members (AMs), Welsh UK Members of Parliament (MPs), Welsh Members of the European Parliament (MEPs), and Welsh Local Authority Chief Executives (LACEs), in formal recognition of the direct consequence of their voting behaviour as decision drivers on continuing or new HAW production in Wales**. Change in status of local councillors to salaried councillors would automatically also bring these decision drivers within the ambit of this principle. The principle aims to provide the public concrete assurance that political decision drivers in Wales (at local as well as central level) would continue to remain materially accountable and responsible for HAW production decisions, beyond the term of office. This would end the privilege of walking away with clean hands from advocacy decisions that lock the nation into HAW production, and lock future generations into HAW management and disposal risk far into distant futures. Under this principle,

(i) AMs, MPs, MEPs and LACEs (decision drivers) alike would individually be held directly responsible throughout their lifetime, for voting behaviour that causes to bring into existence an unenviable burden on future generations. Namely, the burden of ensuring HAW remains environmentally safely and permanently isolated from the biosphere for the next 250,000 years, and to take all necessary remedial measures should any failing compromise that assurance. Previous decision drivers from the 1950s onward, including those now long retired from office, remain equally subject to this principle by virtue of the existence of legacy Made in Wales HAW;

(ii) decision drivers would be required to canvass actively, convince and deliver at least one local community from within their electoral constituency to volunteer hosting a permanent store or GDF, in the national interest. Decision drivers would be

reminded *"there is no 'best' or 'most suitable' generic type of geology"*[17]. In the case of a GDF, it may be a question of drilling deeper still in some locations than in others. Thus, every constituency is eminently suited to deep investigation, subject to *"six high level site selection criteria"*[18], assuming a depth of overburden in the range of 200m to 1000m;

(iii) decision drivers would pay an annual HAW storage/disposal Levy from their tax funded final salary pension entitlements, and maturity pension funds, from the date of claim for such retirement benefits. The Levy would be a lasting reminder of the momentous implication of voting behaviour. Decision drivers could welcome such permanent ties to votes on HAW creation, as milestones in political career. The Levy would be comfortably affordable. Publicly funded pension entitlements for these classes of decision drivers are evidently highly generous, compared with the level of basic state retirement pension on which rely the majority of ordinary retirees, after a lifetime of hard graft at a fraction of tax funded salaries that are the common preserve of decision drivers whilst in office. Funds raised through this Levy could be held in a ring fenced escrow HAWRL account[19] on the Treasury books, strictly at the disposal of future generations saddled with the task of managing the operation and eventual closure (as well as undertaking post-closure remedial measures as arising), of one or more storage facility or GDF. The HAW Responsibility Levy could be applied annually, along the following lines:

(alpha) at 5% plus CPI or RPI (which ever is higher), direct from a decision driver's pension payments;

(beta) at 10% plus CPI or RPI, direct from a decision driver failing to deliver a volunteer storage facility, or GDF, host community from their constituency. No exemption permitted whatever;

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17 DECC (2013) *Review of the Siting Process for a Geological Disposal Facility*. Joint Consultation by DECC, the Welsh Government and the Northern Ireland Executive. URN 13D/250, September 2013: Para.3.9. Available at: https://www.gov.uk/government/consultations/geological-disposal-facility-siting-process-review

18 Para.3.21, footnote12, above, referring. The six high level site selection criteria being, respectively:

- Geological setting;
- Potential impact on people;
- Potential impact on the natural environment and landscape;
- Effect on local socio-economic conditions;
- Transport and infrastructure provision;
- Cost, timing and ease of implementation.

19 A ring fenced escrow account should be established expressly separately from, and supplementary to, the UK Government's provisions under the DECC (2011) *Waste Transfer Pricing Methodology for the disposal of higher activity waste from new nuclear power stations*. Department of Energy & Climate Change. URN 11D/923, December 2011. Last available at http://www.decc.gov.uk/en/content/cms/meeting_energy/nuclear/new/waste_costs/waste_costs.aspx

(gamma) at 15% plus CPI or RPI, direct from a decision driver declining to canvass or convince respective constituency communities of grave national need to volunteer hosting a permanent storage facility or GDF. No exemption permitted whatever; and,

(delta) to address recalcitrance, appropriate sanctions could be modelled on procedures prescribed by UK Parliament, under the regulations governing entitlement to the Job Seeker's Allowance. For example, where a decision driver serially fails to secure a permanent storage facility, or GDF, host volunteering community, deprivation of the full pension for an indefinite period[20] could be enforced.

Q4.

4.1 It is an indisputable fact that Anglesey and Gwynedd, respectively, have created significant quantities of HAW since 1965. This is already proving a burden on succeeding generations. The producing generations evidently failed to secure environmentally safe permanent storage or disposal facilities contemporaneously. It also means that having created HAW and claimed the benefits of its creation, Anglesey and Gwynedd inescapably fall fully responsible for its interim as well as ultimate fate. The beneficiaries' duty of care is neither defensibly nor equitably discharged by exporting the problem and dumping it in the laps of distant communities elsewhere, or on future generations.

a. All exported HAW can be recalled back to its rightful home in Anglesey and Gwynedd, respectively, under the principle of radiologically equivalent substitute waste (observation para.2.4 hereof, referring).

b. It would be advisable to bear in mind a corollary. To the extent Anglesey and Gwynedd (short hand for councils, local authority officers, elected officials, rate payers and local communities, in both cases) are at all content to see any HAW produced at their own hosted nuclear reactors, and prefer to see it dumped in someone else's back or front yard, to that extent neither Anglesey nor Gwynedd could rationally or equitably reject the siting, construction and operation of a nuclear waste dump in their own respective back or front yard. If Anglesey or Gwynedd HAW is safe enough to be dumped anywhere outside Wales in the rest of the world, it would be equally safe to dump the world's HAW in Anglesey and Gwynedd.

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[20] Reilly & Anor, R (on the application of) v Secretary of State for Work and Pensions [2013] EWCA Civ 66 (12 February 2013). Available at http://www.bailii.org/ew/cases/EWCA/Civ/2013/66.html

para.12: … *"For the Secretary of State, Mr Nicholls QC accepted that application of the prescribed procedure could lead to non-payment of Jobseeker's Allowance for an indefinite period of time."*

c. As stated in footnote 12, hereof, there is no ideal geology for HAW disposal. It may be a question of merely digging deeper than 300 metres, until strata layers are reached possessing suitable properties. Neither vacillation nor walking away stands up to scrutiny as equitable defence for enslaving either other current communities, or future generations, to permanent storage or disposal of HAW created by current generations in current host communities in Wales. Acceptance of putative benefits and disbenefits of hosting HAW production inescapably entails acceptance as well of putative benefits and disbenefits of hosting permanent HAW storage or disposal facilities by self same communities. There is no such thing as a one-sided coin.

4.2 The Welsh Government is obligated to collate and publish in full correct and reliably all inclusive baseline information on all Made in Wales HAW. This information is crucial for facilitating informed consideration of the costs and benefits of Welsh HAW production to date. Comparing actual historical cost data with actual income generation during the operating lifetime of each Welsh nuclear reactor, would cast fresh light on the true cost of building, operating and dismantling HAW generating power stations in Wales. Thus, in addition to income generation data, collated data should also show offsets for construction, maintenance, repair, upgrade, operating and projected dismantlement costs. The entire historical data should still be obtainable, as the real data ought to be available from audit verified actual annual financial transactions. In other words, for the next round of consultations, the information disclosed should be such as to:

a. render transparent, for the first time, the historically dark murky world of Made in Wales HAW. Time is surely ripe to shake off a zombie-like stupor under which wagon loads of SNF-HAW stealthily disappeared every week from Anglesey and Gwynedd, out of sight and out of mind, into some proverbial black hole somewhere well beyond Wales's borders; and,

b. provide an intelligibly comprehensible basis for estimating likely costs inherent to the proposed production of new SNF-HAW, albeit on vastly greater scale, at proposed new nuclear reactors at Wylfa (on Anglesey).

4.3 The following information needs to be collated and published, putting on record a full chronological history of creation of HAW in Wales since the 1950s, showing individual site annual production inventories, in both civil and defence sectors.:

(a) the location;

(b) the process resulting in the creation of Welsh HAW;

(c) the total quantity, by tonnage and radioactivity, of HAW produced weekly as well as annually to date;

(d) the gross annual income ensuing, to date, from process output;

(e) the gross annual financial cost incurred, to date,

(i) on on-site interim storage and management of Welsh HAW within Wales;

(ii) on provision and maintenance of special forces security measures at on-site interim storage sites in Wales;

(f) the gross annual cost incurred, to date,

(i) on transporting Welsh HAW off-site to Windscale/Sellafield/Seascale;

(ii) on storage and management of Welsh HAW at Windscale/Sellafield/ Seascale, pending processing;

(ii) on processing, containment storage, management, and clean up of spills and leaks of processed liquid Welsh HAW at Windscale/Sellafield/ Seascale, pending vitrification;

(g) the actual gross annual cost incurred to date, and the projected gross annual cost, of vitrifying all processed liquid Welsh HAW at Windscale/Sellafield/ Seascale, pending permanent disposal;

(h) the projected gross annual cost,

(i) of permanent disposal of all vitrified Welsh HAW currently in temporary storage at Windscale/Sellafield/Seascale, in eventual GDF;

(ii) of digging and engineering a GDF cavern somewhere at some point in time, 200-300 or more metres below ground, for permanent disposal of all vitrified and other packaged solid Welsh HAW created to date;

(iii) of ensuring a safely managed GDF for Welsh HAW, over the following 250,000 years;

(i) the actual gross annual cost as incurred to date, and the projected gross annual cost,

(i) of transporting residual solid Welsh HAW to identified surface or near-surface permanent disposal site;

(ii) of storage and management of residual solid Welsh HAW at identified surface or near-surface permanent disposal site;

(iii) of remedial measures at identified surface or near-surface permanent disposal site for residual solid Welsh HAW, following environmental compromise;

(j) post-closure projected cost of complete dismantlement of all nuclear assets, complete site clearance and reinstatement of the site to green field state, at each HAW production site.

4.4 In the next round of consultations, the following matters need addressing, bearing on Made in Wales HAW and CoRWM recommendations:

a. a list of all CoRWM recommendations;

b. an indication of which CoRWM recommendation could be implemented in Wales and how, and which could not;

c. identification of all measures that have already been put in place, amenable for satisfactory action on CoRWM recommendations considered implementable in Wales; and,

d. identification of all gaps in measures warranting prior rectification in order to implement satisfactorily any CoRWM recommendation in Wales.

4.5 The Welsh Government should further explain what its support for CoRWM's recommendations (Call para.10) actually means. Specifically,

a. Precisely how many years is *interim storage*?

b. *maintaining the security of such storage against terrorist attack*

This concern was first invoked by the Welsh Government in its response to the UK Government's 2007 Consultation, as published subsequently at para.1.11 in the 2008 White Paper[21] on geological disposal of radioactive waste. The risk from terrorist attack was subsequently addressed in the form of direct advice from the UK Office for Civil Nuclear Security (the OCNS), as published in the UK Secretary of State's 2010 Justification of Practices Supplementary Decisions. According to the Secretary of State[22],

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21 DEFRA (2008) *Managing Radioactive Waste Safely: A Framework for Implementing Geological Disposal.* A White Paper by Defra, BERR and the devolved administrations for Wales and Northern Ireland. Cm 7386. June 2008. Last available at http://mrws.decc.gov.uk/

22 DECC (2010) The Justification of Practices Involving Ionising Radiation Regulations 2004. The reasons for the Secretary of State's Decision as Justifying Authority on the Regulatory Justification of the Class or Type of Practice being: "*The generation of electricity from nuclear energy using oxide fuel of low enrichment in fissile content in a light water cooled, light water moderated thermal reactor currently known as the AP1000 designed by Westinghouse Electric Company LLC*." URN 10D/830. Department of Energy and Climate Change. October 2010. Last available at www.decc.gov.uk
The numbered paragraphs and text in [square brackets] refer to:
DECC (2010) The Justification of Practices Involving Ionising Radiation Regulations 2004. The reasons for the Secretary of State's Decision as Justifying Authority on the Regulatory Justification of the Class or Type of Practice being: "*The*

para.9.9 [9.9] … the UK's Office for Civil Nuclear Security (the OCNS) has concluded that the security risks of new nuclear power stations can be appropriately managed.

para.9.36 [9.34] The security of the civil nuclear industry in the UK is regulated by the HSE's Office for Civil Nuclear Security (OCNS) in accordance with the Nuclear Industries Security Regulations 2003 …

para.9.40 [9.38] The OCNS is satisfied with arrangements to guard against terrorism and believes that allowing new nuclear power stations to be built would be unlikely to increase the risks of terrorist attack.

para.9.49 [9.47] The Secretary of State is conscious of the significant detriments to health and the environment that could result from an accident or terrorist attack at a new nuclear power station. However, the scale of potential damage must be seen in the light of the robust regulatory regime which exists in the UK to prevent accidents and protect against security threats including terrorist attacks. The Secretary of State is also conscious of the good record of the nuclear industry in the UK and the regulatory regime which governs it.

(i) Has the Welsh Government accepted the assured advice from the OCNS, in whole or in part?

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generation of electricity from nuclear energy using oxide fuel of low enrichment in fissile content in a light water cooled, light water moderated thermal reactor currently known as the EPR designed by AREVA NP." URN 10D/831. Department of Energy and Climate Change. October 2010. Last available at www.decc.gov.uk

(ii) If the advice from the OCNS is accepted unequivocally, for what reason is the Welsh Government repeating the concern in Call, without qualification?

(iii) If the advice from the OCNS is accepted in part, what is the Welsh Government's residual reservation and reason? And, what additional measure has the Welsh Government determined to assuage residual reservation to its satisfaction? Is any of this information in the public domain?

c. *the need for research and development to support the optimised management and disposal of waste*

Subsequent to accepting unconditionally CoRWM's 2006 recommendation,

(i) what specific R&D has the Welsh Government identified in the Welsh context?

(ii) What specific research on optimised management and disposal of radioactive waste in Wales has the Welsh Government commissioned, or undertaken, since 2006?

(iii) What research reports are available?

4.6 Furthermore, the Welsh Government should adduce tabulated list of all matters (including supra-national and any other matters outwith its competence), on which it has "adopted a reserved position of neither support nor opposition", since inception. In each case, disclosure should show,

- the date the position was formulated;
- justification summary;
- whether currently persisting or abandoned;
- date superseded by proper policy; and,
- full policy reference.

This disclosure may assist the world outside the Cardiff Bay Bubble to get a handle on the extent to which, and the matters on which, a "reserved position" comprises normative policy in Wales.

4.7 The Welsh Government is obligated to demystify as well each imponderable at Call para.10. Namely:

a. *reserved its position*

(i) Does this mean the Welsh Government unconditionally supports all non-disposal alternatives for HAW? If so, what are those alternatives? Were any alternatives excluded?

(ii) By what criteria was this position formulated?

b. *the long term safety of radioactive wastes*

(i) What precisely is meant by “safety”?

(ii) What are the assessment criteria?

(iii) How many years is “long term”?

c. *a framework appropriate to the needs of Wales*

(i) What precisely are “the needs of Wales”, as regarding radioactive waste?

(ii) When were the “needs” first determined, by whom and under what criteria?

(iii) When did the Welsh Government last consult anyone outside the Cardiff Bay Bubble, on “the needs of Wales”, in relation to radioactive waste? Was the outcome published?

d. *the interests of Wales are taken into account in the development of policies on radioactive waste*

(i) What precisely are “the interests of Wales”, as regarding radioactive waste?

(ii) When were these “interests” first determined, by whom and under what criteria?

(iii) When did the Welsh Government last consult anyone outside the Cardiff Bay Bubble, on “the interests of Wales”, in relation to radioactive waste? Was the outcome published?

4.8 In so far as the Welsh Government is unlikely ever to reject either new or continued HAW production at Wylfa (for example), it should set out in the next round of consultations,

a. its justification on transferring unforeseeable, as well as unpredictable, risk to all 10,000 successive future generations. These are the future generations over the course of whose lifetimes the radiation dangers from the contents of Made in Anglesey HAW would slowly decay away; and,

b. the principles of ethics and law (as founded in ancient Welsh and in modern International law), underpinning that justification, and the government’s enthusiasm for elevated production of Made in Wales SNF-HAW at Wylfa for the foreseeable future.

4.9 **Stopping the buck on HAW storage/disposal with the voting behaviour of political decision drivers**

Plainly, the burden of all risks, construction, operation and closure of any permanent surface or near-surface store, or GDF, is expressly transferred to future generations, along with post-closure remedial measures should any failure transpire. Future generations, by definition, have no come-back on this one-sided, one-direction transaction. This is a grave bind. It is gravely unjust.

The reality of HAW production and accumulation is manifestly a direct consequence of the voting behaviour of political decision drivers. Such conscious political behaviour needs to be balanced with palpably suitable direct responsibility, persisting beyond the voting moment.

It cannot be acceptable, proper or reasonable for decision drivers to indulge in voting behaviour on the principle of passing the buck to future generations. Decision drivers appear to have fallen into a habit of making momentous decisions on creating higher activity radioactive waste, while remaining divorced from the extremely long term consequences and risk for future generations.

A way needs to be found that welds political decision behaviour to the national interest obligations on securing and ensuring safe permanent storage and/or disposal all HAW created thereby. In recognition of the gravity of burden on future generations for hundreds of thousands of years, all decision drivers (including those already retired from office) who voted or vote for continuing HAW production (whether at existing or new nuclear reactors), need to be held continuously accountable, as suggested in the principle on HAW Responsibility Levy (observation para.3.3.f hereof, referring).

4.10 Stopping the buck with nuclear reactor host communities

For their part, local communities appear to have fallen into a habit of inviting, lobbying or competing for, and enjoying any manner of socio-economic and community benefits associated with hosting industrial scale HAW production, while passing the buck on safe permanent HAW storage and/or disposal.

Plainly, such buck passing on long-lived radiotoxic waste transfers all unforeseeable and unpredictable risk to distant future generations for hundreds of thousands of years. In that regard, local communities hosting nuclear reactors should no longer be permitted to continue avoiding legitimate expectations, on their proper role in discharging cradle to grave responsibility contemporaneously, for ensuring biologically and environmentally safe permanent disposal of all HAW created under their watch, on their home turf.

Reactor host communities should thus be obliged to strike fair and equitable balance, within the lifetime of generations hosting the HAW creating reactors. It should be incumbent on HAW producer communities to establish direct links with other communities hosting (or, interested in

hosting) safely working permanent surface or near surface storage facilities, or GDF.

A false divorce between the hosting of creation and the hosting of safe permanent HAW storage/disposal, warrants expunging. Such evident reactor host deficit needs to be made good, in the interest of minimising encroachment on unfettered rights of future generations. A fair balance between HAW production by current generations and unencumbered degrees of freedom for future generations, may require:

a. each current community hosting industrial scale HAW producing reactors but lacking permanent storage or disposal facility, to actively seek out and negotiate directly with other communities either hosting, or interested in hosting, a GDF, for disposal of all prevailing as well as any historic HAW;

b. each prospective community seeking to host new or additional industrial scale HAW producing reactors, to actively seek out and negotiate *a priori* directly with other community or communities hosting (or, interested in hosting) permanent storage facilities or GDF, for storage/disposal of all proposed future HAW production;

c. mandatory closure of all HAW producing reactors where the reactor host community fails or declines to secure a GDF host volunteer community, within a specified period, in the case of existing hosts. And, automatic cancellation of proposed new nuclear reactors where a prospective reactor host community fails or declines to secure HAW storage/GDF host, within a specified period of time following the date of announcement of new build, but prior to commencement of site construction work; and,

d. commensurate updating of all nuclear reactor site licensing conditions accordingly, by respective regulatory authorities.

Planet Hydrogen

Question 1 Yes, for the reasons set out in the NFLA response to Q1 of this consultation. I add that the amount of radioactivity (million TBq, disintegrations per second) of Spent Fuel that would accumulate and be stored on Mon would be considerable if a Wylfa B were consented and built.

A 16 GW nuclear new-build programme would produce over 200 mTBq of Spent Fuel (at five sites inc Wylfa) compared to all legacy wastes totalling 87 mTBq. About one fifth or 40 mTBq of this new waste would be stored at Wylfa if a policy of that of the Scottish Government (near site, near-surface) were adopted by the Welsh Government (which Planet Hydrogen supports). So a Wylfa B would produce waste with a radioactivity amounting to nearly half of that from all legacy wastes (mainly stored at Selafield).

The objections of local councillors and politicians to waste storage on Mon should be rebuffed on the grounds of being morally feeble (wanting the jobs in generation but expecting others, probably in other countries to accept the resulting waste) and over-ruled on grounds of it being a planning matter of national significance. That amount of waste would have accumulated in Wylfa B's Interim Store anyway by around 2085 (assuming 60 years of operation).

I also add that even a 16 GW new build programme may require more than one GDF considering the footprint of the tunnels and the fractured and wet geology of the UK. It is not clear at all if one let alone more than one GDF may become available. So near-site storage should be the primary option and may be the only option, and the Interim Stores may become default options anyway. The ONR recently said in a Forum meeting that the Stores have to be sufficient to store all the waste arising from operation (assumed to be around 60 years).

I attach a paper I wrote and presented to the DECC-NGO nuclear Forum (and a shorter presentation paper) which gives more detail of the quantities of waste arisings and multiple GDF issues. (Annex 1)

Question 2: No, as stated above, near-site, near-surface storage should be considered - as the preferred option. Note that disposal is a deceptive term and arguably incorrect use of the 'Oxford English dictionary definition of the word in what is a major issue requiring informed public debate.

The so-called 'burning' of HAWs in fast burner reactors (eg Hitachi PRISM under consideration by the NDA / DECC) should also be considered, at least to be aware of the various practicalities and problems and to make a more robust case for near site, near-surface storage. There are numerous issues with such a 'disposal' route even if proven technically (possibly by 2030's according to DECC).

Question 3:See responses above.

Question 4: Considering the scale of new-build Spent Fuel waste arisings at a Wylfa B and the uncertainties and issues with GDF storage or fast burner reactors, the Welsh Government should urge the Westminster Government to delay consenting any new-build until or unless a robust long-term waste storage solution is identified.