RESPONSE TO DEPARTMENT OF ENERGY AND CLIMATE CHANGE CONSULTATION ON THE PROPOSED JUSTIFICATION PROCESS FOR THE REUSE OF PLUTONIUM

Introduction

1. Horizon Nuclear Power is a 50:50 joint venture between E.ON and RWE, formed in January 2009. On 29 March 2012 E.ON and RWE announced that they no longer intended to pursue nuclear new build in the UK, and that they were seeking new ownership for Horizon. Whilst at the time of this submission the sale process is still in progress, Horizon remains a going concern with plans in development to deliver around 6GW of new nuclear capacity at Wylfa and Oldbury.

2. We welcome the opportunity to respond on the matters raised in this consultation.

3. The UK faces pressing challenges in its energy supply as it seeks to de-carbonise the economy, ensure security of supply and maintain affordable energy. This challenge is in the context of the closure of 11GW of fossil plant by 2015 to meet the Large Combustion Plant Directive and the requirement for over 20GW of fossil plant to either comply with the Industrial Emissions Directive or close by 2023. Moreover, we expect the last of the AGR plants to have closed by 2030, leaving Sizewell as the UK's only operating nuclear power plant of the existing fleet.

4. New nuclear power can play a vital role in providing secure, sustainable and affordable electricity to the UK as part of a balanced energy mix. It is the UK's main economically viable large scale, base-load low carbon generation technology.

5. Horizon is responding as a potential operator of reactor technology and thus may be affected by the outcome of the regulatory justification process.

6. We also have knowledge and experience of the regulatory justification process through our close support of the Nuclear Industry Association (NIA) application for the regulatory justification of AP1000 and EPR.

Do respondents agree with the Government's view that it is sensible to issue generic guidance for the reuse of Plutonium? We welcome comments on this proposed approach.

7. Regulatory justification is a generic high level process that takes place at the start of permissioning an activity. The issuance of generic guidance is entirely consistent with this philosophy.

8. The guidance issued for consultation is already very general and is agnostic on the technological choices that can be proposed, which is entirely proper.

9. To be useful, generic guidance must be relevant to all the potential Plutonium re-use scenarios that might reasonably be proposed. If scenarios other than re-use via irradiation in a reactor are likely then the draft guidance is not sufficient. We also believe that the guidance ought to identify that applications should only be put forward for scenarios that are under serious consideration in the UK.

Is the proposed application and decision-making process clear, appropriate and proportionate? If not, how can they be improved?

10. Horizon has comments on a number of aspects on the proposed process.

11. *"Justification of Fuel Irradiation Stage and Interaction with other Justifications for generation of electricity using nuclear technology":* The proposed guidance needs to consider further how the fuel irradiation stage of the overall Justification will be approached. There are 2 cases to consider:

a. Utilisation of an already justified reactor technology such as AP1000 or EPR

12. AP1000 and EPR are already justified in the UK and have Regulations passed into law. Both these reactor types are understood to have the capability for Plutonium utilisation although there has been no formal assessment of this capability (e.g. through the Generic Design Assessment (GDA) process). However the current regulatory justification decisions are only applicable to uranium oxide utilisation. DECC will need to ensure that if AP1000 and EPR are proposed for Plutonium re-use, there will not be a detrimental impact on existing regulatory justifications. We are not clear whether these reactor technologies will be justified for Plutonium use by virtue of wider regulatory justification Regulations enacted for a wider Plutonium re-use scenario; or alternatively whether the existing regulations will be revised to account for Plutonium re-use. It would be helpful if the Government could clarify its view on this.

13. Regardless of the selected approach, it is essential that the existing regulatory justification for AP1000 and EPR are not affected or threatened.

b. Utilisation of a reactor technology that does not have an existing regulatory justification decision

14. Although not discussed in the consultation documents, it is a matter of public record that there are other technologies being promoted in the UK for Plutonium re-use that do not have a regulatory justification decision. These technologies are AECL's CANDU 6 and GE-Hitachi's PRISM.

15. Given the recent decision by DECC that only reactor designs undergoing Generic Design Assessment (GDA) should be considered for regulatory justification, the guidance needs to advise whether similar evidence of credibility for UK deployment is required for a reactor technology to be proposed for fuel irradiation. Additionally, the guidance needs to advise whether such reactor technologies can be justified as part of the wider consideration for Plutonium re-use or whether separate regulatory justification decisions (such as were made for AP1000 and EPR) will be required.

Approach to Identifying Practices

16. It is for Government to make a decision on what is a new or existing practice and it is recognised that Government's decision will depend on the nature of the application that is made.

17. However the guidance should identify the factors that Government will take into consideration when determining what is a practice. The guidance needs to address the possibility that at least some Plutonium re-use scenarios may encompass more than one practice. We note that the regulatory justification determination in relation to AP1000 and EPR is informative in this regard:

18. *"According to guidance published by the Department for Environment, Food and Rural Affairs (Defra) in August 2007, if a Regulatory Justification decision is to apply to a class or type of practice, the benefits and detriments of the different practices that make up that class or type of practice are likely to be broadly similar. In the consultation on the*

Application, the Government expressed its preliminary view that a class or type of practice is best defined by reference to a common set of technical characteristics in so far as they affect the benefits and detriments of that class or type of practice." (Ref: New Nuclear Power Station Designs: Determinations on Class or Type of Practice, The Justification of Practices Involving Ionising Radiation Regulations 2004) http://www.decc.gov.uk/assets/decc/what%20we%20do/uk%20energy%20supply/energy%20mix/nuclear/whitepaper08/actions/regjust/1_20091106131726_e_@@_justificationpracticesdetermination.pdf)

Parliamentary Stage
19. The regulatory justification Regulations for AP1000 and EPR were laid before Parliament and voted upon before being passed into law. It would seem sensible to have a similar step for a Plutonium re-use decision given the highly strategic nature of the Plutonium re-use activities. A parliamentary stage for Plutonium re-use activities could perhaps make any regulatory justification decision secure in law.

Other comments on the Process
20. **Para 31:** we strongly support the expectation to avoid the use of sensitive information in the application or the determination (although sourced information may itself be sensitive). regulatory justification is a high level process and the arguments should be derived and supported without citing sensitive information. Such openness and transparency is also important in getting confidence in the regulatory justification decision.

21. **Para 41** states that the Secretary of State (SoS) will make a judgement with all the benefits and detriments associated with the class or type of practice being captured. For regulatory justification it should be sufficient that the SoS conclude only that there is a net benefit. For such a judgement, all detriments need to be captured, but only sufficient benefits (not necessarily all) identified to show that on balance there is a net benefit.

Is the indicative list of information in Table 3 sufficient and appropriate to assist in the making of justification applications and justification decisions? Does the indicative list omit any relevant information, or include any unnecessary information?
22. Table 3 is clear on the different phases of the Plutonium re-use lifecycle.

23. We have the following comments on Table 2.

24. Environmental: total carbon emissions across the full lifecycle are sought (and to be compared to the full lifecycle for conventional uranium fuel). Regulatory justification is not about finding the “best” option: it should simply show that the benefits outweigh potential detriments. Thus this comparison is only relevant if the arguments for benefits of Plutonium re-use invoke improved life-cycle carbon emissions compared to conventional uranium fuel. We agree that it is legitimate to seek full life cycle carbon emissions information to demonstrate that there is not the detriment of high carbon emissions.

25. Information on the net contribution to UK’s overall total carbon emissions is similarly only relevant if Plutonium re-use benefits rest upon making a contribution to decarbonisation of UK electricity generation.

26. Benefits around contribution to UK security of supply are only relevant if this is part of the argument for overall benefit being made.

27. Information on the impact on the Geological Disposal Facility (GDF) storage capabilities should be sought as part of the required information for fuel irradiation stage. The detriment from the higher heat load associated with spent MOX fuel needs to be part of the overall balance of detriments versus benefits.

28. Plutonium “baring” should be Plutonium “bearing”.

Are there any other ways in which the draft justification process can be improved? If so, how?

29. We would suggest that there could be greater clarity on whether there will be any public engagement activities beyond the formal public consultation process during consideration of the regulatory justification application and how they might work.

30. Given the role that regulatory justification must play in ensuring that members of the public receive appropriate information and are consulted about the high level aspects of the safety of Plutonium re-use, full engagement with the public during the regulatory justification process will be essential.

31. We also note that the Nuclear White Paper (January 2008) proposed a once-through fuel cycle, and that this is the basis of the following National Policy Statement (NPS) for Nuclear Energy (EN-6). DECC must ensure that any additional proposals around Plutonium use do not undermine these critical aspects of the policy framework for the new build programme.

32. The process could helpfully advise that the GDF does not require regulatory justification and that this position is consistent with ICRP guidance. The GDF is integral not only to Plutonium re-use (of necessity as final disposal is needed for this practice) but also to other already justified UK practices and so the GDF will not require further regulatory justification. The International Commission on Radiological Protection (ICRP) emphasise that waste management and disposal operations should be treated as an integral part of the practice generating the waste (See ICRP publication 81, 1998 *Radiation protection recommendations as applied to the disposal of long-lived solid radioactive waste*)