Nuclear Free Local Authorities

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UK Government's 'Justification' draft decision on new nuclear power stations – responding to the official consultation

This NFLA Policy briefing considers: 'The Justification of Practices Involving Ionising Radiation Regulations 2004, Consultation on the Secretary of State's Proposed Decisions as Justifying Authority on the Regulatory Justification of the New Nuclear Power Station Designs currently known as the AP1000 and the EPR'. This policy paper has been prepared by the NFLA Scotland Policy Adviser, Pete Roche.

1. Introduction

The documents for this consultation are available to download from the link:

http://www.decc.gov.uk/en/content/cms/consultations/reg_just_cons/reg_just_cons.aspx

The consultation, which closes on **22nd February 2010**, is particularly important because the Secretary of State for Energy and Climate Change is proposing to agree that the economic and social benefits associated with building new reactors outweigh any health detriments caused.

The suite of documents published includes:

(1) A short consultation document. (1)
(2) A proposed decision on the Westinghouse AP1000 reactor-type. (2)
(3) A proposed decision on the Areva EPR reactor-type. (3)
(4) Technical advice to inform the Justification decision. (4)

1.1 The Justification Process

The concept of "Justification" is based on an internationally accepted principle of radiological protection. This states that no practice involving exposure to ionising radiation should be adopted unless it produces sufficient benefits to the exposed individuals or to society, to outweigh the health detriment it may cause. This principle is derived from recommendations of the International Commission on Radiological Protection (ICRP) and is included in the European Council Directive 96/29/Euratom of 13 May 1996.

Under these European Union regulations, companies hoping to build a new class or type of nuclear facility must show the benefits outweigh the potential health risks - this is known as the Justification Process. This has been incorporated into UK law under the Justification of Practices Involving Ionising Radiation Regulations 2004. (5)

In March 2008 the Government issued Guidance (6) and invited nuclear companies to put forward new reactor designs by June 2008 for a justification decision.

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An application was made by the Nuclear Industry Association (NIA) in June 2008 on behalf of those energy utilities interested in developing new reactors. The Department of Energy and Climate Change (DECC) published a package of information, including the NIA application, for consultation on 17th December 2008. (7) The consultation closed on 25th March 2009. An A NFLA briefing on this consultation appeared as New Nuclear Monitor No.15 (8) and the NFLA response is available on its website http://www.nuclearpolicy.info. (9)

The current consultation, which was launched on 9th November 2009, is based on the Secretary of State's proposed decisions on two new reactor types "*with the aim of testing the proposed decisions, and the evidence on which they are based, and giving people the opportunity to raise any other matters which they think are relevant*".

Further information on Justification is available on the DECC website (10), including all submissions to the consultation which closed in March 2009. This site explains why any Justification decision will be ***UK-wide*** and includes minutes of meetings of the Justification Co-ordination Committee, some of which have been attended by the Scottish Environment Protection Agency.

1.2 Independent decision-making?

Legislation on the Justification Process requires the "Justifying Authority" to decide whether a new class or type of practice resulting in exposure to ionising radiation is justified by its economic, social or other benefits in relation to the health detriment it may cause. Several respondents to earlier consultations have questioned whether the Secretary of State for Energy and Climate Change should be acting as the Justifying Authority given that he has already expressed support for new reactors**.**

2. The Consultation Document

The consultation document includes all of the consultation questions, which appear throughout the two decision documents. The document explains that the Regulations allow for a public inquiry or other hearing as one of a range of possible steps that the Secretary of State can take if he considers it expedient to do so. A number of respondents to the consultation on the Application requested a public inquiry, arguing that an inquiry chaired by someone independent of the Government was needed to ensure an open and transparent decision. The Secretary of State is keeping this under review and does not propose to make a final decision until the end of the process. (Paragraph 39 & 40)

2.1 Calls for a Public Inquiry

The Nuclear Consultation Group, a group of academics and experts with specialist knowledge on nuclear power and energy have led calls for an inquiry into the 'Justification' of new reactors. The group wrote (11) to the Department of Energy and Climate Change in March 2009 explaining that Justification, once finalised, may foreclose on any future discussion on issues crucial to nuclear power - it is vital that this process is opened up in order to allow for meaningful and realistic examination of evidence in a public forum. The Government proposes to hold a public event with Government officials on the draft decision statement. This is not the right way forward - there should be an inquiry into Justification where the evidence can be publicly tested. (12) The NFLA have sent in a similar request for a public inquiry within its own response in March 2009.

The Welsh Environment Minister, Jane Davidson, wrote to Lord Hunt of Kings Heath in June 2009 expressing support for a public inquiry on the grounds of concern over the safety and security of the management of future nuclear wastes. (13)

An inquiry would be a good opportunity to examine issues such as plans for safely managing radioactive waste from new reactors. The disposability of the high burn-up spent fuel from new

reactors, and the possibility that spent fuel will be stored for up to 160 years at reactor sites, require full discussion and proper consultation in an open and transparent manner. This has not happened thus far and represents a significant failing in the consultation programme that should and could be rectified through an inquiry.

3. Justification Document - Volumes Two & Three

The two decision documents, volumes two and three, are both very similar and include a chapter on each of the identified detriments: health detriments; nuclear waste; environmental detriments and safety and security risks. They also have chapters on each of the identified benefits: carbon reduction benefits; security of supply benefits and economic benefits.

3.1 Health Detriment

At an NFLA seminar held in Glasgow in October, delegates heard from radiation consultant, Dr Ian Fairlie, about the findings of a report by the German government on cancer rates around nuclear sites in Germany. (14) The German KiKK study reported a ***1.6-fold increase in solid cancer risks and a 2.2-fold increase in leukaemia risks, among infants under 5 years old living within 5 km of all German nuclear power stations. These increased cancer rates were unequivocally linked to proximity to nuclear reactors.*** The study's findings support over 60 other studies worldwide on increased childhood cancer near nuclear power stations.

The Justification decision documents point out that the Government's Committee on the Medical Aspects of Radiation in the Environment (COMARE) is currently undertaking a further review of the incidence of childhood cancer around nuclear power stations, with particular reference to the KiKK study and expects the outcome of this review to be available at the start of 2010.

NFLA has learned that COMARE's review will not be published until March 2010. It is important that consultees, such as NFLA, are given the opportunity to be fully informed about the findings of the COMARE review before submitting comments on the Justification consultation. The NFLA chair, George Regan, has therefore written to the Secretary of State to request that the deadline for comments on the Justification Consultation is postponed until after the publication of the COMARE review of KiKK. A response from the Secretary of State has refused to extend the consultation to allow consideration of COMARE's report. It notes that, should the COMARE report indicate any specific concerns that Regulation 10 of the Justification regulations allow for a decision to be reviewed at a later date (15).

In addition, the Childhood Cancer Research Group (CCRG) at Oxford University has been commissioned by the Department of Health to undertake a study which will extend earlier investigations into childhood cancer excesses around Seascale and Dounreay and also consider adult cancer incidence in these same areas. But preliminary work will not start on this until January 2010. (16)

3.2 Nuclear Waste

Chapter 4 of both decision documents deals with nuclear waste.

Paragraph 4.1 is crucial for both this and the National Policy Statement (NPS) consultation. It quotes ICRP Publication 77, which states that "*Waste management and disposal operations are an integral part of the practice generating the waste. It is wrong to regard them as a free standing practice that needs its own justification*."

This implies that, under the current Government proposals, the disposal of spent fuel and nuclear waste from new reactors may ***not*** be subject to further public scrutiny after 22nd February 2010. It implies that, if the two draft Justification decisions are agreed then a

geological disposal facility will also be deemed to be justified. It also implies that the Infrastructure Planning Commission (IPC) could simply be told the strategic question of whether nuclear waste should be disposed of in a geological repository has already been decided and any planning application for such a facility only needs to be examined with regard to local planning issues. This clearly bolsters the case for a public inquiry on justification.

Paragraph 4.6 highlights a paper that summarises the Government's evidence on nuclear waste, published for the NPS consultation. (17) This report (para 19 and 88) mentions the Nuclear Decommissioning Authority's so-called "disposability assessments". (18) The Government is relying on these documents to support its conclusion that "*effective arrangements will exist to manage and dispose of the waste that will be produced from new nuclear power stations.*" (19) These disposability assessments have been submitted to the Generic Design Assessment (GDA) process for review by the Environment Agency. The Environment Agency review will not be available for public comment until the Agency carries out a consultation exercise on its part of the GDA in Spring 2010. So, again, respondents are being asked to respond to a consultation with incomplete information. A public inquiry would enable cross-examination of both the NDA and the Environment Agency on the subject of disposability of high burn-up spent fuel.

The Government's summary of evidence on nuclear waste (20) also confirms that it is possible that on-site storage of spent fuel may have to continue on new reactor sites for up to 160 years. (Paragraph 53) This has clear implications for the potential health detriment of new reactors.

In addition, the process of finding a site for a deep geological disposal facility is at a very early stage. It may, in fact, not be possible to make a safety case for such a facility. Clive Williams of the Environment Agency has specifically stated that: *"work may or may not indicate that an acceptable safety case can be made."* (21)

In August 2009 the Environment Agency produced a new list of nine "*major knowledge limitations on the technical issues*", (22) and in its November 2005 review of Nirex's disposal plans, the Agency listed ten key technical challenges "...*where further work is needed before an acceptable repository safety case could be generated*." (23) In October 2009 the EU Joint Research Centre listed nearly 40 technical issues indicating that nuclear waste disposal is far from a proven waste management technique. (24) It is critically important to realise these technical problems could mean the risk calculations produced by the nuclear industry for a geological disposal facility are of the order of 10,000 to one million times out. This has huge implications for the health detriment associated with new reactors.

As well as technical barriers to waste disposal, there may also be political ones. The three Cumbrian authorities looking into whether or not to volunteer may yet decide against hosting a deep geological disposal facility, leaving the Government with no volunteers. It is worth noting that para 4.78 of the Justification decision documents explicitly states that it is prepared to "*develop alternative ways to implement*" geological disposal i.e. override a Community's wishes – if the voluntarism approach to disposal does not work.

On liquid and gaseous discharges of radioactive waste paras 4.123 – 4.126 attempt to reconcile the fact that the UK is committed to a progressive reduction of radioactive discharges into the marine environment with the construction of new reactors. The Secretary of State concludes that he is satisfied that discharges will remain within limits agreed by the regulators, but he does not say how the UK will meet its OSPAR commitments other than referring to the Governments updated 'Strategy for Radioactive Discharges'. (25)

3.3 Safety and Security

Chapter 6 deals with the possible release of radiation into the environment following a major accident or terrorist attack. This chapter concludes with an acknowledgement of the extent of the risk of detriments to health and the environment that would result from a major accident or

terrorist attack at a new nuclear power station. However, it says this must be seen in the light of the robust regulatory regime which exists in the UK to prevent accidents and protect against security threats such as terrorist attacks.

In Sweden, a country with a reputation for a regulatory regime which is just as robust as the UK's, the main power supply to the Forsmark-1 reactor was interrupted on 25th July 2006. Two of the four backup generators failed to start, but luckily two were sufficient to run part of the plant's cooling system. If they had not started there could have been a catastrophic meltdown. A former director of Forsmark commented that: "*it was pure luck there wasn't a meltdown*". This highlighted how frequently incidents have occurred in countries with apparently robust regulatory regimes and how vulnerable we are to nuclear catastrophe. There have been widespread and frequent problems in the US and Germany, for example, and a similar incident took place in Belgium in July 2005. (26)

Nuclear safety regulators from three countries – the UK, France and Finland, recently sent a joint letter to Areva asking them to make improvements to the initial EPR design. (27) The US Nuclear Regulatory Commission had sent a key component of the Westinghouse AP1000 back to the drawing board. (28) The Safety Shield Building – the outer structure surrounding the AP1000 containment - does not meet "fundamental engineering standards" with respect to design basis loads. It has several functions, including holding a large tank of water so that in the even of an accident it can be dribbled over the surface of the steel containment dome. It is intended to protect the reactor from severe weather including tornado-hurled projectiles, hurricanes, earthquakes and air crashes. It also adds shielding in the event of a severe accident. But the NRC was not convinced the Safety Shield Building would protect the reactor from "external" events like earthquakes, tornadoes and high winds. (29)

While these actions might be seen as "robust" regulation, they also add to concerns because the Health and Safety Executive is expected to finish its Generic Design Assessment by June 2011 – to a fixed timetable - against a background of staff shortages. (30)

The consequences of a successful attack on a nuclear facility would depend on a wide range of variables, such as the type of facility, the extent of the damage and the size of any radiation release; weather conditions; the efficiency of countermeasures. A study by the UK's National Radiological Protection Board (NRPB) on a release from the Sizewell B reactor suggested over a thousand fatal cancers might result with crop restrictions necessary over 1,000km^2. (31)

New reactor sites will also be spent fuel stores. These stores could well be even more vulnerable to attack than the reactors themselves. In a worst-case scenario, a successful attack could result in the loss of water from a spent fuel storage pond, leading to ignition of the fuel. According to a US nuclear security specialist, this could result in large releases of radioactivity. A 1997 study done for the US Nuclear Regulatory Commission estimated the consequences of a spent-fuel fire at a pressurized water reactor (PWR) could include 54,000–143,000 extra cancer deaths. (32)

3.4 Diverting Investment

Chapter 7 deals with the NFLA contention that investing in new reactors will divert investment from other low carbon technologies and energy efficiency. The Government argues it is taking action to reduce carbon emissions on many different fronts including ensuring a diverse low carbon energy mix and investing in energy efficiency. The NFLA argues that building new reactors has a high opportunity cost - the cost of forgoing the alternative outcomes that could have been purchased with the same money – and this needs to be taken into account when analyzing whether the benefits outweigh the detriments.

New Nuclear Monitor No.15 argued that spending on new reactors is likely to have a negative impact on more cost effective carbon abatement solutions, and that in fact, the Government's

strong focus on carrying out 'facilitative actions' to speed up new reactor construction is delaying a local energy revolution.

In the 2003 Energy White Paper local authorities were promised a "step change" in policies and programmes to deliver energy efficiency. (33) The 2003 White Paper included encouraging local authorities to take the lead, acting as catalysts for change. Some local authorities have indeed been carrying out some innovative climate change strategies, but without the central government support these schemes will never be ambitious enough or at the scale required to meet carbon abatement targets. The UK is still waiting for the step change in energy efficiency which was promised six years ago. (34)

The Government's Low Carbon Transition Plan (35) expects 30% of UK electricity to come from renewables by 2020 and 10% from nuclear and coal with carbon capture. But only 2 of the 30% would be from small-scale renewables - whereas the solar PV industry alone expects to provide 12% across Europe. The difference between 2 and 12 would be enough to save us having to replace our nuclear reactors. (36)

The Government's proposed Feed-in Tariff, or 'Clean Energy Cashback' scheme has been set at a rate that is inappropriately low. Alan Simpson MP, who advised the Government on Feed-in Tariffs, says we should aim to get much more than 2% of electricity from microgeneration. *"If they were five times as ambitious, it would only cost the average family another £2 a year"*. But, according to *The Guardian*, the nuclear industry has been lobbying against support for renewables because it undermines the case for new nuclear stations. (37)

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