

# *Nuclear Free Local Authorities* new nuclear monitor



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## **NFLA / STOP HINKLEY SUBMISSION TO THE NATIONAL INFRASTRUCTURE DIRECTORATE OVER THE PROPOSED HINKLEY POINT C NUCLEAR REACTOR, SOMERSET, SOUTH WEST ENGLAND**

### **i. Introduction**

The Nuclear Free Local Authorities (NFLA) has jointly submitted to the Planning Inspectorate's National Infrastructure Inspectorate (NID) with the Stop Hinkley Campaign a formal response to the planning inquiry over the proposed construction of a new nuclear power station at the Hinkley Point site in Somerset, South West England. The submission has been jointly developed by the NFLA Secretary, the NFLA Policy Advisor and a representative from the Stop Hinkley Campaign.

The NID, formally the Infrastructure Planning Commission (IPC), is seeking responses from all interested parties by May 3<sup>rd</sup> 2012. It will also hold a series of local meetings and deliberate on its response to EDF's application to develop a new nuclear power station. It is expected to make its decision and inform the Secretary of State for Energy and Climate Change by the end of the year. The Secretary of State takes the final decision on the planning application.

The planning application comes at a time of great stress on the probability of a new nuclear power construction programme. The two German energy utilities, RWE Npower and E-on, have pulled out of developing new nuclear power stations at Wylfa in Anglesey and Oldbury in South Gloucestershire. They state issues over the financial implications of a change in German Government energy policy (phasing out nuclear power in the country) and the difficulties in financing new nuclear reactors in the UK.

The CEO of Centrica, who plan to provide 20% of finance for the Hinkley Point development, has also questioned this investment unless the UK Government provides firm price guarantees for new nuclear power. The CEO of GDF Suez, who are considering developing a new nuclear reactor at Sellafield Moorfield has given a similar type of statement.

The CEO of EDF has repeatedly indicated that investment decisions over new nuclear build in the UK will be made at the end of the year, only after this planning process is concluded.

The NFLA / Stop Hinkley submission focuses particularly on concerns over radioactive waste management, flooding, nuclear emergency planning and local issues around effects on tourism, the local housing market, transportation networks and the local environment. The submission also notes real concerns around a democratic deficit with this planning process. If local groups or NFLA members wish to send in individual responses to the NID consultation (the closing date is May 3<sup>rd</sup>) it should be emailed forthwith to [HinkleyPointC@infrastructure.gsi.gov.uk](mailto:HinkleyPointC@infrastructure.gsi.gov.uk). The submission follows on the next page.

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## **31 YEARS AS THE LOCAL GOVERNMENT VOICE ON NUCLEAR ISSUES**

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# NID CONSIDERATION OF PROPOSED NEW NUCLEAR REACTOR DEVELOPMENT AT HINKLEY POINT SOMERSET (REF EN0010001) – OFFICIAL SUBMISSION FROM UK AND IRELAND NUCLEAR FREE LOCAL AUTHORITIES (NFLA INTEREST REF - 10013470)

I provide an official written submission from the UK and Ireland Nuclear Free Local Authorities (NFLA) to the National Infrastructure Directorate (NID) for its consideration. The submission is in reference to the planning application made by EDF for construction of new nuclear reactors at the Hinkley Point site in Somerset.

NFLA are a cross-party local government organisation made up of Councils from England, Wales, Scotland, Northern Ireland and the Republic of Ireland. They raise concerns about all aspects of nuclear policy through its Secretariat and Steering Committee, based in Manchester. The NFLA Service Plan and its official views on nuclear policy can be found at its website – <http://www.nuclearpolicy.info>.

This response has been prepared jointly with Stop Hinkley, the locally based group opposed to the development of nuclear power at the Hinkley Point site. The group has a mailing list of 2,000 and a website – [www.stophinkley.org](http://www.stophinkley.org) – which explains in detail its opposition to the plans for a further nuclear power station. A separate response has also been submitted to the NID solely on behalf of Stop Hinkley.

Our submission considers a number of issues in relation to the Hinkley Point site and the role of the NID in considering the planning application for developing new nuclear reactors there.

## 1. Introduction

- 1.1 The Hinkley Point C (HPC) proposal by EDF Energy requires the local community in Somerset to host a growing inventory of spent nuclear waste fuel eventually reaching a total of around 6,800 fuel assemblies in 2080. After 2080, when HPC would be scheduled to close, the waste could well remain in storage for at least another 50 years until 2130. In terms of the area taken up in an underground repository this inventory represents 16% of the area required for legacy High Level Waste and Spent Fuel from 26 first generation Magnox reactors, 14 second generation Advanced Gas-Cooled reactors and 1 Pressurised Water Reactor (Sizewell B), as well as several research reactors and nuclear-powered submarines. Clearly this is a heavy burden to ask any individual community to accept.
- 1.2 Initially the UK Government envisaged that spent fuel might require interim storage for 160 years from the start of the power station's operation, because the reactor's final fuel load would require 100 years of cooling.<sup>1</sup> More recently the Government has cited work by the Nuclear Decommissioning Authority (NDA) which suggests that it *might* be possible to reduce the cooling period to 50 years by "*the judicious mixing of long-cooled and short-cooled*" spent fuel.<sup>2</sup> The House of Commons Energy and Climate Change Committee pointed out that from the perspective of the local community it is a misnomer to describe this as interim storage as it will be several lifetimes between the commencement of a power station's operation and the eventual removal of waste from that site.<sup>3</sup>
- 1.3 Whether spent fuel requires 50 or 100 years cooling, prolonged on-site storage of what is, in effect, high level radioactive waste is a matter of concern for local communities, as is

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<sup>1</sup> 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](http://www.umweltbundesamt.at/fileadmin/site/umweltthemen/umweltpolitische/SUP/SUP_UK_NPS/Waste/wasteassessment.pdf)

<sup>2</sup> Geological Disposal: Feasibility Studies exploring options for storage, transport and disposal of spent fuel from potential new nuclear power stations. NDA, November 2010

<http://www.nda.gov.uk/documents/loader.cfm?csModule=security/getfile&pageid=42986>

<sup>3</sup> The Government response to Parliamentary Scrutiny of the draft National Policy Statements on Energy Infrastructure, DECC, October 2010. Recommendation 17, pages 22-23 <http://www.official-documents.gov.uk/document/other/9780108509339/9780108509339.pdf>

acknowledged by the Government.<sup>4</sup> The proposal would involve moving waste from cooling ponds after an initial 10-year period of cooling; emplacement in the interim storage facility; possible refurbishment of the storage facility; and the possible encapsulation of waste and eventual transport of waste off-site. There will be discharges of radioactivity into the environment from the routine operation of the storage facility. Each time the waste is moved or involved in a process such as encapsulation or packaging there is a risk of accident; there is a risk of accident as the waste is transported away from the local community and there is a continuous risk of a terrorist attack on the storage facility or whilst waste is in transit. There is a risk of flooding, earthquakes and other natural disasters during the 110 – 160 year life of the storage facilities. It is only right, therefore, that the proposed waste management facilities should be subjected to full, open and transparent scrutiny during examination of the Hinkley C application.

- 1.4 The Government says that the nature of the on-site facilities proposed for the management of radioactive waste produced on the HPC site and the associated operational activities should be considered by the Infrastructure Planning Commission (now incorporated into the Planning Inspectorate and known as the National Infrastructure Directorate or NID). The Government agrees that there are planning issues relating to this which it is appropriate for the NID to consider. Proposals for waste management facilities that are part of the application for development consent for a power station should be considered by the NID in the same way as the rest of the power station.<sup>5</sup> We urge NID to interpret these directions from the Government in the widest possible way to allow a full discussion of the issues raised by the proposal to store high level radioactive waste on the Hinkley Point site for over a century.

## **2. UK Government Policy**

- 2.1 The Government's policy on nuclear waste generated by new nuclear reactors is set out in Annex B of the National Policy Statement for Nuclear Power Generation (EN-6 Vol.II).<sup>6</sup> It is assumed that spent fuel will not be reprocessed, and that along with intermediate level waste it will eventually be emplaced in a deep Geological Disposal Facility (GDF). The NDA, which is charged with developing a GDF, currently anticipates that a GDF will not be available to take spent fuel from new nuclear reactors until around 2130.
- 2.2 Whilst the Government doesn't preclude the possibility that alternative arrangements for the interim storage of waste may be proposed, for example a centralised storage facility, or that it may be possible to bring the date for acceptance by the GDF forward,<sup>7</sup> in the absence of any proposals the Planning Inspectorate needs to assume waste will be stored on-site until the GDF is available – in other words for up to 110 years.

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<sup>4</sup> The Government Response to the Consultation on the Draft National Policy Statements on Energy Infrastructure, DECC October 2010, para 7.154  
<http://webarchive.nationalarchives.gov.uk/20110302182042/https://www.energy-nps-consultation.decc.gov.uk/docs/GovernmentResponseToConsultation-October2010.pdf>

<sup>5</sup> The Government Response to the Consultation on the Revised Draft National Policy Statements for Energy Infrastructure, DECC June 2011. Para 3.245 <http://www.decc.gov.uk/assets/decc/11/meeting-energy-demand/consents-planning/nps2011/1945-govt-resp-consultation-on-nps.pdf>

<sup>6</sup> National Policy Statement for Nuclear Power Generation EN-6 Volume II of II – Annexes. DECC July 2011  
<http://www.decc.gov.uk/assets/decc/11/meeting-energy-demand/consents-planning/nps2011/1943-nps-nuclear-power-annex-volII.pdf>

<sup>7</sup> Review of options for accelerating implementation of the geological disposal programme, NDA December 2011 <http://www.nda.gov.uk/documents/upload/Geological-Disposal-Review-of-options-for-accelerating-implementation-of-the-Geological-Disposal-programme-December-2011.pdf>

- 2.3 The Government has declared itself satisfied that effective arrangements will exist to manage and dispose of the waste from new reactors, and says the Planning Inspectorate should not consider this question, but rather confusingly it also says there may be planning issues relating to the on-site management of radioactive waste which it is appropriate for the IPC to consider as part of the development consent application (see Section 2.11 of EN-6<sup>8</sup>). Para 2.11.5 of EN-6 states that “*the IPC should expect that waste would be on site until the availability of a GDF [Geological Disposal Facility]*”. Consequently “*Proposals for waste management facilities ... should be considered by the IPC in the same way as the rest of the NSIP [Nationally Significant Infrastructure Project].*”
- 2.4 The possibility of a delay or even failure in the GDF siting process needs to be taken into consideration. The Cumbria Association of Local Councils (CALC) has just delivered a major vote of no confidence in the Managing Radioactive Waste Safely process. It says it does not consider “credible or viable” the UK government process for siting a geological disposal facility (GDF) for nuclear waste. CALC represents town and parish councils on the West Cumbria MRWS (Managing Radioactive Waste Safely) Partnership. The Partnership is looking into whether West Cumbria should take part in the search for a site for a repository for the UK’s higher activity radioactive waste on a voluntary basis. Since the process relies on ‘voluntarism’ CALC concluded that in “*the absence of clear support from parish councils and the community generally and the number of serious shortcomings in the prospective MRWS process in West Cumbria, CALC does not consider the programme as currently envisaged to be credible or viable.*”<sup>9</sup>
- 2.5 The Government is basing its satisfaction (that effective arrangements will exist for managing waste from new reactors) on the recommendation of its Committee on Radioactive Waste Management (CoRWM).<sup>10</sup> CoRWM was quite clear, however, that its recommendations do not apply to wastes arising from new reactors.<sup>11</sup> This is because, in addition to the far more burdensome physical attributes of their much higher heat output and fission product content, the political and ethical issues raised by the creation of an unknown inventory of new build waste, with an indefinite time-scale for management, are quite different from those arising due to the waste burden we currently face following decisions and actions of our predecessors. CoRWM recommended that the management of radioactive waste from new reactors should be subject to a quite separate process of examination.
- 2.6 The siting process for radioactive waste from new reactors such as HPC is particularly unfair when compared to the parallel process for siting a Geological Disposal Facility (GDF). The voluntarism principle should be equally applicable to new build waste. Although there is ultimately an intention to remove the spent fuel from the new build sites, it may not happen within the lifetime of anyone alive today. Former CoRWM member Professor Andy Blowers argues that, in principle, there is little difference between finding a site for a repository for the long-term management of legacy wastes and finding a site for long-term

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<sup>8</sup> Appraisal of Sustainability of the revised Draft National Policy Statement: Main Report, DECC October 2010 <http://www.decc.gov.uk/assets/decc/11/meeting-energy-demand/consents-planning/nps2011/2009-nps-for-nuclear-volumel.pdf>

<sup>9</sup> Local Governments give vote of no confidence in UK’s Geological Disposal Process, i-Nuclear 24<sup>th</sup> April 2012. <http://www.i-nuclear.com/2012/04/24/local-governments-give-vote-of-no-confidence-in-uks-geological-disposal-process/>

<sup>10</sup> Managing our Radioactive Waste Safely: CoRWM’s recommendations to Government, July 2006 <http://corwm.decc.gov.uk/assets/corwm/post-nov%202007%20doc%20store/documents/reports%20to%20government/nov%20and%20dec%202007/700%20-%20corwm%20july%202006%20recommendations%20to%20government.pdf>

<sup>11</sup> See para 26

storage of new build wastes. On ethical grounds any community where it is intended to store spent fuel for an indeterminate period should be asked if it is willing to accept (for the present and on behalf of future generations) the burden and, if so, under what conditions of involvement and withdrawal.<sup>12</sup> In fact CoRWM said:

*“It is clear that CoRWM’s recommendations on implementation must be applied at least to new central or major regional stores at new locations if CoRWM’s recommendations are to inspire public confidence”.*<sup>13</sup>

### 3. The Hinkley Point C (HPC) Application

3.1 The Appraisal of Sustainability (AoS) of the draft revised Nuclear National Policy Statement: Main Report<sup>14</sup> (para 6.1.8) says that the effects of waste management which may arise at a nuclear power station site or in the transport of waste from them have led to recommendations for further consideration by the Planning Inspectorate when considering applications for development consent for new nuclear power stations.

3.2 Para 6.4.11 of the AoS continues: *“It is expected that detailed site specific plans for the spent fuel will be presented by potential operators of new nuclear power stations for assessment by regulators and planning authorities”.*

3.3 In fact very little detail about what is intended is given by EDF Energy in the HPC application documents. The Environmental Statement Volume II, for example, says:

- An Integrated Waste Strategy (IWS) **will** be developed to help make sure waste management strategy throughout the life cycle of HPC is consistent with UK policy.
- Solid radioactive waste is planned to be “disposed” of as soon as reasonably practicable where a viable disposal route is available. ILW and spent fuel, for which there is no available disposal route, will be accumulated on-site and “safely” stored until a suitable disposal route or alternative management route becomes available.
- The Strategy for ILW is to retrieve condition and package (in a passively safe package) the waste on-site for interim storage until a GDF is available to accept it.
- “Whilst there is a Government programme in place to develop a GDF there are currently no disposal facility for spent fuel and the GDF will not be available until many years after the time when HPC would start generating spent fuel. The strategy for spent fuel management at HPC is, therefore, to store the spent fuel on site pending availability of a GDF ...”

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<sup>12</sup> *Why dump on us? Power, pragmatism and the periphery in the siting of new nuclear reactors in the UK*, Professor Andy Blowers, Journal of Integrative Environmental Sciences Vol. 7, No. 3, September 2010, 157–173

<sup>13</sup> Moving forward: CoRWM’s proposals for implementation. CoRWM Document 1703. London: CoRWM. February 2007. Page 45 <http://corwm.decc.gov.uk/assets/corwm/pre-nov%202007%20doc%20archive/doc%20archive/introduction/top%20level%20key%20docs/1703%20-%20moving%20forward%20-%20corwm%20report%20on%20implementation.pdf>

<sup>14</sup> <http://www.decc.gov.uk/assets/decc/11/meeting-energy-demand/consents-planning/nps2011/1925-appl-of-sust-of-revised-draft-en6.pdf>

#### 4. High Level Waste

- 4.1 Spent fuel from HPC is not intended to be reprocessed so should, in fact, be declared a waste. As it will be highly radioactive heat generating waste, it should be classified as High Level Waste.
- 4.2 EDF Energy says it is currently planning on the basis of the need to store the lifetime arisings of two EPRs until they can be transported off site in 2130. Fuel assemblies removed from the reactors would be cooled underwater in on-site reactor fuel pools for up to ten years. After this initial storage period the assemblies would be prepared for transfer to the Interim Spent Fuel Storage Facility (ISFS). The ISFS would be designed for a life of at least 100 years.
- 4.3 EDF Energy has reviewed the options available for on-site interim storage of spent fuel and has concluded that wet storage in an engineered pool is the best option for HPC. EDF Energy says the design will be optimized to favour passive operation as much as possible. The facility will be 'resistant' to a number of external events such as aircraft crashes and earthquakes. Spent fuel would need to be transported to an encapsulation facility prior to transport to a GDF. The encapsulation facility could be on-site or elsewhere.<sup>15</sup> Wet interim storage will result in the generation of small quantities of gaseous, liquid and solid waste.<sup>16</sup>

#### ***Resistance to Aircraft Crashes and Earthquakes***

- 4.4 Although the spent fuel storage ponds and wet interim stores are said to be "resistant" to aircraft crashes and earthquakes no details are given. It is assumed here that "resistant" has a similar meaning to the use of the word to describe water "resistant" watches as compared to water-proof watches. As everyone knows water resistant watches should never be immersed in water.
- 4.5 Spent fuel from Pressurised Water Reactors is clad in flammable zirconium. In worst-case scenarios, a successful attack could result in the loss of water from spent fuel storage ponds, leading to ignition of the fuel.<sup>17</sup> According to a US nuclear security specialist, this could result in large releases of radioactivity. A 1997 study for the US Nuclear Regulatory Commission estimated that the consequences of a spent-fuel fire at a pressurized water reactor (PWR) could include 54,000–143,000 extra cancer deaths.<sup>18</sup>
- 4.6 At the Fukushima Dai-Ichi plant in Japan, which suffered the disastrous accident in March 2011, 10,893 spent fuel assemblies sit in pools vulnerable to future earthquakes, with

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<sup>15</sup> Chapter Seven of Volume Two of the Environmental Statement deals with Spent Fuel and Radioactive Waste Management. <http://infrastructure.planningportal.gov.uk/wp-content/uploads/projects/EN010001/2.%20Post-Submission/Application%20Documents/Environmental%20Statement/4.3%20-%20Volume%20%20-%20Hinkley%20Point%20C%20Development%20Site/4.3%20-%20Volume%20%20-%20Hinkley%20Point%20C%20Development%20Site.pdf> Para 7.7.12

<sup>16</sup> Chapter Seven of Volume Two of the Environmental Statement deals with Spent Fuel and Radioactive Waste Management. <http://infrastructure.planningportal.gov.uk/wp-content/uploads/projects/EN010001/2.%20Post-Submission/Application%20Documents/Environmental%20Statement/4.3%20-%20Volume%20%20-%20Hinkley%20Point%20C%20Development%20Site/4.3%20-%20Volume%20%20-%20Hinkley%20Point%20C%20Development%20Site.pdf> Para 7.6.19

<sup>17</sup> "Nuclear analyst highlights risks of terror attack at power plants", Nuclear Free Local Authorities Press Release 7th March 2005 [http://www.nuclearpolicy.info/Latest\\_News/Pr05/050307.htm](http://www.nuclearpolicy.info/Latest_News/Pr05/050307.htm)

<sup>18</sup> quoted in:- Alvarez et al., Reducing the hazards from stored spent power reactor fuel in the United States, Science and Global Security, 11:1–51, 2003. <http://www.ips-dc.org/projects/nuclear/alvarez%20spent%20fuel.pdf>

roughly 85 times more long-lived radioactivity than released at Chernobyl. It is now becoming clear that this irradiated nuclear fuel stored in spent fuel pools amidst the reactor ruins pose far greater dangers than the molten cores. Any loss of water exposing the spent fuel would result in overheating, which in turn could cause melting and ignite the zirconium metal cladding, resulting in a fire that could deposit large amounts of radioactive materials over hundreds, if not thousands of miles. The Fukushima Dai-Ichi accident has revealed the folly of operating several nuclear power plants in a high consequence earthquake zone, but it also showed the folly of storing huge amounts of highly radioactive spent fuel in vulnerable pools. The Fukushima operator, TEPCO, like EDF Energy, tries to minimize dry cask storage of spent fuel as much as possible and relies instead on vulnerable pool storage, which carries an extraordinary and continuing risk. Despite the enormous destruction from the earthquake and tsunami, little attention has been paid to the fact that the nine dry spent fuel casks at the Fukushima Dai-Ichi site were unscathed. This is an important lesson we cannot afford to ignore. Spent fuel in the existing on-site spent fuel pools at Fukushima should be retrieved and stored in dry casks.<sup>19</sup>

- 4.7 There has been virtually no discussion in the local community around Hinkley about the merits of different spent fuel storage options, with full scrutiny of EDF Energy's plans for an engineered wet storage facility. At the very least this should be open to debate. Ideally EDF Energy should drop its insistence on wet storage and opt instead for dry storage.

## **5. High Burn-up Spent Fuel**

- 5.1 The Nuclear Decommissioning Authority's Disposability Assessment for EPR Spent Fuel found that if spent fuel is produced at the highest burn-up considered (65 GWd/tU) then a period of 100 years might be required for cooling. More recent work suggests that 50 years might be sufficient. It is therefore assumed that the date for the transfer of spent fuel to the GDF is approximately 50 years after the End of Generation. The transfer would take about eight and a half years.
- 5.2 The NDA, which is charged with developing a GDF, currently anticipates that a 'disposal' facility will not be available to take spent fuel from new nuclear reactors until around 2130. However, "optimisation" of the GDF design to allow earlier disposal of new build spent fuel or provision of a centralised store could both result in an earlier transfer of spent fuel off-site.
- 5.3 The NDA's Repository Concept would require spent fuel to be packaged in durable corrosion resistant disposal canisters. Encapsulation would require an expensive and complex facility. The Government's base case is for this encapsulation to be done on-site, but EDF thinks it would be better to do it in a single centralised facility – probably co-located with the disposal facility.
- 5.4 The local community around HPC is therefore left wondering whether it is being asked to host a high level waste store for 110 years or 160 years or perhaps much less. Nor does it know whether it will be asked to host a spent fuel encapsulation plant at some point in the future. Once a decision is made to site new reactors at Hinkley, however, the community will get very little say on the length of time the waste is stored there, the type of waste storage facility, or whether or not waste is to be encapsulated locally.

***In the NFLA's view, this situation is totally unacceptable.***

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<sup>19</sup> The Fukushima Nuclear Disaster is Far From Over, by Robert Alvarez, Huffington Post 22<sup>nd</sup> April 2012  
[http://www.huffingtonpost.com/robert-alvarez/the-fukushima-nuclear-dis\\_b\\_1444146.html](http://www.huffingtonpost.com/robert-alvarez/the-fukushima-nuclear-dis_b_1444146.html)

## 6. Intermediate Level Waste

- 6.1 Given that the dates given for the opening of the GDF are some 40 years before HPC decommissioning would start, EDF considers it highly improbable that there would be no GDF available to accept this waste (in around 2080).
- 6.2 Intermediate Level Waste (ILW) generated during the operation of the EPR would be conditioned in an Effluent Treatment Building (ETB). This building would contain everything necessary to prepare the waste prior to transfer to the ILW interim storage facility (ILWISF). Some waste generated in the Interim Spent Fuel Store would be packaged in the store rather than being transferred to the ETB.
- 6.3 As a condition of the Nuclear Site Licence the ILWISF would require a Periodic Review of Safety throughout its lifetime. EDF anticipates that the store would be emptied of waste and decommissioned within 20 years of the end of generation.
- 6.4 EDF's decommissioning strategy is to begin decommissioning as soon as the station has finished generation at the end of its 60 year anticipated life. Thus a reactor that begins operation in 2018 could have all of its ILW packaged and ready for transfer to a GDF by 2100 – 30 years sooner than the current date the GDF is anticipated to be ready to accept new build waste.
- 6.5 For the purposes of EDF's decommissioning planning, it is assumed that the NDA will be able to optimise the scheduling programme for emplacement of legacy waste to allow transfer of packaged ILW during the decommissioning stage. However, if this is not possible and a further period of storage is required, the ILWISF would probably require refurbishment.
- 6.6 Again, very little information is available about the design and safety assessments for the storage of ILW on the Hinkley site. The local community is being asked to host an ILW store for at least 80 years and possibly longer and yet is being given almost no information about what this entails.

## 7. Flood Risks

- 7.1 The Appraisal of Sustainability for the National Policy Statements on Energy<sup>20</sup> says that *“some potential significant negative effects associated with the management of spent fuel have been identified”*. These are mostly considered to be of minor strategic significance (e.g. the effects would be localised) and similar in nature to the effects produced by other aspects of new power station development. But one negative effect, which is considered to be of potentially greater significance, is flood risk, especially because of the long period over which spent fuel storage facilities might need to be in operation:

*“Further assessment will be required at the design, development and planning stage where detailed site-specific proposals for spent fuel management will be made for new nuclear power stations”*.<sup>21</sup>

- 7.2 As discussed above, the duration of on-site interim storage of spent fuel is uncertain. According to the National Policy Statement for Nuclear Power Generation (EN-6 Vol.II), the regulators have examined the adaptability of the proposed sites, including HPC, to potential

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<sup>20</sup> Appraisal of Sustainability of the revised Draft National Policy Statement: Main Report, DECC October 2010 Para 6.4.14 <http://www.decc.gov.uk/assets/decc/11/meeting-energy-demand/consents-planning/nps2011/2009-nps-for-nuclear-volumel.pdf>

<sup>21</sup> Para 6.4.17



changes in flood hazard and are satisfied that additional safeguards are in place to ensure that only suitable sites achieve development and ongoing operational consent. This will also be reviewed in more detail as part of the planning and licensing stage and as part of the Flood Risk Assessment that applicants must undertake in conjunction with their applications to the Planning Inspectorate.<sup>22</sup>

- 7.3 EDF Energy's Flood Risk Assessment (FRA)<sup>23</sup> says it is not intended to demonstrate a safety case in terms of nuclear safety. This will be addressed in the Pre-Construction Safety Report which will be considered by the Office for Nuclear Regulation. This will not, however, be subject to public consultation or open to examination at a public inquiry.
- 7.4 The FRA concludes that all flooding risks have been given due consideration and are found to be acceptable. However, Middlesex University's Flood Hazard Research Centre has concluded that the cliff line in the area of the proposed HPC reactors is currently subject to erosion, and that the rate of erosion may increase over the lifespan and decommissioning period of a new power station. This means that this site is likely to become problematic in the long term and "*cannot be considered a practicable option*".<sup>24</sup>
- 7.5 EDF assumes that the consequences of sea level rise in the Bristol Channel and the threat of flooding will be anticipated well in advance, giving time for appropriate action to be taken to address those impacts. This is a big assumption. No detailed sea level rise assessment has been made stretching for more than 100 years ahead, nor is it clear what impact climate change might have on societal organisation, enabling these precautionary actions to be carried out.
- 7.6 A recent assessment by the Department for Environment, Food and Rural Affairs (DEFRA) concluded that although the flood risk at the HPC site is currently low, by 2080 it will be high, and the erosion risk is high too.<sup>25</sup>
- 7.7 Some studies suggest that sea-level rises may be much faster than official projections. The Intergovernmental Panel on Climate Change (IPCC) estimates a global average sea level rise of a maximum of 59 centimetres, whereas a recent study, published in the Proceedings of the National Academy of Sciences, found that global average sea levels are likely to rise by between 75cm and 190cm by the end of the century.<sup>26</sup> Thus sea level rise could be up to three times faster than predicted by the IPCC.

## 8. Nuclear emergency planning concerns with the HPC application

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<sup>22</sup> National Policy Statement for Nuclear Power Generation EN6 Volume II, DECC July 2011, Para C.5.25 <http://www.decc.gov.uk/assets/decc/11/meeting-energy-demand/consents-planning/nps2011/1943-nps-nuclear-power-annex-volII.pdf>

<sup>23</sup> Hinkley Point C Development Site Flood Risk Assessment. <http://infrastructure.planningportal.gov.uk/wp-content/ipc/uploads/projects/EN010001/2.%20Post-Submission/Application%20Documents/Reports/3.2%20Hinkley%20Point%20C%20Development%20Site%20Flood%20Risk%20Assessment/3.2%20Hinkley%20Point%20C%20Development%20Site%20Flood%20Risk%20Assessment.pdf>

<sup>24</sup> The impact of climate change on nuclear power station sites, Greenpeace, March 2007. <http://www.greenpeace.org.uk/files/pdfs/nuclear/8176.pdf>

<sup>25</sup> The DEFRA Analysis is available here: <http://www.robedwards.com/2012/03/most-nuclear-sites-at-risk-of-flooding-and-coastal-erosion-says-government-study.html>

<sup>26</sup> Vermeer, M & Rahmstorf, S, "Global sea level linked to global temperature", PNAS, 7 Dec 2009 [www.pnas.org/content/early/2009/12/04/0907765106.full.pdf+html](http://www.pnas.org/content/early/2009/12/04/0907765106.full.pdf+html) and Connor, S, "Sea levels may rise three times more than first thought", Independent, 8 Dec 2009 [www.independent.co.uk/environment/climate-change/sea-levels-may-rise-three-times-more-than-first-thought-1836036.html](http://www.independent.co.uk/environment/climate-change/sea-levels-may-rise-three-times-more-than-first-thought-1836036.html)

- 8.1 One of the major outcomes of the Fukushima disaster and its application to UK nuclear policy, on which the Nuclear National Policy Statement has not specifically commented, is the area of nuclear emergency planning. The reports of the Chief UK Nuclear Inspector Mike Weightman and the UK nuclear industry on Fukushima <sup>27</sup> included several detailed points about the need for a review of the UK nuclear emergency planning regime. Both the Office for Nuclear Regulation (ONR) and the UK Government have therefore instigated detailed reviews of nuclear emergency planning. These were initially expected to be completed by the end of 2011, but the NFLA understand it will now be summer 2012 before they are complete. These reviews may bring about some significant changes to emergency planning around fixed nuclear sites and should be incorporated into the NID consideration of the HPC application.
- 8.2 It is important to note the extensive amount of actions on nuclear emergency planning recommended by the Chief UK Nuclear Inspector in his Fukushima report. These include:
- Recommendation to the UK Government for a full review of nuclear emergency planning; this was accepted and is ongoing;
  - Request that the Nuclear Emergency Planning Liaison Group (NEPLG) consider emergency plans for a prolonged nuclear incident;
  - Recommendation that the nuclear industry and ONR should review public communication plans for fixed nuclear sites;
  - The need for a thorough consideration of long-term severe accident exercise scenarios across the nuclear industry;
  - Requirement for a review of the flooding potential at nuclear sites (as noted above at section 7);
  - Need for a review, overseen by the National Grid, of offsite electricity emergency plans;
  - Need for a review by the nuclear industry of contingency plans for onsite cooling ponds;
  - Need for a review of contingency plans for care of on-site staff during a prolonged emergency incident at a nuclear site.
- 8.3 It is also important for the NID to consider other nuclear emergency planning reports from the Japanese Government and independent reports of the Fukushima disaster, which outline a large number of failings that can be extrapolated to the UK context. The NFLA particularly wishes to point the NID to the independent report developed by Greenpeace International which focuses in particular on nuclear emergency planning failings. Amongst its main findings was that:
- The emergency response was not functional and the evacuation of the civilian population was chaotic, exposing large numbers of people unnecessarily to radiation;
  - The determined evacuation radiuses changed several times during the incident;
  - The evacuation planning based on using circles of several kms (which is also used in the UK) is too rigid for nuclear reactors. Some communities were evacuated over a distance exceeding 50 km and even then this was still not a far enough safe distance;
  - The computer software determining expected radiation fallout was not used correctly;
  - The evacuation of particularly vulnerable people did not operate efficiently and many were not evacuated;
  - The critical emergency planning concept of 'confinement' of affected communities in a contaminated area failed. Communities who were told to stay at home and keep all doors and windows closed soon ran out of food and fuel. A large number of specialised and important emergency workers were also not prepared to stay in the contaminated area for the period of time expected of them;

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<sup>27</sup> Office for Nuclear Regulation, Chief Nuclear Regulator interim and final reports on nuclear safety, May and October 2011, <http://www.hse.gov.uk/nuclear/fukushima/interim-report.htm> and <http://www.hse.gov.uk/nuclear/fukushima/finalreport.htm>

- The post-emergency response was riddled with problems;
- The public authorities were unclear what to do with contaminated goods or radioactive waste.<sup>28</sup>

- 8.4 The Chief UK Nuclear Inspector's final Fukushima report concluded that extensive consideration undertaken by the NEPLG on current nuclear emergency planning arrangements showed they were 'fit for purpose' but 'strengthening arrangements' were required. These arrangements have not been publicised and, with the December 2011 deadline passing for both the ONR and UK Government, those concerned about nuclear emergency planning arrangements for a much enlarged Hinkley Point site are not aware if they are being considered by the NID in their assessment of the HPC application. In the NFLA's view NID has to make a full and thorough consideration of these matters and indicate publicly that it is satisfied with potential emergency planning arrangements at an expanded Hinkley Point site – HPA, HPB and HPC.
- 8.5 Apart from the more general issues with nuclear emergency planning there are other specific concerns in this area with the HPC application. The NFLA particularly want to raise issues over the size of the 'Detailed Emergency Planning Zone' (DEPZ) around Hinkley Point, and how a huge increase in the site with two new reactors will complicate matters still further. The question of the DEPZ is being considered in the emergency planning reviews, and, in the view of the NFLA, needs to be increased significantly. The DEPZs set for nuclear sites in the UK are amongst the lowest of any nuclear industry in the world. The current DEPZ for Hinkley Point A and B is set at 3.5 km, with an extended release scenario of 15 km. However, the International Atomic Energy Authority's 2007 standard recommendation<sup>29</sup> is for a 5 km 'Precautionary Action Zone' and a 30 km 'Urgent Protective Action Zone'. Had the Japanese authorities used such a standard, the outlying areas of Fukushima would have received emergency information and iodine tablets much more quickly than they did.
- 8.6 The NFLA are aware that nuclear sites and Site Stakeholder Groups are being consulted on the size of the DEPZs and the extended information areas. The Sizewell SSG, for example, has made a recommendation for the local Emergency Resilience Forum to consider a 20 km DEPZ<sup>30</sup>. The NFLA urges NID to consult with EDF, the ONR, the UK Government and the NEPLG over this matter and recommend changes to the DEPZ for a considerably expanded site. Communities that are 30 km from Hinkley should be fully informed about the risks and emergency procedures required in the event of an incident at the existing or new nuclear reactors at Hinkley.
- 8.7 The NFLA notes that the European Commission has recorded its dissatisfaction with a lack of detail and general information from the European 'stress tests' of all civil nuclear reactors carried out as a result of the Fukushima disaster<sup>31</sup>. There was considerable concern raised by the Commission over the potential damage to a reactor from an air crash and a request

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<sup>28</sup> Greenpeace International, Lessons from Fukushima – an Independent Assessment, February 2012, <http://www.greenpeace.org/international/en/publications/Campaign-reports/Nuclear-reports/Lessons-from-Fukushima>

<sup>29</sup> IAEA Safety Standards Arrangements for Preparedness for a Nuclear Emergency, 2007, [http://www-pub.iaea.org/mtcd/publications/pdf/pub1265\\_web.pdf](http://www-pub.iaea.org/mtcd/publications/pdf/pub1265_web.pdf)

<sup>30</sup> East Anglia Daily Times, 5<sup>th</sup> March 2012, [http://www.eadt.co.uk/news/sizewell\\_n\\_plant\\_neighbours\\_want\\_evacuation\\_drill\\_1\\_1227406](http://www.eadt.co.uk/news/sizewell_n_plant_neighbours_want_evacuation_drill_1_1227406)

<sup>31</sup> EU Business.com, 27<sup>th</sup> April 2012, <http://www.eubusiness.com/news-eu/energy-nuclear.g7n>

for more information from all European nuclear regulators. The NFLA urges NID to consult EDF and the regulators to satisfy itself with the Hinkley Point stress tests and this generic concern over air crashes. Furthermore, the NFLA believes NID needs to satisfy itself that the HPC application contains adequate protection and safeguards in the event of a malicious or terrorist attack.

## 9. Other issues

9.1 A matter of concern to the NFLA throughout the IPC/NID process of the HPC application is the extremely tight schedule being forced upon local councils, local concerned groups and interested non-governmental organisations (NGOs) in responding to EDF's 30,000 page application. The NFLA notes that the 3 local Somerset Councils had requested an extension to the NID examination process, as have local groups like Stop Hinkley and national groups like Greenpeace UK. There has only been six weeks since the initial preliminary meeting to present detailed submissions to NID. Such a tight timetable puts an unacceptable pressure on groups, many of which are poorly funded, to respond adequately with their concerns. The NID planning process offers a real democratic deficit compared to previous planning inquiries for nuclear reactors, which, due to the inherent complexity of such facilities, should be carried out in a manner that is inevitably time consuming but would ensure an adequate final outcome.

9.2 The NFLA is also disappointed that at the preliminary meeting for this examination you, as lead examiner, made it clear that all of the real issues of concern to many people and organisations - such as nuclear safety, waste storage, flooding and the transport of nuclear materials - were not going to be dealt with during the process. The NFLA notes that, after the representative from South West Against Nuclear tried to argue several times that such issues are planning matters, you turned off the representative's microphone and refused to let her speak again, despite the fact that she was raising issues that she had been legally briefed to raise. This is a matter of great concern, particularly as Lord Justice Ouseley, in his summing up at the judicial review of the Nuclear National Policy Statement (NPS) brought by Greenpeace UK, clarified that the Nuclear NPS does not provide the final word on site and project specific issues including (a) flood risks (b) off-site electrical supplies and (c) on-site emergency controls. The Nuclear NPS, for instance, merely sets out that the eight sites have the *potential* to be protected from flooding, but it is for the IPC and the ONR to consider whether the proposal before them would provide adequate protection with regard to the characteristics and challenges of the specific location. This would clearly suggest that the NID should be looking at all these safety issues, as well as issues of local concern.

9.3 If the NID does not look at the issues raised above by the NFLA in any detail, then it is failing a key democratic test and opening up the process to further legal challenge.

9.4 The NFLA is aware, through its involvement in the Local Government Association's Nuclear Legacy Advisory Forum, that the three local Somerset Councils will be making detail comments over concerns around radioactive waste management, impact on the local transportation network, negative impacts on tourism and deepening pressures on the local housing market as large numbers of workers migrate into the area. The NFLA believes these are all legitimate concerns and would echo the request that they are also considered in detail, along with the more fundamental concerns that have been indicated above.

## 10. Conclusions

- a) The HPC proposals require Somerset to play host to the equivalent of one sixth of the high level waste already created by the UK's nuclear programme. This is a heavy burden to ask any community to bear.
- b) So-called "interim storage" will probably last at least 110 years but may last as long as 160 years – well beyond the lifetime of anyone alive today.

- c) The proposals would involve various risky stages requiring the movement of high level waste and may include the construction of an encapsulation plant to package the waste. The plan eventually is to transport the waste off-site to a Geological Disposal Facility which has yet to find a suitable location.
- d) It is not clear where the Planning Inspectorate/NID will draw the line between agreed Government Policy and Planning Issues when considering waste management issues. We urge the Planning Inspectorate to interpret the Government's directions in the widest possible way to allow a full discussion of these issues.
- e) The UK Government has declared itself satisfied that effective arrangements will exist to manage and dispose of the waste from new reactors; yet it has still to find a suitable site for a Geological Disposal Facility, and its own advisors have said that waste from new reactors should be subject to a quite separate process from legacy waste because producing such new waste raises completely different social, political and ethical issues.
- f) It is completely unfair to force a high level waste store on the people of Somerset when the siting of a Geological Disposal Facility is being decided by a voluntary process.
- g) Very little information is given about plans for the Interim Spent Fuel Store or the Intermediate Level Waste Store, apart from saying that spent fuel will be wet stored in an engineered pond which would be 'resistant' to aircraft crash and earthquakes. This is despite evidence emerging from the Fukushima disaster which suggests that dry cask storage would be much safer.
- h) The HPC application leaves the Somerset community wondering whether it is being asked to host a high level waste store for 110 years or 160 years or perhaps less. It doesn't know whether it will be asked to host a spent fuel encapsulation plant in the future. Very little information is provided about the types of waste storage facility the community is being asked to host, and it is not provided with any safety assessments. Yet should permission be granted for EDF Energy to proceed with Hinkley Point C there will be no going back – waste will start to be generated and will have to be managed somewhere.
- i) The situation regarding Intermediate Level Waste (ILW) is no better. The local community is being asked to host an ILW store for at least 80 years and possibly longer and yet is being given almost no information about what this entails, and no safety assessments.
- j) Middlesex University's Flood Hazard Research Centre has concluded that the proposed HPC site is likely to become problematic in the long term and "*cannot be considered a practicable option*". Yet EDF Energy's Flood Risk Assessment is not intended to demonstrate a safety case in terms of nuclear safety. That will be left for discussions between EDF Energy and the Office for Nuclear Regulation. Once again the public is unable to contribute and excluded from important areas of discussion.
- k) DEFRA has already predicted the HPC site will be at a high risk of flooding by 2080, and some studies suggest that sea levels could rise up to three times faster than official predictions before the end of the century.
- l) NID need to take account of the national emergency planning reviews being undertaken by the UK Government, the ONR and the NEPLG. Particular attention should be given to the size of the detailed emergency planning zone, given that IAEA standards indicate it should be considerably larger than is currently being suggested in the HPC application.
- m) NID should seek ONR advice over the post-Fukushima reports by the UK Chief Nuclear Inspector, the Japanese Government, the IAEA and independent organisations such as Greenpeace International. The major mistakes that have come to light during the Fukushima disaster and its aftermath need to be avoided in any consideration of new nuclear facilities.
- n) More time should have been allocated by NID to this examination process. The EDF application, at 30,000 pages long, is extensive and extremely detailed. If the 3 Somerset Councils are struggling to deal with responding to the application in the allotted time, then surely smaller less well-resourced groups and concerned members

of the public have little opportunity to raise legitimate concerns about an extremely complicated development.

- o) The statements made by NID at the preliminary meeting that fundamental concerns around radioactive waste, flooding and emergency controls were not in its remit are particularly alarming. The views given by Lord Justice Ouseley in his judgement on the judicial review sought by Greenpeace UK clearly suggest that both the NID and the ONR should be considering these matters in their examination. Given the extensive consideration of all such matters in previous planning inquiries into nuclear power stations, including that for Sizewell B and the failed previous application for Hinkley Point C, the NFLA has a major concern about the democratic deficit in this current process. The NFLA hopes this will be rectified by the NID in its consideration of this and the other submissions that it will receive in regard to HPC.
- p) The NFLA supports local concerns around the impact of the development on the transport network, the local accommodation market, the local tourism industry and on-site radioactive waste storage for a considerable time period. These need to be considered in detail along with the more fundamental issues noted above.
- q) **Finally, as an organisation formally committed to the phasing out of nuclear power, the NFLA oppose the development of Hinkley Point C as a matter of principle. Nuclear power is not the answer to climate change mitigation and diverts scarce resources from clean and more sustainable alternatives such as renewable energy, microgeneration and energy efficiency.**