



***Greenpeace submission to the Consultation on the draft National Policy Statements for energy infrastructure***

*February 2010*

**Introduction**

Greenpeace welcomes the opportunity to submit evidence to the Consultation on the draft National Policy Statements for energy infrastructure. The National Policy Statements are entirely inadequate for a variety of reasons. They fail to make any reference to the international commitments that we have, such as the EU's Directive requiring its proportion of final energy consumption from renewable sources to rise 20% to 2020. Under this latter scheme, the UK's committed to a target is 15%. In order to incorporate these obligations, the policy framework would require a much clearer, more facilitative environment or directive in favour of renewable energy.

The EU also has a collective target to reduce greenhouse gas emissions by 20% against 1990 levels by 2020. Under the UK's own Climate Change Act (2008) it must reduce emissions by 34% on 1990 levels, rising to a 42% cut when an international burden sharing agreement is agreed. In this context the NPS cannot be considered helpful is that it fails to make an assessment of carbon impact of the planning decisions (impacting carbon budgets under the Climate Change Act). Nor do the NPSs have a monitoring arrangement for cumulative impact of planning decisions. The IPC should be able to explicitly consider greenhouse gas emissions (given changes to the NPS and technicalities of budget accounting) when assessing applications as no-one currently has the responsibility for making the link between new infrastructure and the UK's overall emission targets. This missing link risks government relinquishing its ability to strategically develop infrastructure or to enforce its own carbon commitments. It's a glaring omission and a fatal flaw in the NPS system.

This is a most peculiar state of affairs. It remains to be seen how the IPC can possibly green-light infrastructure projects that will meet our binding climate change targets, or severely compromise them through carbon lock-in, when they cannot consider the GHG emissions of the projects themselves.

Moreover, because the NPS don't have a prior assessment of alternative policies like efficiency, it threatens to make the "let's have lots of everything" approach inevitable. As stated above, the Pöyry report 'the implications of UK meeting its 2020 renewable energy targets' explicitly shows that this confused and all inclusive approach is unnecessary in energy security terms. Meanwhile the recommendations of the CCC and the Stern Review show that the ETS is too weak to provide the signals needed and so regulation (which could include the NPS) that explicitly requires the carbon impact of developments to be accounted for within the stated greenhouse gas targets is essential to stop investment in new high carbon infrastructure. As it stands the NPS approach being taken is a very significant climate risk.

**The Nuclear NPS**

New nuclear power is inadequate, unnecessary and dangerous. It is inadequate because it offers too little, too late in terms of climate change. It is unnecessary because we can reduce emissions and keep the lights using better technologies instead. It is dangerous because of the intractable problems of radioactive waste and nuclear weapons proliferation. But there is another danger: the danger of distraction. Renewables and energy efficiency are booming in other countries, could be the cornerstone of a green economic recovery in Britain, quickly secure our power and become a springboard for greater emission reductions in future. But despite the UK's abundant wind, waves

and engineering skill, lack of government focus and priority means Britain's renewables industry remains tiny.

Justification for new nuclear capacity in the NPSs is based on an apparent refusal to acknowledge the significant potential for renewable electricity generation. Instead they present a hobson's choice between either more nuclear or more gas, oil and coal: *"failure to take account of the ability to develop new nuclear power stations significantly earlier than the end of 2025 will increase the risk that the UK is locked into higher CO2 emissions than would otherwise be necessary. This is because of the high-carbon nature of thermal generation capacity that might otherwise help to meet the demand for electricity."*<sup>2</sup> It is quite wrong and deeply misleading to present the argument in this way.

There is also a question of whether the NPSs constitute adequate planning documents. The NPSs are supposed to allow the IPC to make considered and evidence-based decisions on whether to allow major infrastructure projects to proceed, but certainly in terms of nuclear, their considerations must be made having taken suppositions from government on issues such as radioactive waste disposal at face value. Significant concerns exist as to the practicability of safely managing new build spent fuel arisings (not least because the industry has thus far been either unwilling or unable to say exactly how they intend to deal with them), yet the Nuclear NPS instructs the IPC to unquestioningly accept promises from government and industry that arrangements for cooling, storage, conditioning, encapsulation and eventual disposal of spent fuel "exist or will exist" at some unspecified point in the future.

Given both the lack of concrete proposals that presently exist for dealing with new build spent fuel, and the nuclear industry's dubious safety record and history of evasiveness and dishonesty, this is an extraordinary assumption to be forced to make. This makes it seem as though the sole purpose of the nuclear NPS is to allow the IPC to say "build a reactor" without any real consideration of the technical practicalities of if / how radioactive wastes arising from their construction can be dealt with. Consequently the absence of such significant information that would normally guide planners' decisions means that under no circumstances does the nuclear NPS fulfil its stated purpose.

Will the IPC be so narrowly focused (because of the guidance in the NPS) that it will only examine site-specific issues (e.g. access roads) as opposed to wider issues of major public concern, such as spent fuel management? Take this theoretical position:

- *EdF submit an application to the IPC for Hinkley C sometime in 2010*
- *Their plans for spent fuel remain as hazy as they are today.*
- *The regulatory position is that the Generic Design Assessment (GDA) pre-licensing of reactors hasn't properly assessed the acceptability of waste management proposals for the EPR reactor (GDA probably will not finish before 2012 and this issue was specifically mentioned by the Health and Safety Executive (HSE) in their 3<sup>rd</sup> Stage Assessment in November 2009).*
- *At the same time the Department for Energy and Climate Change (DECC) has not finalised the proposals for a Funded Decommissioning Programme (in which potential operators must clarify back-end management plans) and crucial Fixed Unit Price are not expected to do so until after 2011. The public consultations on these have not yet started.*

The question is this: will the NPS allow the IPC to freeze EdF's application until these issues are adequately resolved, or will they press on regardless?

### **The National Policy Statement Process**

The amount of documentation that the public must read, understand and consider before they can be expected to make reasoned comments on the conclusions of the draft nuclear NPS by 22<sup>nd</sup> February 2010 (a period of only 15 weeks including the Christmas and New Year holidays) is vast. A member of the public living near Bradwell in Essex would have to read a staggering 1,674 pages of documents to take in the bare bones of every part of the consultation, including looking at why other sites like Dungeness were not selected. This is more than Tolstoy's *War and Peace*.<sup>1</sup> Whilst our energy future is an issue that concerns each of us, given its very complex nature and some of the important conclusions the NPS reaches, and the fact that the consultation is running concurrently with the Regulatory Justification consultation (and other consultations e.g. CoRWM's consultation on new build wastes), we believe the amount of data and the confusing way in which it has been presented by the Department for Energy and Climate Change have made entirely unreasonable demands on the public and local authorities.

The overall emphasis of the Energy NPSs is skewed in such a way as to paint new nuclear in an overly positive manner, to the detriment of alternative renewable technologies. For instance, there are 39 references to the term "employment" in the nuclear NPS<sup>2</sup> but no references to the same term in the renewable NPS.<sup>3</sup> The nuclear NPS also consistently refers to "energy" and conflates this with "electricity", giving a further misleading appraisal of the potential for new nuclear.

### **Overall Energy Need**

The Government argues that there is significant need for all types of electricity generation for energy security reasons, yet this case has not been adequately or comprehensively made. There is a need for the delivery of a large scale new renewables programme (to meet EU legislation, UK targets and for the UK to decarbonise) and there should be safeguards, frameworks and clear timelines established to ensure that the case for renewable energy investment is not compromised by large numbers of approvals from other sources.

Indeed, the summary of need should explicitly refer to the mandatory target of 15% of total energy coming from renewables by 2020, and explain clearly how if deployment in the heat sector falls short, the electricity component will have to grow and how this will be delivered. Given this very clear, binding target, the need for renewable electricity projects cannot be overstated, given the current level of deployment and poor progress to date.

Indeed, the Pöyry report on the 'Implications of the UK meeting its 2020 renewable energy target'<sup>4</sup> report finds that, if the UK is able to achieve its commitments to meet EU renewable energy targets and delivers on its own action plan to reduce demand through energy efficiency, then major new power stations (burning either coal or gas) would not be needed to ensure that Britain can meet its electricity requirements up to at least 2020. The report does not analyze further clean energy growth beyond the 2020 target, but makes clear that in the mid 2020s when new capacity could be needed, it could be met by building on the renewable targets and scaling up technologies such as wave and tidal technologies. It need not require new conventional power plants. The report also concludes that a strong drive for energy efficiency and renewable energy can reduce emissions and assist energy security. This is where the Government should be focusing their efforts and set clear targets and guidelines for achieving this.

### **The need for new nuclear**

The nuclear NPS claims that new nuclear is needed because "*excluding nuclear power as an option for generating electricity would make it harder and more expensive to meet our emission targets. It could also jeopardise the security of the UK's energy supply.*"<sup>2</sup> Greenpeace strongly refutes this notion. We do not believe that there is an overriding national need for any new nuclear generating capacity.

Even the most optimistic estimates suggest that new nuclear will provide only a 4% emissions reduction sometime after 2020.<sup>5</sup> Our binding target is a 34% cut by 2020.<sup>6</sup> Nuclear is presented as a key pillar of energy strategy. It is not. The UK can reduce emissions and keep the lights on

using better technologies instead. In the next decade meeting our existing renewables and efficiency targets would safely close the 'energy gap' and cut emissions, while leaving plenty of potential to expand renewables even further later.<sup>7</sup>

There have been claims that nuclear power could supply 40% of the UK's electricity beyond 2030.<sup>8</sup> Greenpeace is doubtful that in a liberalised energy market the possible size of the generating fleet can be determined. What can be safely assumed, however, is that if new nuclear produces not just 10GW but anywhere up to 23GW or more this will crowd out sustainable energy alternatives. If government continues to favour nuclear power, through direct or indirect political or financial support, utilities will follow their lead, which would be to the detriment of renewable energies. A massively expanded new build fleet would also have enormous implications for the management of highly radioactive wastes, for which there is no proven solution.

### **Regulatory Justification**

The UK government has yet to confirm whether the practice of operating the new Areva / EdF European Pressurised Water Reactor (EPR) and Westinghouse AP-1000 reactors is justified under EU law.<sup>9</sup> Justification is a regulatory requirement under EU law that must be completed before new reactors can be built. Justification is a high level strategic assessment in which the disadvantages of a 'practice' involving releases of ionising radiation (in this case new nuclear power and all associated activities e.g. spent fuel storage and disposal) are weighed against its potential benefits (economic, CO2 emissions etc).

There is an on-going consultation on this issue that will not conclude until the end of February 2010. Though the government has reached a preliminary conclusion that new nuclear is justified, Greenpeace feels it is presumptuous to assume that the practice of new nuclear will certainly be signed off in the near future. The IPC has been instructed not to consider whether the aims of the EU Directive have been or will be implemented (see NNPS 4.8.12).

### **Generic Design Assessment and licensing**

The Health and Safety Executive's (HSE) Generic Design Assessment (GDA) process, though not legally binding, is an overarching safety assessment of the EPR and AP1000 reactors designed to avoid many of the pitfalls of past reactor programmes. Yet is it likely it will not deliver the outcome the Government hopes.<sup>10</sup> The UK nuclear industry has an appalling track record of meeting schedules and budgets and any claims that vendors or potential operators make regarding bringing new capacity online on time should be treated with utmost circumspection. The Committee should carefully consider the catalogue of delays at cost overruns bedevilling the projects at both Olkiluoto-3 in Finland<sup>11</sup> and Flamanville-3 in France<sup>12</sup> as we feel they illustrate the nature of the problems we are likely to face with UK new build.

Indeed, problems are already surfacing in reports from the safety regulators. It has been reported that at the end of the GDA process in around mid-2011 there will most likely be "exclusions" and "conditions" attached to the sign off on reactor designs.<sup>13</sup> These issues will have to be resolved by potential builders and operators under the site-specific licensing process. Given the issues outstanding there is no guarantee either GDA or licensing will be finished to the timelines produced by government.

As an example of the problems outstanding, we refer the committee to the HSE's recently published the 3<sup>rd</sup> Stage GDA report on the EPR.<sup>14</sup> They concluded that *"we have identified a significant number of issues with the safety features of the design."* This followed the HSE taking the unprecedented step of releasing a Joint Regulatory Position Statement on the EPR with their Finnish and French counterparts. The statement said, *"The issue is primarily around ensuring the adequacy of the safety systems (those used to maintain control of the plant if it goes outside normal conditions), and their independence from the control systems (those used to operate the plant under normal conditions). Independence is important because, if a safety system provides protection against the failure of a control system, then they should not fail together. The EPR design, as originally proposed by the licensees and the manufacturer, AREVA, doesn't comply*

*with the independence principle, as there is a very high degree of complex interconnectivity between the control and safety systems. As a consequence of this, the UK nuclear safety regulator, the French nuclear regulator, and the Finnish nuclear regulator have asked the licensee and manufacturer to make improvements to the initial EPR design.”<sup>15</sup> It is very worrying that EdF apparently do not agree with the HSE’s assessment. The Senior Vice President Nuclear Engineering recently said that EdF “is ‘confident we will qualify’ the Siemens SPPA-T2000 control I&C system for use without modifications.”<sup>16</sup>*

The HSE GDA 3<sup>rd</sup> Stage report on the Westinghouse AP1000 was similarly scathing.<sup>17</sup> It concluded that *“there is significant additional work to be done by Westinghouse to satisfy our questions and to make and present an adequate safety case in the majority of the technical topic areas...In some of the areas that we have already assessed we found that there was a lack of detailed claims and arguments.”<sup>18</sup> But in spite of these major problems Westinghouse has not responded promptly to requests for further information about whether the reactor can stand up to things like earthquakes and aircraft crashes.*

As the GDA findings show, new reactor designs proposed for the UK do not by any stretch of the imagination represent a “proven” technology as claimed in the nuclear NPS. The fact remains that any new reactor, be it an EPR or AP1000, will be first-of-a-kind and very much UK specific and as it stands operators are unable to prove that the designs meet basic reactor safety standards.

The IPC’s relationship to the GDA process seems fragmented. For instance, the nuclear NPS states that the IPC *“does not need to consider matters that are within the remit of the nuclear regulators, although it is to liaise with them.”* Instead it may seek a regulatory *“letter of comfort.”*

Given the above it is essential that the Committee fully considers also the potential impact of an accident (or malicious act) on a reactor or spent fuel store. The probability of such an event may be low, but the potential consequences so huge they have to be thoroughly scrutinised.

One example of how Governments and industry view the real impact of an accident is in the changed international liability insurance regime that covers nuclear accidents. The UK has yet to consult on, and enact, legislation to cover the increased financial liability and expanded coverage for a nuclear accident.<sup>19</sup> It has been reported that the insurance industry has refused to provide the cover necessary for existing and new reactors, potentially leaving the public exposed to even higher costs in the event of a major accident.<sup>20</sup> This matter should have been discussed in the nuclear NPS as the risk of accident applies not only to reactors, but also the spent fuel stores planned for sites.

### **Climate Change: Sea level rise, storm surge & flooding**

All of the sites earmarked for new nuclear development in the NPS are in coastal areas, mainly because of the significant volume of water reactors need for cooling. However, the UK’s coastal zone is, in many cases, a dynamic and shifting environment. Changes in coastal geomorphology may well become more significant in the future because one of the predicted outcomes of anthropogenic climate change is an increase in global sea levels. This in turn could have a significant detrimental impact on nuclear power stations sited in coastal regions.

Whilst the government claims it has closely assessed the potential impact of sea level rise on possible sites for new nuclear, Greenpeace would like to draw the Committee’s attention to research carried out for us by the Middlesex Flood Hazard Research Centre.<sup>21</sup> This found that *“it is hard to escape the conclusion that the most sensible approach would be to reject all nuclear new-build within the dynamic coastal environment.”<sup>22</sup>*

New research has suggested that loss of ice from the West Antarctic ice sheet could *“contribute to a projected total sea level rise of up to 1.4 metres by 2100”<sup>23, 24</sup> at a far quicker rate than previously estimated. This figure is could “result in large tracts of eastern England being inundated with seawater...It would also increase the chances of storm surges flooding major*

coastal cities, such as New York and London, even with the protection offered by the Thames Barrier.<sup>25</sup> The Met office recently concluded that “by 2100, storm surge heights may increase dramatically — by up to 1.7 metres in the most affected areas of Suffolk, where the Sizewell B nuclear power plant is located.”<sup>26</sup>

Yet in the nuclear NPS the HSE admit that it has only been able to assess sea level rise based on modelling and predictions for 100 years - even though one of the plans for spent fuel is to keep it on site for possibly up to 160 years.

### **Radioactive waste management**

It is claimed in the nuclear NPS that arrangements to deal with wastes “will exist.” The simple fact is that there is nowhere on Earth to put this waste – there is no environmentally acceptable and proven 'solution' for the disposal of high level radioactive wastes and spent fuel. Such disingenuous and misleading statements mark a return to the days when real decisions on nuclear waste were habitually put off, leaving future generations to deal with the problem. The matter, for example, of where and for how long spent fuel might be stored and conditioned should have been fully detailed in the NPS so that local communities (at reactor sites and the potential host community for a national geological repository) could consider the implications of the various options industry and government agencies are considering. This is essential because for as the nuclear NPS states the IPC will not be allowed to consider spent fuel and waste storage: “*having considered this issue, the Government is satisfied that effective arrangements will exist to manage and dispose of the waste that will be produced from new nuclear power stations. As a result the IPC need not consider this question.*”<sup>27</sup> It is unacceptable that both the principle and the practicalities of spent fuel management will not be discussed and all debate foreclosed by the IPC.

There are clearly differences in the approaches of the reactor vendors on the issue of spent fuel encapsulation. These are highlighted in a presentation from the Environment Agency<sup>27</sup> and in HSE reports on the two reactor designs. On the EPR the HSE notes: “*EDF and AREVA still need to show that the encapsulation of spent nuclear fuel for disposal is ALARP and that the environmental impacts are acceptable. I have raised a TQ requesting EDF and AREVA to provide this information.*”<sup>28</sup> On Westinghouse's AP1000 the HSE notes: “*In the absence of any other firm agreement it must at this stage be assumed that any encapsulation will be performed at the reactor site and I have raised TQ-AP1000-329 (Ref. 10) requesting information on how the fuel will be encapsulated. A response is outstanding, but when received it will need to be considered with the 'disposability' case.*”<sup>29</sup>

Westinghouse and Areva are already openly challenging the government's assumptions on the proposal that spent fuel would be stored for 100 years prior to disposal.<sup>30</sup> Westinghouse has written to the Nuclear Installations Inspectorate stating: “*[We have] concerns over the length of time that high burnup spent fuel would have to remain on site before it could be disposed in the repository design currently envisaged for the UK. Reliable, high burnup fuel is economically and environmentally beneficial, yet the projected designs of the spent fuel encapsulation containers, combined with those of the repository cells are such that they cannot accommodate such fuel without a cooling period so long that it would make the repository unavailable for some of the spent fuel.*”<sup>31</sup>

There is complete uncertainty as to exactly how spent fuel may be dealt with from new nuclear reactors. Possibilities include:

- Spent fuel is to be kept on-site at reactors<sup>32, 33, 2</sup>
- Pending a period of on-site storage it could remain on-site or be moved to a regional or central store.<sup>34</sup>
- Spent fuel may be stored for only 5 years (pending possible removal to a central storage facility) or 10 years,<sup>35, 36</sup> but possibly up to 50 years,<sup>37</sup> 100<sup>38</sup> or 160 years (on or off-site).<sup>39</sup>

- Spent fuel will be encapsulated on site<sup>40</sup> or at a central site.
- Stores may or may not need to be replaced.<sup>41</sup> Stores may be above ground or underground.<sup>42</sup>
- Title and liability stays with the operator until it leaves the site or, if no geological disposal facility is built, the government / Nuclear Decommissioning Authority (NDA) take title and liability.<sup>43</sup> Title and liability may pass to the NDA for encapsulation whether there is a repository or not.
- There may be one or two geological disposal facilities depending on the timing of availability of a repository (i.e. how long it is kept open) and also the amount of wastes produced.<sup>44</sup>

Whether the industry shares encapsulation costs with the NDA is an issue which should be examined in case it constitutes an indirect subsidy (depending on how costs for encapsulation facilities are allocated). In reply to an FOI request the NDA stated that: *“The operator of a new build power plant will be responsible for the cost of managing their waste pending disposal, which includes the cost of packaging spent fuel (SF). This does not necessarily mean that the operators will package the SF themselves. They may do so, or they may contract with a 3rd party to encapsulate their SF. In their Funded Decommissioning Programme (FDP) the operator must set out the steps they propose to take to manage their waste and have this plan approved by Secretary of State. These plans will be regularly reviewed and operators can submit modifications to their plans for approval. The Government might need to undertake the necessary steps to package the SF into a disposable form. The costs of encapsulation will be a cost for which the operator will have made provision in their independent Fund and in these circumstances the amounts that operators have budgeted for these costs (set out in their FDP and agreed with the Secretary of State) would pass to the Government when title to and liability for the waste transfers, to cover the costs of performing this.”*

The regulations and statutory guidance on Funded Decommissioning Programmes (FDP) and the Fixed Unit Price (FUP) are not finalised and will not be until late 2010 and mid-2010 respectively, if then. The FDP and FUP is the process by which the Secretary of State will sign off on plans for site decommissioning and spent fuel storage and disposal: *“The Energy Bill will require any operator of a new nuclear power station to have a Funded Decommissioning Programme, approved by the Secretary of State, in place before construction of a new nuclear power station begins and to comply with this programme thereafter”<sup>45</sup>* (our emphasis).

The current basis for the initial fixed unit price for geological disposal is that it will be co-disposed with legacy wastes. The timing of deciding on both an FDP and FUP, and agreeing this with reactor operators appears, to conflict with that of other key processes that need to be determined before the FUP can be decided. A crucial one of these is that the IPC, local communities and local authorities, should know exactly what the waste plans are *before* these are set in stone though an industry-government agreement (negotiations on the FUP will be between the operators and the Government. They will not involve the public or Parliament).

A recently published timeline shows the FDP will be finalised the same time as the first site license is agreed (immediately after the GDA process ends) and when planning is granted.<sup>46</sup> The IPC process will supposedly have started over a year in advance of this, meaning firm plans will not be available for public scrutiny. Yet the regulators have said that the issue of exactly where spent fuel will be stored (and for how long) and be encapsulated will not be known until 2012-2013.

No assumption can be made that disposal even of legacy wastes will take place and certainly not on the timeline proposed by the NDA. This issue is fraught with difficulties. The addition of new build waste could create many more problems. The first CoRWM noted: *“We believe that future Government decisions on new build should be subject to their own public assessment process, including consideration of waste, because such decisions raise different political and ethical issues when compared with the consideration of wastes which already exist. We have noted*

*before that the prospect of a new nuclear programme might undermine support for CoRWM from some stakeholders and citizens and make it more difficult to achieve public confidence.*<sup>47</sup>

The NDA itself has gone on record as saying: *"There is no guarantee that the process will succeed in Cumbria. We need to bear in mind that the community has the right of withdrawal at any time and they do not need to justify their decision.*"<sup>48</sup>

Concerns that Cumbria may not ultimately accept a repository prompted the government to re-issue its invite to all local authorities to reconsider applying to volunteer to host a repository. In October 2009, Energy Minister Lord Hunt had to remind *"local communities about the opportunity to consider hosting a geological disposal facility.*"<sup>49</sup> This is because as yet only three councils in the whole country have expressed an interest, all from Cumbria: Copeland,<sup>50</sup> Allerdale<sup>51</sup> and Cumbria County Council.<sup>52</sup>

Yet the NNPS proceeds on the basis that:

- Any potential host community will accept all legacy wastes and all new build wastes - the inventory has yet to be even discussed in Cumbria. This view contradicts any notion of true voluntarism by a community.
- That a site can be found that can accommodate all wastes - the Fixed Unit Price (based on co-disposal of legacy and new build wastes) for the first round of new reactors might set this in stone before these matters are signed off on by a community
- In the interim, a repository host community might also have to accept a central store for all spent fuel and / or an encapsulation plant (although this has not been clearly expressed, which underlines the vagueness of the spent fuel management proposals).

The concerns over disposal are more than of a political and social nature. David Smythe, Professor of geophysics at Glasgow University has stated: *"There is clear evidence, after the expenditure of some £400m, mostly directed to the Sellafield area, that West Cumbria possesses no suitable rocks in which to site such a repository...To choose Sellafield yet again, by way of community voluntarism, and despite the lessons that have been learned, would be wrong and possibly illegal in international law.*"<sup>53</sup> In addition, by depending on one (as yet undecided) community, there may be significant implications for the taxpayer. It has been reported that *"the Treasury is resisting plans to invite councils to bid for the right to house the waste because it fears that only one council – the one that includes Sellafield in Cumbria – will apply. This lack of competition would leave it able to demand extra funding of more than £1bn.*"<sup>54</sup>

This means the government's plans could practically force Cumbria not only take all radioactive wastes, but possibly also take a long-term store for a new build spent fuel and an encapsulation plant.

Yet in all of this it is vital to remember there is no environmentally acceptable and proven 'solution' for the disposal of high level radioactive wastes and spent fuel. There is no disposal site operational anywhere in the world for spent fuel. Indeed, as Areva has noted: *"No spent fuel direct disposal facility is currently available in the world.*"<sup>55</sup> Government assertions that a solution exists are therefore deeply misleading. The most advanced site, Yucca Mountain in the USA, has effectively been abandoned: *"Yucca Mountain has been placed in what the Department of Energy calls "cold standby." Congress cut almost \$100 million from its \$386 million budget this year, forcing DOE to lay off 500 of its 1,400 workers. The new Obama administration budget proposes to stop funding altogether while a "blue ribbon" panel explores other alternatives for nuclear waste disposal.*"<sup>56</sup> It is entirely misleading for government to point to other countries' plans for possible waste disposal as a basis for allowing the nuclear industry to create more highly radioactive wastes.

The NNPS should be able provide clear information so that the IPC can answer all of the following questions:



- Is the operator of a new reactor currently in a position to say publicly exactly what its agreed plan to deal with spent fuel from any potential new reactors on site is? If so, what are these plans?
- Post-cooling, will spent fuel be put into wet- or dry-storage?
- Will storage be sub-surface or at surface level?
- Exactly how long will spent fuel be stored on site for?
- How will spent fuel be conditioned? Where?
- How will spent fuel be encapsulated? Where?
- When will title and liability of the operator's spent fuel arisings pass to the government?
- Where will final disposal of new build spent fuel arisings eventually take place? When?

Greenpeace strongly recommends that the government read a recent article by Professor Gordon MacKerron, former Chair of CoRWM, on the issue of waste disposal and the nuclear NPS. It is attached in Appendix 1 of this submission.

**Potential complications around the sale of EdF land and the outcome of any planning permission for new build at a variety of sites**

One agreement that may have implications for the proposed NPS and the remit of the IPC is the Government agreement reached with EdF when it took over British Energy (BE). This agreement is clearly of relevance to an NPS that is site specific. In September 2008 the government agreed to the takeover of BE by EdF. The agreement contained undertakings on land sales by EdF that were linked to planning consents for two EPRs each at Sizewell and Hinkley. The relationship between the EdF / government agreement, the Nuclear NPS and the IPC's work has not been mentioned or discussed within the NPS or other relevant documents. There is no discussion on how delays or refusals on applications for Sizewell and Hinkley may have an impact on potential development at other proposed new build sites because of the terms of the agreement.

The most relevant paragraph of deal between EDF and the Government is set out below (with our emphasis added):<sup>57</sup>

*3.2.3 - In particular, EdF will only be obliged to sell the land at Wylfa detailed in paragraph 3.2.1 if it is reasonably satisfied that it will be able to build two EPRs at each of Sizewell and Hinkley Point. EdF will be obliged to sell the land at Bradwell detailed in paragraph 3.2.1 above only if it goes on to secure planning consent for two EPRs at Sizewell. If EdF then goes on to secure planning consent for two EPRs at Hinkley Point, it will be obliged to sell land identified as potentially suitable for New Nuclear Build at either Heysham or Dungeness (HM Government will select which plot is to be sold) to a party chosen by EdF (provided that party is a credible nuclear operator).*

Regarding Wylfa, it is not known what EdF considers to be 'reasonably satisfied'? Does its definition of 'reasonably satisfied' cover planning consent for EPRs (and associated facilities e.g. spent fuel stores) at Sizewell and Hinkley, or does it also extend to essential associated infrastructure such as new transmission lines? It has been reported in an industry journal<sup>58</sup> that the ownership of EdF land next to NDA land is already causing delay in the NDA receiving monies from the sale of its land. This is because the sale of the Wylfa land is dependent on EdF getting permission to build 2 reactors at Hinkley *and* Sizewell. The article also states the sale of Wylfa is dependent on there been no legal challenges to the NPS covering Sizewell, Hinkley *and* Bradwell.

Regarding Bradwell, it is not what EdF considers 'secure planning consent' for 2 EPRs at Sizewell. This is different from 'reasonably satisfied' as per the agreement on Wylfa. Questions arise as to whether, even if the IPC gives planning permission for reactors at Sizewell, EdF will accept that as a firm basis for the sale of Bradwell even if it might not have secured planning consent on associated infrastructure e.g. for new grid transmission?

Regarding Heysham and Dungeness, under this agreement EdF has to sell either one of them *if* it gets permission for 2 EPRs at Hinkley. Under the agreement the government chooses which site is sold. Dungeness is currently not recommended as a new build site in the draft list in the Nuclear NPS, effectively ruling it out as a site attractive to other potential new build developers. It is not known precisely what EdF considers 'secure planning consent' for 2 EPRs at Hinkley (again, this is different from 'reasonably satisfied' as per the agreement on Wylfa). Questions arise as to whether, even if the IPC gives planning permission for reactors at Hinkley, if EdF will accept that as a firm basis for the sale of its land at Wylfa even if it might not have secured planning consent on associated infrastructure e.g. for new grid transmission?

The original IPC list of 12 new projects for consideration included only the applications for new nuclear reactors at Sizewell and Hinkley. The original IPC list and its granting of applications based on the Sizewell and Hinkley alone may have allowed everything to run and free up sites in order of how they appeared under the EdF / government deal. However, the joint RWE / E.ON venture, Horizon Nuclear Power, has added Oldbury and Wylfa to the list of projects the IPC might / should also begin considering from the start of its operations on 1st March 2010. Note that the most recent IPC list of projects for submission of applications shows that the timing of the applications for some of the reactors looks to be delayed (some may not happen until Nov 2011).<sup>59</sup>

The EdF / government deal raises some important questions:

- Has the government had discussions with EdF over the potential implication of any delays to its plans at Sizewell and Hinkley and how these might impact on the sale of land as per the BE agreement?
- Has the government had discussions with Horizon Nuclear Power over the potential implications for any delays in planning consent at Sizewell and Hinkley and how these might impact on its plans at Wylfa?
- Does the EdF/ government agreement effectively pre-empt and possibly invalidate the whole Nuclear NPS *and* associated NPSs (i.e. Overarching Energy and Electricity Networks)?
- Which Minister will make the final decision on matters relating to the agreement with EdF?
- If changes are made to the IPC's powers, and is left to make recommendations to the Secretary of State, who will then make final decisions on applications and what will be the position be if the Secretary of State has to:
  - designate the sites list (under the NNPS);
  - make the final planning decisions on sites; *and*
  - make the final decisions on the land sales detailed in the EdF / government agreement?
- What are the likely knock-on effects at other sites if Sizewell and / or Hinkley applications are not granted?
- Given government policy on new build, and the potential direction from a designated NPS, what powers will the IPC really have if it chooses to turn down an application at Sizewell or Hinkley - particularly as there is already an agreement for EPRs to be built at these sites?

- What is the potential impact on the government if:
  - the IPC decides against an application for new build at Sizewell or Hinkley; or
  - if the relevant Secretary of State decides against an application for new build at Sizewell or Hinkley?
- How long can EdF delay in selling Heysham or Dungeness and not fall foul of its obligations under the EU Competition Commission clearance for its takeover of BE?
- How might any delay to applications impact on EdF's obligations for land sales (and grid transmission at Hinkley) as in the decision by the European Competition Commission in December 2008?<sup>60, 61</sup>
- Does the EdF / government agreement pre-empt and override the powers of the regulators in forcing them to license EPRs at Sizewell and Hinkley?
- What are the implications if, for some reason, the NII delays approving the EPR but does approve the Westinghouse AP1000.
- What if the AP1000 design is approved at other sites before the EPR design is given approved?
- If EdF can't build EPRs is it still obliged to undertake the land sales as per the agreement? Could sites sales be held up because of the reactor technology failing to be licensed in time?

### **RWE and Cumbria**

In the NNPS the government claims that the UK needs 25GW of new non-renewable capacity, adding that “a significant proportion of the 25GW will in practice be filled by nuclear power.” Recently RWE dropped its connection agreements with the National Grid for two sites listed for potential new nuclear development in Cumbria, at Braystones and Kirksanton.<sup>62</sup> According to industry press, since it was not possible to commit to specific plans for the two sites RWE had chosen “not to maintain the current grid connection agreements...maintaining our current grid connections could mean large, and rising, extra costs and it's only sensible to avoid this risk and renegotiate connection agreements once we are in a position to confirm our plans.”<sup>63</sup> Despite RWE's protestations to the contrary, it is clear that its move raises serious questions as to the long-term viability of Cumbria as a location for any new nuclear capacity. More importantly, this decision also removes the prospect of around 7.2GW of new nuclear capacity (based on 2 twin 1.6GW EPRs) from the table and seriously undermines the government's notion that at least 25GW of new atomic capacity will be brought on-stream via the NNPS.

### **Planning Blight**

The nuclear industry recognises that those sites that are on the government's list of 10 preferred sites named in the NNPS may not actually be utilised for many years. This could lead to planning blight in some areas (such as in and around the three prospective sites in Cumbria), having serious knock-on effects on plans for housing estates, infrastructure and industry. As a local MP said, “it is not fair on residents, the public or local businesses to be expected to live with the question of ‘will they, won't they’ for the next 10 to 25 years.”<sup>64</sup>

### **Carbon budgets and EU ETS**

The Government appears to believe that the NPS will automatically ensure the carbon budgets are met, which is explicit in the statement that Government policies “*underlie the NPS have been set according with the low-carbon transition plan and carbon budgets, the IPC does not need to assess individual applications in terms of carbon emissions against the budgets*”

The first problem with this approach is that in sectors covered by the EUETS – including electricity generation - the Government measures progress towards its carbon budgets by the number of permits the UK is allocated, not by actual emissions in those sectors. So, in practice, for the purposes of meeting carbon budgets it does not matter what the electricity mix is, coal or gas or renewables – the UK simply records allocated permits; real emissions are irrelevant.

The Government's belief that the "right" developments will come forward, with the EUETS as a driver for investment in cleaner electricity generation, suggests complacency and contradicts the concerns expressed by the Climate Change Committee, who in their October 2009 report on UK stated that:

1. *"inclusion of the power sector in the EU ETS ...will not automatically bring forward the low-carbon investment to deliver required emissions cuts in the 2020s and beyond. This is because the EU ETS cap to 2020 could be met through coal to gas switching without any significant new investment in lowcarbon plant, and because the cap beyond 2020 is highly uncertain"* (p112).They continue:
2. *"There are plausible scenarios where investors favour investment in gas-fired rather than low-carbon generation. This is likely to ensue where investors require higher returns in response to risks that are induced by the current arrangements, and/or where investments are made on the basis of prevailing carbon prices rather than an assumption of increasing carbon prices. These scenarios lead to lock-in to high-carbon assets and failure to make sufficient progress with decarbonisation by 2030, unnecessarily high system costs/prices, and loss of any security of supply benefits associated with generation from low-carbon sources rather than imported gas"* (p140)

In addition, the Environmental Audit Committee also stated in their report, 'The role of carbon markets in preventing dangerous climate change', that the Emissions Trading System is failing to deliver vital green investment, after a collapse in carbon prices magnified by the recession<sup>65</sup>. The government's policy framework would serve better if it was more directive and set out clear guidelines to facilitate the transition to a low carbon economy. One such example would be to introduce an emissions performance standard into the Energy Bill. This would require energy companies to limit the emissions from any new power stations. Such a standard already operates in five US states including California. The level of emissions permissible would reduce in steps over time depending on the type of power station, the best technology available, and in line with recommendations from the Government's independent advisors the Committee on Climate Change. Introducing such a measure would provide a clear limit on emissions from the start and would provide investment certainty, and reduce the risk of future governments being forced to decide whether to close heavily polluting plants once they are operational.

Clearly the recognition of the need for planning reform which brought about the Planning Act 2008 and the National Policy statements means that the planning process needs to recognise its role in delivering a low carbon Britain. We propose that the NPS (in general not just for energy although it applies particularly here) should:

- Place an obligation on IPC to ensure they play a full role in delivering carbon budgets
- Require the IPC to assess the carbon impact of any project approval
- Require the IPC to assess the plausibility and conditions required for the project to be low or zero carbon by 2050 in line with the target of Climate Change Act 2008

And in the absence of satisfactory answers to these assessments refuse permission.

### **Reasonable Alternatives**

The Strategic Environmental Assessment legislation requires the environmental report to include reasonable alternatives. Those 'reasonable alternatives' must be described and evaluated in the

same manner as the proposed option. This is a particularly important part of the SEA process and is designed to assist the authority (here it is DECC) to avoid or mitigate significant adverse effects by assessing other ways of achieving their objectives that are less environmentally detrimental.

The specialist environmental consultants (ENTEC) retained by DECC to draft the AoS reports suggested a number of different 'alternatives' to be evaluated by DECC. DECC refused to evaluate any of them saying that none of them were 'reasonable alternatives'. Our complaint here is not that DECC evaluated those alternatives and then rejected them but that DECC refused even to evaluate them as SEA alternatives. It is hard to see how the sustainability of a proposed development can be properly assessed without consideration of credible alternatives, which are also difficult to effectively assess without the necessary spatial information. The RSPB and WWF have commissioned an independent analysis of the Appraisal of Sustainability process and we recommend that this forms part of the Committee's evidence.<sup>66</sup>

As discussed under the section above on 'Need', a study by Poyry finds that, if the UK is able to achieve its commitments to meet EU renewable energy targets and delivers on its own action plan to reduce demand through energy efficiency, then major new power stations (burning either coal or gas) would not be needed to ensure that Britain can meet its electricity requirements up to at least 2020. Clearly this would represent a reasonable alternative approach to the policy adopted.

### **Energy Efficiency**

There is concern that the National Policy Statements on the whole do not sufficiently investigate the potential for reducing UK electricity demand through efficiency measures. Although the Government often proffers the virtues of energy efficiency as a way of rapidly and cost effectively driving down emissions, increases energy security and saving money for householders and businesses alike, DECC seems to view energy supply policy as entirely separate from energy demand policy. Any consideration of future supply requirements has to be founded upon a detailed assessment of energy demand. Indeed, it is vital that electricity demand reduction be considered fully because the successful implementation of policies in this area may negate the need for additional generating capacity.

For example, the retrofitting of existing homes to make them not only energy efficient but energy generators could have greater economic, environmental and social benefits than the provision of major infrastructure and result in a different technology mix with less requirement for major infrastructure. Yet, when designing national energy policy, Government would rather opt for controversial, unproven and/or costly technologies such as nuclear power or carbon capture and storage.

### **Gas and Coal**

It is clear from current investment forecasts that gas will remain a fundamental part of the UK energy mix for at least the next decade, whichever transition pathway is ultimately pursued. Given this fact, Greenpeace believes there is insufficient detail within the existing NPS regarding the pathway to bring about the decarbonisation of UK gas use, particularly in gas-fired power stations. There is no equivalent to the coal CCS demonstration programme announced last year by the government, despite the fact gas is and will remain a more significant source of the UK's primary energy consumption than coal. Without the inclusion of the recommendation by the Committee on Climate Change to reduce emissions from the electricity sector by 2030, The NPS fails to provide sufficient certainty regarding the future CCS requirements for gas to either utilities looking to construct new gas capacity or to those concerned about the carbon implications of new gas capacity. The current requirement of Carbon Capture Readiness outlined in the NPS is largely a restatement of the existing conditions contained within section 36 of the Electricity Act 1989, and adds little to outlining the pathway from readiness to deployment, which remains a significant gap in the government's energy and climate change policy.

## Appendix 1

### ***A key nuclear question that government shrugs off as a waste of time***

Gordon MacKerron, *Parliamentary Brief*, 7<sup>th</sup> January 2010

<http://www.parliamentarybrief.com/articles/1/new/mag/77/1038/a-key-nuclear.html>

The British government is now firmly committed to helping the private sector build several new nuclear power stations. It has issued a 'Draft National Policy Statement for Nuclear Power Generation' and given precise instructions to the new Infrastructure Planning Commission (IPC) on the issues it should consider when examining prospects for named potential sites. These instructions are lengthy and detailed — including questions such as amenity, cultural heritage and landscape value — but rather unlikely to cause any major upset, especially as the great bulk of named sites already have nuclear histories.

But there is one conspicuous absence from the list of IPC responsibilities. Government has specifically told the IPC that it 'need not consider' the question of whether or not 'effective arrangements will exist to manage and dispose of the waste that will be produced from new nuclear power stations' as it is 'satisfied that effective arrangements will exist'.

This sits slightly oddly with the fact that government is also consulting on the same question. However, the rather definite instruction to the IPC suggests that government is somewhat unlikely to change its 'preliminary view' (this subtly different language being employed in the consultation section of the multiple documentation) that satisfactory waste arrangements will exist. In another subtle linguistic shift, government, which previously talked of whether satisfactory arrangements 'exist or will exist' now, with welcome attention to reality, only uses the future tense.

So how reasonable is it to suppose that satisfactory waste management arrangements will exist, with the corollary that waste will not prove to be an issue as we move towards specific nuclear investment proposals? There are two questions to consider: national policy towards legacy waste and new build waste, and some important site-specific considerations.

### **National issues**

The Committee on Radioactive Waste Management (CoRWM) in 2006 recommended that legacy waste — waste to which the UK is already committed as a result of past decisions — should best be disposed, eventually, in a geological repository. CoRWM also made clear that while technical issues surrounding waste from new-build would be similar to those affecting the legacy, the political, social and ethical questions would be different. Specifically, while there was a need only to find 'least-worst' solutions for legacy waste the calculus is different for new-build, where choice exists. The choice could be to opt for non-nuclear technologies if political social or ethical considerations — in all of which waste is deeply implicated — pointed that way.

Government readily accepted the legacy waste recommendation. But all subsequent official discussion about new-build waste has talked only of the technical similarities between managing legacy and new-build waste, and has ignored the wider political questions. Ignoring the CoRWM distinction between the two waste categories, government has insisted that geological disposal will be a satisfactory end-point for new-build waste.

While an earlier white paper did acknowledge that ethical argument might play a role, it said that ethical considerations 'did not rule out' new nuclear power — government has never discussed the ethical issues at all. There is still a need for debate about the deliberate decision to create more waste in much wider terms than the technical — this debate would not necessarily preclude new nuclear construction, but it is important that arguments on both sides of the issue are publicly aired and resolved. As for the issue of whether satisfactory waste arrangements 'will exist', a functioning geological repository is still a very long way off. Expressions of interest in hosting a repository have come from the Sellafield area but the Nuclear Decommissioning Authority, the responsible agency, believes that the earliest a repository is likely to be available is 2040. Asking

people in the current consultation whether or not they believe that satisfactory waste arrangements will exist is therefore asking for a rather highly developed capacity to forecast the long-term future. The only credible answer is that no-one really has any idea.

### **Local issues**

In the probable (but regrettable) absence of the wider national and essentially political debate about the waste-related issues surrounding new-build, waste issues will in practice be aired at local planning inquiries. Through the National Policy Statement process and its instructions to the IPC, government expects that the local planning inquiries into individual proposals for new build will deal in purely local, site-related issues. This may be a vain hope: in the late 1980s the Hinkley Point public inquiry into a (never built) reactor was expressly charged with dealing only in local issues and ended up taking just as long — over two years — as the earlier Sizewell inquiry, which had been supposed to resolve the national level issues once and for all.

But even if future inquiries do succeed in covering only the local issues, waste has now squarely become local. Operators of future nuclear stations are being required to develop long-term on-site storage for spent fuel — over 99 per cent of the radioactivity produced by reactors. This is in contrast to the past practice at virtually all nuclear sites, where spent fuel was always shipped to Sellafield for reprocessing after a short cooling period. But government assumes (correctly) that in future private sector operators will find reprocessing uneconomic and in the absence of any other national facilities for higher-activity waste, spent fuel will need to be stored on-site. The surprise to many people is the length of the period over which this storage will be needed at local sites — 160 years or thereabouts.

Why is this so elongated a time-scale? The logic has two parts. First there is timeline that starts with a repository opening by 2040, disposing of legacy intermediate-level waste till 2075. Then legacy high-level waste will go in until 2130 and only then would new-build spent fuel start to be disposed. Second there is the expectation that fuel in future would have a higher 'burn-up' of the fissile uranium, making the fuel much hotter in radioactivity terms than current fuel, and necessitating a longer cooling period on site before it can be treated for disposal. So even if a repository did become available for new-build waste earlier than currently expected, disposal would be many decades into the future.

So, partly because of the history of poor past management of waste in the UK, new-build wastes will have to be stored on site for around 160 years into the future, and maybe longer — given the lack of certainty that a centralised repository will be built. This could be a very large issue for local planning inquiries. Local residents will now be asked not only to accept a new reactor, they will also be asked to accept that they will become host to a very long-term radioactive waste storage site. This is a radically new situation. Even at Sizewell B, the one place currently storing spent fuel on site, there was an expectation that sooner or later spent fuel would go to Sellafield. No such expectation will exist for future sites. The waste issue, apparently resolved by government's instruction to the IPC and its conflation of legacy waste with new-build waste, may yet prove to be the most serious problem to resolve before new reactors can be built.

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- <sup>66</sup> [http://www.rspb.org.uk/Images/RSPB\\_%20WWF%20SEA%20paper%20final%20report6Jan2010%20FINAL%20FINAL%20v2\\_tcm9-241229.pdf](http://www.rspb.org.uk/Images/RSPB_%20WWF%20SEA%20paper%20final%20report6Jan2010%20FINAL%20FINAL%20v2_tcm9-241229.pdf)