

## **THE ENERGY ACT 2008**

### ***CONSULTATION ON THE FINANCING OF NUCLEAR DECOMMISSIONING AND WASTE HANDLING REGULATIONS***

### ***CONSULTATION ON A METHODOLOGY TO DETERMINE A FIXED UNIT PRICE FOR WASTE DISPOSAL AND UPDATED COST ESTIMATES FOR NUCLEAR DECOMMISSIONING, WASTE MANAGEMENT AND WASTE DISPOSAL***

## **RESPONSE OF THE BLACKWATER AGAINST NEW NUCLEAR GROUP**

### **Introduction**

The Blackwater Against New Nuclear Group (BANNG) is a Citizens' Based Organisation formed in 2008 with the aim 'to seek to protect the people and environment of the River Blackwater estuary and its surrounding area, now and in the future, from the risks and dangers of radioactivity by preventing the further development of nuclear activity in the estuary.' BANNG has responded to successive government consultations on the SSA process, the National Policy Statements and Justification. BANNG has presented written and oral evidence to the House of Commons Energy and Climate Change Committee's Inquiry into the proposals for national policy statements on energy. We have maintained contacts with DECC, CoRWM and the regulatory bodies and have consulted widely within the Blackwater area. We have raised public awareness of the issues raised by a proposed new nuclear power station through campaigns, meetings and the media.

This present response reflects BANNG's concerns about radioactive waste management proposals and especially the proposal to store spent fuel at the sites of new power stations. We have set out our technical, policy and ethical objections to this proposal in previous consultations. They provide background and context for our comments on the proposals for financing and fixed unit price which follow.

We have chosen to take the two consultations together (referred to hereafter as FUP and Financing). Our response does not take the form of answers to specific questions set out in the consultation documents, rather we prefer to organise our response under specific themes. We have identified three broad themes. They are: unknowns and uncertainties; liabilities and responsibilities; and bearing the burden. In setting out our response in this way we feel we shall address some of the key issues raised in the consultations which will have a direct bearing on communities around the proposed nuclear power station sites and on generations to come.

### **UNKNOWNNS AND UNCERTAINTIES**

It is evident throughout the consultation documents that there are many unknowns and uncertainties. The methodology for establishing a FUP is riddled with assumptions that have very little empirical or historical basis. ). We are dealing with incredibly long time-scales when disposal from new build may not begin until near the end of the next century. Moreover there I absolutely no experience anywhere of completing and operating a deep disposal facility for civil spent fuel and high level wastes. It is

evident, too, that nuclear programmes including waste management routinely exceed projected costs and are delayed. In trying to calculate costs for complex facilities over such time-scales we are literally in the dark.

Any costs that are eventually calculated will inevitably cover a wide range of possible outcomes. Consequently any FUP calculated for an operator which is intended to cover the full lifetime costs of waste management is likely to be highly speculative. BANNG considers the risk of ultimate costs deviating widely from estimated costs are so pervasive that it is simply not possible to present costs that are credible. **We conclude, therefore, that the proposal for a FUP should be abandoned and that operators should instead be responsible for paying the full costs of managing and disposing of wastes as and when they arise.**

The Government and the operators have clearly recognised the uncertainties that make any credible cost calculation so difficult. In offering the operators the choice between a FUP at the time their FDP is agreed or a deferral for ten years, the Government is acknowledging the high cost uncertainties that currently exist on the expectation that there will be greater certainty over costs in the future. We consider that many of the uncertainties will persist, certainly beyond ten years, and that there is the possibility of unforeseen costs arising in future for which contingency should be provided.

*Disposal Costs.* In Chapter 3 of the FUP consultation a number of the potential technical uncertainties are raised. Some of these surround the ultimate disposal facility for the wastes. The disposal concept has not been finalised and the NDA is still working on the Swedish KBS-3 concept. It is not clear how appropriate the model is for UK geological conditions, for high burn-up fuels and for co-disposal of wastes. Furthermore, some aspects of the KBS-3 model have recently been questioned, notably the utility of copper canisters and the bentonite barrier. It is fair to say that the final disposal concept is not yet agreed or approved and therefore the costs must be speculative.

It is also assumed that there is no technical obstacle to the co-disposal of new build wastes in a repository destined for legacy wastes. Further, 'it is assumed that no additional fixed costs are incurred as a result of including new build wastes in a GDF designed and built for the disposal of legacy wastes' (FUP, p.27). It also appears that new build operators will be able to gain some financial benefit from co-disposal in a repository initially intended for legacy wastes (see later under 'Other Matters'). If so, this will amount to an indirect subsidy to new build which would be contrary to presently stated Government policy.

Depending on the volumes of wastes arising and the technical disposition of the wastes it may prove necessary to have more than one repository. If so, that will result in an escalation of costs not currently foreseen.

As the FUP consultation recognises the cost model does not calculate for 'such things as the consequence of delays, the possibility that costs for the assumed activities and their duration, scope and timing may be different in practice, or that some activities, and their associated costs, have not been included' (FUP, p.27). Although the costing methodology will make adjustments for 'optimism bias' **BANNG considers the**

**technical uncertainties associated with disposal make realistic cost calculations impossible.**

*Location of GDF.* This problem of cost calculation is compounded by the fact that there is not yet a site in prospect for the GDF. The Government has claimed in its NPS for Nuclear Energy that ‘effective arrangements will exist to manage and dispose of the waste that will be produced from new nuclear power stations’ (DECC, 2009, p.25). As we have pointed out in our response to that consultation this is a misleading interpretation of policy and is, at best, speculative. Under present policy arrangements, before a site can be identified certain conditions must be satisfied. There must be a programme of research and development and a community must express willingness to participate in a site selection process. Moreover this process applies to a repository for *legacy* wastes; there is no process for finding a site for new build wastes, merely an assumption that they will be accepted in a repository destined for legacy wastes. In the absence of a site, the geological conditions for a repository are unknown and the social costs arising from the voluntary site selection process cannot be calculated. Therefore, **BANNG concludes that, in the absence of a safe and acceptable location, the eventual costs of a geological repository are impossible to calculate.**

*Interim Storage.* Whatever the prospect for final disposal it is intended that wastes will have an extended period of interim storage, probably at the sites of new reactors. In the Nuclear NPS it is recognised that onsite storage might be required for around 160 years (from the commissioning of the power station) allowing time for an adequate cooling period before the spent fuel is removed. As we have pointed out in earlier responses, in the absence of a repository this period could be longer, in effect storage may be required indefinitely. Over such long time scales uncertainties increase making cost calculations even more problematic. In several cases, sites are close to sea level on coasts liable to erosion or inundation, a problem that increases over time as the risks from rising sea levels and storm surges resulting from climate change increase. The costs of maintaining, protecting and defending these sites is unknown.

It is also unclear what facilities will be constructed for waste management. Among the unknowns here are: wet or dry stores; above or below ground; encapsulation facilities; replacement stores. There is also the possibility that wastes may be managed through the construction of central or regional stores thereby incurring further costs in construction, transportation and maintenance. Our overall conclusion on the issues arising from interim storage is that **the range of possibilities for interim management on sites over such long time-scales is so varied that it is impossible to make valid predictions of costs.**

The consultation documents convey a pervasive caution and qualification about cost estimates. Among the uncertainties are such things as the lifetime of a new power station, the likely costs of decommissioning, the time-scales for storage, the cost and timing of a repository, the technical methods for managing high burn up wastes, the provision of community benefits and so on. It seems a heroic but futile task to try to calculate a FUP. **We are led to the conclusion that the unknowns and uncertainties involved in calculating the cost of nuclear decommissioning, waste management and waste disposal make the provision of a FUP an unreasonable**

**and unjustifiable exercise. BANNG, therefore, urges the Government to abandon the proposal.**

## **LIABILITIES AND RESPONSIBILITIES**

A key issue arising from the consultation is the allocation of liabilities and the sharing of responsibilities. In the case of liabilities the issue is the apportionment between operator and taxpayer. In terms of responsibilities the question is how far the burdens should be borne by those who create them.

*Who should be liable?* There is considerable debate about whether and how far the development of a new nuclear programme should be at some cost to the taxpayer. It is government policy that the new build programme should not receive subsidy. This presumably extends to preventing hidden subsidy as well as more transparent and direct government support.

It is obvious that some costs will fall to the taxpayer. These include some research costs (for example into the GDF), the costs of providing site security measures and the acceptance that government will, ultimately, have to pay for the uninsurable costs (clean up, health, construction etc.) that could arise from a catastrophic nuclear accident.

However, whether other costs might be borne by the taxpayer is arguable. Given the unknowns and uncertainties discussed above, it is impossible to make accurate predictions of cost and hence the FUP will be based on a series of judgements identified in the methodology. This leaves a substantial risk that costs may be higher (or lower) than the calculated FUP. The Government intends to take this into account by making conservative estimations and assumptions and including provision for revisions for cost recovery (for example, if a second repository were needed), making adjustments for ‘optimism bias’ and building in a ‘risk premium’. By these various stratagems government intends that ‘the operator bears the risks around uncertainty in waste disposal costs and provides the taxpayer with material protection’ (FUP, p.16).

With so many uncertainties there will always be the risk that liabilities will ultimately fall to the taxpayer. The proposals for a FUP provide protection against financial risk for the operator while exposing the taxpayer. The benefit of a FUP for the operator is that they ‘pay a risk premium over and above the expected cost of disposing waste and spent fuel in return for having the certainty of a Fixed Unit Price.’ (FUP, p.17). The Government have made a further concession to operators in offering an estimated FUP deferred for ten years which carries a smaller risk premium and therefore lower cost (unless costs escalate). Thus the government is making an offer which is highly attractive to operators – it provides a cap on costs and thereby transfers the risks arising from uncertainties to the government. **BANNG considers this an inequitable outcome since the risks are borne by the taxpayer. We consider that the full costs should be met by the operator as and when they arise. Consequently the offer of either a FUP set at the time of an agreed FDP or a FUP deferred for ten years should be withdrawn.**

*Who should be responsible?* A further proposal has been made in response to the operators. This is to change the time at which title to and liability for wastes should pass from the operator to the Government. It was originally intended that transfer would occur when disposal facilities were available. The consultation on methodology proposes that transfer should now take place earlier and be aligned with the operator's decommissioning timetable. The reasoning here is that, in view of the very long timescales involved, the Government 'considers that it is better placed than an operator to manage the risk' (FUP, p.4). Certainly, there is a greater likelihood of governmental institutions surviving over such long timescales compared to private companies and government are, ultimately more likely to act in the public interest rather than private profit. But, as with the FUP itself, this proposal means that the taxpayer will absorb the risks. Although there will be provision for operators to pay for estimated costs post transfer it is impossible to predict what changes may occur and what future liabilities might be, especially as the impacts of climate change impinge on vulnerable coasts. **BANNG recognises that government may be better able to manage wastes over the very long term but this should not absolve operators from a continuing liability up to the point of disposal. Therefore, arrangement should be made to ensure that operators continue to pay to government the full costs of waste management as they arise.**

## **BEARING THE BURDEN**

Under the Energy Act 2008 it is required that 'sufficient funds are set aside during the electricity generating lifetime of the new nuclear power station, so that the operator is able to meet in full and as and when necessary: a. the full costs of decommissioning the installation; and b. their full share of the costs of safely and securely managing and disposing of their waste' (Financing, p.3). As we have argued above this objective has been compromised by the methodology proposed for recovering these costs. The concept of a FUP and the early transfer of liabilities provides financial certainty and limited liability to the operator. This results in some of the liabilities falling to the taxpayer while government inevitably will bear responsibility for the safety and security of long term management.

The social costs involved in the long term management of radioactive wastes are largely ignored in the consultations. BANNG considers this to be an important issue that needs to be addressed by government. The burden of costs, risks and effort is unevenly distributed falling disproportionately on specific communities and on future generations. While the nuclear new build programme emphasises economic benefits in terms of jobs and investment accruing to local communities, the economic and social detriments are unconsidered. In particular no provision appears to have been made to provide compensation for the anxiety, radiation risks and negative environmental impacts associated with radioactive wastes in areas around the sites.

Moreover, these burdens of risk extend down the generations and may well increase as site conditions deteriorate under the impacts of climate change especially in the next century. By that time site activity will be reduced to decommissioning and waste management. Communities around the sites will bear all the risk with little or no benefit.

The only social cost included in the FUP methodology is the cost of providing community benefits. But, this cannot be calculated and it is only vaguely accounted for in an 'Optimism Bias' adjustment, a catch all for seeking to include costs excluded from the Parametric Cost Model. There are several problems here. One, is that community benefit costs are simply unknown and no serious effort has been made to estimate them. Two, is that there are many uncertainties in any calculation of such costs, including, the size of community, the length of time over which benefits will be provided, the nature of the benefits and so on. Three, is that the benefits only apply to the community around the proposed repository; it is not envisaged supplying community benefits to communities neighbouring spent fuel stores near new nuclear sites.

Yet, the potential risks in the far future borne by local communities near the sites are considerable. There is the increasing risk of deterioration at the sites under the impact of climate change. And, there is the risk to maintaining institutional stability and control over the long term. The Government recognises the problems of constructing a register of risks and does not think it feasible 'to undertake such an exercise for the purpose of setting a Fixed Unit Price' (FUP, p.28).

The Government makes it clear that in approving a FDP it will ensure that 'the operator has considered the costs associate with future ILW and spent fuel stores both during operation and at the end of generation' (Financing, p.20). Operators will need to take into account maintenance costs of stores and their security at the outset. However, there is uncertainty both about the length of time stores will be required and about the need for repackaging, replacement stores or other measures to secure stores against deteriorating environmental circumstances at the sites. Such contingencies cannot be factored into a FUP.

It is clear that government has not fully taken into account the technical and social costs arising from spent fuel and waste storage at these sites in the far future. BANNG considers the lack of consideration of potential costs and risks involved in safely managing spent fuel and radioactive waste stores on sites in the far future is a serious omission in the proposals for financing waste management. It is recognised that the uncertainties and unknowns are so great as to make any estimation of potential costs an impossible exercise. This reinforces our view that the construction of a FUP is a flawed and futile exercise lacking credibility. **In our view the only way to ensure the full costs of spent fuel and radioactive waste management are met is through operators (and their successors) making adequate provision against all eventualities and ensuring funds are made available as and when they are required.**

## OTHER MATTERS

There are a number of other matters in the consultation documents which we have not considered in detail. However, we wish to make very brief comment on some of them.

1. *Contribution of new build to costs of repository.* Consistent with our approach set out above we do not consider deferred payment, marginal cost or virtual GDF approaches are appropriate since they are likely to load a

disproportionate attribution to the legacy wastes component of a shared repository. We are not persuaded that since the repository will be needed in any case new build should gain a benefit by paying a lower charge than is applied to legacy waste.

2. *Verification* BANNG supports the need for third party independent verification of FDPs. We are concerned that verifiers appointed are truly independent of the nuclear industry and that their expertise is not restricted to scientific, technical and economic competencies. We consider expertise in the social sciences and ethics is also required to bring social and community perspectives to bear in discussions.
3. *Reporting and Modifications to an Approved Programme.* We support the proposals for quinquennial reporting and consider that this should continue so long as any activity remains on site. We note the proposals for modification and the notion of a materiality threshold. As indicated in our response above we believe substantial modifications to FDPs are inevitable to the extent that funding should not be based on FUP but rather on a full price real cost pay as you go basis.

## **CONCLUSION**

Government has recognised that ‘Over time events may arise that could change the estimate of the cost of decommissioning and the management and disposal of waste’ (Financing, p.15). It is BANNG’s view, spelled out in our submission above, that the costs are likely to prove extremely dynamic over the long time scales involved. Technical, social and environmental changes may well transform the circumstances and methods by which radioactive waste is managed. Consequently, BANNG believes it is inappropriate to provide methods of costing that are based on present circumstances. The uncertainties will increase to the point when indeterminacy (the unknowable) becomes a major factor rendering realistic calculation of cost impossible. BANNG considers the only rational approach is for government to instruct operators to ensure they make sufficient provision to meet the full costs of decommissioning and waste management as and when they arise.

**On behalf of Blackwater Against New Nuclear Group**  
**June 18 2010**

### *Reference*

DECC (2009) *Draft National Policy Statement for Nuclear Power Generation (EN-6)*, TSO, November