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**Comments on the revised Public Consultation on the Site Selection Process  
for identifying a Geological Storage Facility for Nuclear Waste.**

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**Introduction - why respond to the consultation process in this fashion?**

This commentary provides the personal opinion of one who has experienced a lifetime of analysing the calamitous incompetence in the human species' attempts to manage the environment in which it lives. The tragedy is that all of these disasters have been both predictable and preventable. But now I see approaching an entirely new level of abandonment of common sense, committed in the name of the people by those whom we have improvidently appointed to lead us and our descendants into the an increasingly uncertain future.

I do not publish these comments lightly - through our own actions in the past we have erected formidable barriers to the future sustainability of our species, and of many others subject to our depredation of the environment in which we attempt to live and, for millions, just survive. But the subject of the environmental implications of nuclear proliferation is one that demands a far more wide-ranging debate than the narrow confines within which our politicians attempt to steer it. With the emergence of the nuclear industry, we now have the capacity to cause environmental destruction on a scale, intensity and duration that is both unprecedented and incomprehensible. The release of radioactive materials to the environment, both actively through conflict and passively through incompetence in dealing with these long-lived lethal substances, raises the environmental stakes already erected by our species to an entirely new level.

Unless we resolve the challenges and, where necessary, avoid raising them at all, on an international scale, we will be creating an entirely new and unspeakable legacy for our descendants that cannot be justified. The apparently trivial local issues that prompted this discussion in fact expose the fundamental flaws that are built into our systems of government and world politics as a whole.

The practice of public consultation by government on matters that are far beyond the comprehension of the average person is designed to provide false reassurance that only rational and secure policies are implemented, with the backing of the people. This is an illusion - not only are most people unprepared to provide such an informed opinion, but so also are the ephemeral politicians on whom we bestow our naive faith and trust.

So read the following commentary as a holistic approach to the management of the sustainability of our environment in the face of the challenges raised by the expansion of the nuclear sector. We are in imminent danger of travelling down the throat of a one-way, irreversible tunnel from which no return or escape is possible. The following commentary examines the special environmental issues raised by attempting to persuade Local Authorities in Cumbria to host a geological nuclear waste storage facility, but then uses this example to open the discussion on a far broader and fundamental issue, that emerge from a holistic approach to this ultimate challenge to our continuing relationship with our planetary environment.

**Disenfranchisement of the people**

***Background to the confrontation.***

In late 2013 the UK's Department of Energy and Climate Change (DECC) announced that it has now started a new public consultation process over the siting of a new nuclear waste repository. This will burrow deep into the ground to create a massive storage facility that will, it is hoped, hold the existing and projected future waste generated by this emerging industry for millennia to come. Only the optimistic Pharaohs of Egypt planned for such far futures, and look

at the sad state in which their 'immortal' remains have now declined!

Because local District Councils in Cumbria originally agreed to consider hosting such a facility, but were then over-ruled by the County Council, the government shifted the goal posts - it changed the rules so that DECC can - it assumes - now carry out the process of 'public consultation' once again, but this time without allowing the rebellious County Councils to express their irritating opinions. In such cavalier fashion is the principle of consensual development evaded by the ephemeral inhabitants of our Parliament and Civil Service!

This move by DECC is another blatant attempt to evade the legal obligation accepted by the government in ratifying the terms of the Aarhus Convention. This guarantees the right of the people to have access to environmental information, and to play an effective part in the development of programmes and plans that are likely to affect them and the environment in which they live. DECC's vaunted National Renewable Energy Action Plan was recently declared illegal by the UN, since it violated Article 7 of the Aarhus Convention. It had been formulated without proper public consultation, and this latest attempt to constrict public debate is clearly an attempted repeat performance of this preposterous proposal.

County Councillors have been democratically elected by all eligible residents voting in legally-constituted public referenda. DECC's outrageous attempt to disenfranchise our elected representatives, on the specious argument that a decision to locate a nuclear waste facility should be a purely local decision, is an intolerable affront to democracy. A nuclear waste dump is not an entity that would exist in complete isolation in this remote, and therefore eminently ignorable, part of the country. Transportation of the wastes would be through routes across the entire country, exposing the public throughout very large areas to potential contamination in the event of any unforeseen incident (to say nothing of a more malicious challenge).

In addition, within a considerable range of a permanent nuclear waste dump public disquiet at its presence would become a significant lifetime concern for almost every person within and outside of the administrative area of a petty and ill-educated District Council. Visitors to the Lake District ask 'How far will we be from Sellafield?' not because they wish to visit it (its Visitors Centre was closed some years ago!) but because they do not wish to approach this notorious Complex too closely.

#### **District Councillors do not have the knowledge to make an informed decision.**

Dismissing local District Councillors as being uneducated enough to make a valid decision on this issue is not intended as an insult. I worked in the Radiochemistry Section of the Metallurgy Division of the National Physical Laboratory in the 1950s, but even after half a century as a practising professional scientist, and as a medical radiographer, and so with at least a basic experience of the raw hazards of radioactivity, I would certainly not claim to be able to make an informed assessment of a nuclear development proposal without substantial additional training.

Only a couple of years ago our local Parish Councillors, none with any high-level training in physics, were invited by DECC to provide their 'opinion' on which of two available designs of nuclear reactor to be installed to new build power stations along the Cumbrian Coast! None of the Councillors has any expertise whatsoever in this field, and such 'consultations' are entirely specious and meaningless. They merely allow DECC to 'tick the boxes' in following its programme of development.

No, I simply propose here that virtually all Local Councillors have even less direct experience in this field than do I, so my remark is entirely pragmatic. My argument is based on hard, and perhaps unpalatable, scientific fact. Does DECC really wish to persuade us that Local Authority Councillors have the skills and education to assess the multiple complex environmental and social issues that arise from its ambition to site this facility as close as possible to the existing high-risk nuclear waste dump at Sellafield? I think not.

#### **The illusion of 'community benefits'**

Our experience in Cumbria is that District Councils are vulnerable to the importuning offers of the 'public benefits' offered to communities, like beads to primitive societies, by governmental development agencies. They are usually preoccupied with domestic economic issues, and are easily distracted by the tantalising job-creation prospects supposedly available from the expanding nuclear sector.

Yet these are in real terms almost entirely illusory and fraudulent. In West Cumbria the region has become virtually a 'Company Town'. Continued support in the region for the existing nuclear disaster at Sellafield has been suborned by cynical 'pump-priming' hand-outs to local communities. These sops to public relations are designed purely to generate continued support for the government's disgraceful incompetence in dealing with the relatively low-level nuclear waste generated by the Windscale fire over half a century ago.

We are not impressed by such attempted bribery. Only two years ago the community around Kirsanton was equally enticed by the prospect of 'five thousand new jobs' in the construction (and improbably, also the operation) of a new

nuclear power station in that part of West Cumbria. With a total of one hundred and twenty six registered unemployed in Millom at the time, none qualified as nuclear engineers, and five hundred prison officers facing redundancy if the station were to be built (again, none of them with nuclear industry work experience), the community rejected this gauche and insulting clap-trap as an insult to our intelligence.

### **Competence of the County Councils.**

The County Councils are able to exercise a more balanced and impartial judgment on this issue. They recognise that, on the larger scale, the nuclear industry is not the most important employer available. But even the County Councils have their limitations. I believe that relying on any non-professional organisation, on its own initiative, to be able to come to an informed and rational decision on such a complex and controversial subject is actually extremely difficult. Only by bringing in the most experienced and knowledgeable experts in this arcane field and holding high-level discussions of the issues involved can even a County Council hope to arrive at a reasonably informed decision.

DECC's has absolutely no prospect of educating the average Local Authority Councillor to a level at which he or she could possibly make an informed decision on the appallingly complex issues raised by locating a permanent - and I do mean PERMANENT - high-level waste disposal facility under their own doorstep. Only a fully-informed independent Expert Committee, at the national and even international level, could possibly weigh the evidence and risks involved in this adventure. Whilst I do not assume that County Councils are in any real sense more educated in the relevant areas of expertise than are District Councillors, under the law they are fully entitled to have their say in this spurious 'consultation' process.

### **At what level should the decision on a nuclear waste disposal method really be made?**

But even this still fails to address the central question - should public opinion, however well-informed, influence policy-making on such a sensitive and potentially calamitous development? I fully accept that a permanent solution to the disposal of the legacy waste at Sellafield is an issue that must be resolved. However the continued production of additional new waste, and the proposed importation of other recalcitrant wastes and redundant weaponry from elsewhere for decommissioning, confirms that a proper disposal facility is already necessary.

But these two issues are in fact separate - whilst the legacy waste seems to present an interminable problem, generating (and importing) yet more new waste poses an additional threat to the environment that cannot - under the present state of knowledge - be permitted. Whether we should be planning for a small facility to deal with existing production, and then close that down permanently once these sources dry up - that is, by stopping further growth in this sector - or go ahead with a full-scale repository designed for the waste generated in the indefinite future, is a different issue.

Ultimately, the only acceptable decision on the permissibility of this proposed method of nuclear waste disposal must be founded on the best available scientific evidence - still, admittedly, an estimate. We must be absolutely certain that the actual solution is well-founded and realistic, and accept that, as the over-riding European legislation makes quite clear, cost is not a relevant issue. If we cannot provide that level of certainty then no amount of 'public consultation' can alter the fact that high-level radioactive waste that cannot be stored absolutely safely for millennia must not be produced at all.

Other more enlightened nations have already come to this conclusion, so unless DECC is able to provide convincing proof that it knows better, this process of 'Strategic Site Selection' (or whatever other promotional name DECC wishes to generate to further its propaganda for this siting exercise) remains improper and a total waste of public financial resources, such as they are in these days..

### **Legal obstacles to the proposal**

During the original 'consultation' process, in which DECC's ambition was so inconveniently frustrated by Cumbria County Council (thus forcing Parliament to change the law on consultation and move the goal-posts to its own advantage) I pointed out that current European and English legislation on the Strategic Environmental Assessment (SEA - 2001/42/EC) of programmes and plans in the nuclear sector was in violation of the Directive and domestic law.

Under this legislation, the permissibility of engaging in a programme is absolutely dependent on the completion of a relevant SEA in which all component parts of the sectoral development are subjected to detailed and, in this case, absolutely rigorous, scrutiny. This is designed to ensure that no 'loose ends' remain that might compromise future environmental sustainability and public safety.

I emphasised then, and do so again now, that if any such obstacles do remain, then the entire programme must be put on hold until acceptable and demonstrably effective and safe solutions have been found. It is not permissible to blunder forward regardless, in the hope that someone will find a solution, some day! The solution of the problem of finding an acceptable permanent system of waste storage that meets this exacting standard has not been disclosed since the original consultation: nothing has changed, except the arbitrary new rules under which DECC has chosen to play.

This issue is a matter of policy, not of public debate and opinion. The consequences of permitting DECC to continue to generate this hugely challenging and dangerous waste could, at some indefinable time in the future, become catastrophic beyond comprehension. That it should even contemplate importing additional wastes, including redundant nuclear warheads for decommissioning, when no demonstrably safe and permanent solution has been proposed for its own waste, is the height of irresponsibility and public concern.

When the potential consequences of a containment failure cannot be ignored, no matter how supposedly improbable, then the ONLY permissible decision that can be tolerated is that the proposed programme shall not be permitted to go ahead. An absolute ban on producing such wastes domestically, and of importing more from other states eager to rid themselves of such inconvenient materials, must become an absolute national policy. And this policy must transcend and over-ride any ephemeral political decision to the contrary, regardless of what government may be in power. No-one, whether they be a humble Local Authority Councillor or the collected authority of the Members of both Houses of Parliament themselves, should have the power to overturn that decision, until and unless a permissible solution does emerge in the future.

#### **Another inconvenient issue - Sellafield and the sustainability of a nuclear waste dump in Cumbria.**

So now allow me to put on my own 'Expert Hat' and speak as one with some expertise in my own professional discipline. I draw your attention to a small problem that appears to have escaped even DECC's most diligent analysts, but one that actually erects an extraordinary obstacle to DECC's continued efforts to locate a potential site within the Cumbrian area itself.

#### ***The politically inconvenient constraints of Environmental Impact Assessment***

For many years I have practised as a consultant in the field of Environmental Impact Assessment (EIA in the professional vernacular). I have worked in this field at its leading edge, and have participated in the development of some of the many sub-disciplines that infest this burdensome but essential regulator of development planning. So I can speak with at least some authority on this matter.

So let us first assume that, despite all that I have said so far, DECC (or some other entity) does eventually devise an adequate solution to nuclear waste storage. Or even, for argument's sake, let us suppose that, for purely political reasons, the Secretary of State, in his/her authoritarian 'wisdom' decides to invoke the authority granted by this unwary Parliament and orders a 'solution' to be imposed on some unfortunate recipient region. This is, as was recently admitted in Parliament, entirely on the cards!

#### ***Alternative solutions - keeping one's options open.***

Any decision on locating the dump would have to be subjected to the legal process of formal Environmental Impact Assessment. The mandatory methodology requires the assessor to examine, amongst others, of two particular concerns. First, he/she must analyse the 'do-nothing' scenario, including the option of alternative sites (if, indeed, any other District Council is foolish enough to 'volunteer'). Since none has at present, nor does it seem likely that another Council will express willingness to do so in the near future, I will not consider this further here. But secondly, they must also look at the risks that may exist that could either prevent the dump from being completed and managed, or that might even bring its sustainability as a project into question.

#### ***Cumbria - a special case***

So let us now take the special case of Cumbria, since once again we seem to be front runners in this unholy race to environmental vandalism. The decision to locate the dump in or near to Cumbria raises a quite remarkably unforeseen problem, one that falls squarely within my own field of interest. And here we immediately have to face a very controversial issue indeed - the proximity of the notorious Sellafield Complex.

Public debate about certain issues associated with this facility is not encouraged. It is, politically speaking, an extremely sensitive thorn in the flesh of DECC. But in the present circumstances at least, some attention must be paid to the issue of the future condition of the entire region, and inevitably also of a nuclear waste dump located within that area, should an incident at the Complex result in significant discharges of radioactive emissions, either from the huge volume of legacy waste stored there, or from more recent acquisitions.

#### ***Incompetent internal management***

I am not here concerned with the security measures that may be in place to ensure that the facility is safe from hostile attention. I do not know what they might be, nor do I wish to be so informed. But reports of managerial defects and 'incidents' do on occasion filter out. Some have become public knowledge through their being aired in local Council and other formal meetings, others in the local press and even national media. These indicate that the standard of management of the facility itself leaves something to be desired. In addition, despite a somewhat tatty cloak of secrecy regarding environmental contamination originating from various components of the Complex facilities, there is evidence that even after half a century of attempting to 'contain' the radioactive material kept on that site, escapes (and even authorised discharges) still occur.

### ***Keeping up with progress - the covert arms race and the bad guys lurking in the wings***

Now consider this, as I am sure that the security forces must already have done. The technical sophistication available for mounting a challenge to a potentially dangerous facility such as this by hostile elements increases year on year. It has to be balanced by perpetually superior security measures, that can be guaranteed to frustrate any such action. Reviewing the history of such challenges over the past century, it is clear that there is an ever-escalation 'arms race' that has become far more dangerous in recent years. The means available to mount such challenges are now far more complex and potentially effective than they were even a couple of decades ago.

### ***Exclusion Zone***

Given such escalation, and the fact that the proposed dump is projected to have a future life-span of millennia, it is utterly impossible now to predict just how long the balance between resistance and breaching of the defences of the Complex will rest with the good guys. In the event of a single significant failure, however caused, it is entirely probable that an Exclusion Zone around and downwind of Sellafield would have to be declared and enforced. We are unable to estimate just how large and dangerously contaminated that Zone might be. Incidentally, this would without question force the immediate shut-down of the nuclear power generating station proposed to be sited beside the Sellafield Complex, thus adding to the country's agonising over 'the lights going out'!

So if the nuclear waste dump, in all probability the only one available in the entire country, were to be located anywhere within that future Exclusion Zone, then this would be a catastrophic development for the sector. There would be nowhere to store any future waste generated during the closure period - which could be for centuries.

### ***Running the dump after a catastrophic incident at Sellafield***

But of even more concern would be the problem of actually managing the waste that would already have been stored within the dump, should it be located within an Exclusion Zone originating at Sellafield. Whilst, under normal circumstances, the routine management of the facility might be a virtual sinecure, any abnormalities that might arise would still need immediate attention, and possibly remedial action. But if the area were forcibly closed as the result of a containment failure at Sellafield, then the management of the existing wastes in the dump itself would become problematic. Both access and management could become impossible, and environmental contamination that could result from a failure to service defective storage units could result in a real and substantial threat to the future habitability of the entire region.

I will not go into more detail here - it is sufficient to note that such eventualities would have to be identified and analysed within the context of an EIA on any proposed site that might fall within an Exclusion Zone declared around Sellafield. In my judgment, the inevitable conclusion would have to be that locating the dump site in this region should be declared unacceptable, because of this possibly remote, but ultimately avoidable risk. So I find the present attempt by DECC to progress its ambitions, in apparent disregard of even the most elementary safety precautions, wholly unacceptable.

### ***What are the critical 'Exclusionary Criteria' that should be applied to this Site Selection process.***

During the equally farcical 'public consultation' adventure over the siting of new nuclear power generating stations along the Cumbria 'Energy Coast', certain 'Exclusionary Criteria' were identified that would, if exceeded, demand the complete rejection of the site for further discussion. This resulted in both the Braystones and Kirsanton sites quite rightly being disqualified. However, in this revised Strategic Siting exercise for the nuclear waste dump, no such criteria seem to be in evidence. Why is this?

### ***Inconvenient geology and heavy rainfall on the Lake District fells***

Could the reason be simply that one such absolute Exclusionary Criterion is the actual geology of the region? DECC's continued bluster that it still believes that suitable geological formations might - possibly - exist in the Cumbria region is pure dissembling and hogwash. Because it has been so extensively explored over the years, the geology of Cumbria is probably better understood than that of any other region in the country.

As detailed analyses during the NIREX fiasco demonstrated beyond all reasonable doubt, that of this region is totally unsuited to such an adventure. The high subterranean hydraulic pressures caused by the presence of water in the fissures in the rocks of the Lake District mountains above the Borrowdale Volcanic Intrusion cause rapid and unpredictable hydraulic flows in sub-surface geological strata and intrusions below and around the National Park. When - and not as DECC like to argue, 'if' - there is a containment failure in the dump at some unpredictably distant time in the future, released radioactive substances will be forcibly percolated under pressure through the entire fault complex of the region.

Where they will emerge - as emerge they most certainly will - to the surface, whether in Cumbria and its surroundings or even in the South Western areas of Scotland (the Solway Estuary is nothing more than an inconsequential surface feature as far as the geology is concerned!) is anyone's guess. Evidence that the time taken for such contamination to reach the surface may be orders of magnitude faster than some modelling predictions suggest must be taken as a powerful warning that this issue is of far greater concern than DECC likes to accept.

### ***The environmental risks of containment failure***

And a second Exclusionary Criterion for a dump in the vicinity of Sellafield (and remember that the emissions cloud from Chernobyl moved over Cumbria - twice) must be the potential for the isolation of the active dump following any containment failure at the Sellafield Complex. Failure to manage a nuclear waste dump releasing potent, high-activity contaminants into the environment, and their inevitable transportation by natural hydraulic process to distant surface locations, is completely unacceptable.

DECC is fully aware of these risks, yet continues to prevaricate and dissemble. If the public likewise continues to look the other way whilst DECC fiddles, then Cumbria and all who live there can expect no peace of mind over this irresponsibly prolonged attempt to impose a politically selected solution in defiance of common sense. The new attempt to disenfranchise the County Council, and therefore all who voted for the Members to represent their interests, crosses the line between democracy and fascism, between respect for sustainable future and the desire for quick politically convenient solutions now. This proposal must be dropped now, and those who have acted with such wilful neglect of the common interest brought to account.

### **In conclusion**

The attempted disenfranchisement of County Councils in the new 'Consultation' is both illegal and in contempt of the public. The environmental issues raised by the policy of expanding the nuclear waste generating sector, both internally and through the import of additional waste and munitions from elsewhere, would, if permitted to go forward, create an entirely new and terrifying vulnerability to every nation going down this irreversible pathway, regardless of where those final waste disposal facilities may be located.

Because these dumps will be effectively everlasting, any action that might prevent their continued effective management, whether from natural causes or from hostile action, introduces a totally new form of severe and even potentially catastrophic environmental hazard to future populations. Even merely incapacitating them would create the risk that uncontrollable natural processes could then progress to their inevitable outcome, rendering parts of the surface uninhabitable for an unthinkable long period of time thereafter.

Unless these waste can be stored in a totally invulnerable geological formation, such as several kilometres down in the crystalline basement crust of the Earth's tectonic plates themselves, any failure to maintain these facilities, for whatever cause, would raise the very real prospect of an intolerable and insoluble threat to the very environment of any nation adopting such an improvident course of action. It is often said that we 'learn lessons' from previous catastrophes - maybe our politicians do attend the lectures, but they still seem highly incompetent when asked to pass the real world examinations thereafter!

But now we are facing an entirely new situation - one for which there is no precedent from which to learn these crucial lessons. The Chernobyl Incident exposed weak management and inadequate design as causative factors - is the Sellafield Complex free from such defects? The Fukushima Incident was supposed to be impossible - except that the site was imprudently lowered during construction, so making it vulnerable to the 'unthinkable' tsunami that caused its catastrophic meltdown. But here in Cumbria we do not need to be concerned about earthquakes and tsunami damaging either the dump or the Sellafield Complex - any incident at Sellafield, however caused, would be sufficient to render the region uninhabitable and the dump unstable.

Or should we be concerned with the 'unthinkable' after all? We are now watching as the Greenland Ice Cap melts as our climate changes. The reduced gravitational pressure over a very substantial part of the adjacent tectonic plates will result in increasing stresses in the geology of the Northern Hemisphere. Those stresses will be relieved by readjustments of the crust that will inevitably be unpredictable and literally earth-shaking. So can we be absolutely certain that this will not cause Cumbria to experience renewed seismic activity of an intensity that is, at present, unthinkable? No, we cannot give that assurance - we simply do not know.

But for other nations the same problem also emerges. We have no idea how nations and world-wide political strategies will change in the far future, but well within the lifespan of these nuclear waste time bombs. In the unpredictable geopolitics of the future, unimaginable weapons targeting the ground-level infrastructure of even the deepest buried of these nuclear dustbins could render them unserviceable.

What may transpire from such attacks rests in the hands of forces of nature far beyond our powers to control. We are about to decide on the legacy that we will leave to the future inhabitants of this planet, with the very real prospect of making the greatest mistake that this improvident species has yet committed. Until government everywhere start to think on the larger scale, and for far further into the future, instead of trying to reduce the debate to fragmented and trivial absurdities, policies on nuclear proliferation and the sustainability of this planet's environment will continue to be disjointed, irrational, and ultimately potentially lethal to us, and to our descendants.

