Dear Sir,

Re. Braystones Beach Residents Response to NuGen’s “Moorside” Project

Please find herewith a copy of a document containing our response to your consultation exercise.

You will find within it questions, and points which counter what is contained in some of your documents. We require a response to each, please.

We are especially concerned about the impact of your development on Braystones beach and find your response to us, via Jamieson Reed, M.P., singularly dishonest in implying that there will be virtually no impact on our enjoyment of our property or our amenity.

We believe that, should you seek to continue your project, then there will be ample grounds for legal challenge and judicial review.

We consider that the earlier government decision not to allow similar development at Braystones, as proposed by R.W.E. in 2007, supports our contention that to build in the buffer zone of the most dangerous chemical plant in the world would be nonsensical and pose serious and unnecessary risk to people over an extremely large area. We are of the opinion that the buffer zone was never – and should never – be considered to be a suitable site for private development or, indeed, any other kind of planning opportunity.

Our concerns extend to your faith in being able model various aspects of the proposed development by means of computer programmes. A number of very important aspects of your proposed development are fudged by offering this future solution as an answer. Therein lies the assumption that all the results of the computer modeling exercises will produce results that are in your favour, or are easily countered by you. Even if the modeling were to be done and the results worked to your favour, how can anyone form a considered opinion until they know just what the results are, or how any problems will need to be overcome?

Yet computer models are notoriously unreliable and prone to unexpected anomalies occurring, whether from the quality of the computer programme itself, or from unexpected events occurring that are beyond the ability of the programme to compute. Your reliance on their satisfactory performance is concerning.

Interestingly, the fundamental principle on which the nuclear industry promotes itself, climate change, is entirely founded on computer models – the GCM, or general circulation model – which have been known to be flawed for decades.

Ref.: [http://science.sciencemag.org/content/340/6136/1053](http://science.sciencemag.org/content/340/6136/1053)
When meteorologists cannot reliably forecast the weather for a few days ahead, despite years of computer modeling and the use of vast computing equipment, it is difficult to have any faith in your promises that all will be satisfactorily and safely overcome.

On page 46 of our document we quote Dr. Paul Dorfman, “Accidents are by nature, accidental. The cost of occluding this commonsense axiom can prove radiologically catastrophic.” The proposal to build an intrinsically dangerous additional power station alongside Sellafield is to compound the extant risks and potential consequences quite unnecessarily.

You will be aware that the National Audit Office said that Sellafield poses “intolerable risks”. It is, therefore inconceivable that your proposal to build within the buffer zone of the plant has ever been considered to be viable.

Ref.: http://www.bbc.co.uk/news/uk-england-cumbria-20228176

Your effort to distance yourselves from the Sellafield operations is somewhat ridiculous, as is the attempt to overlook the other proposed projects, all of which will have an impact on the overall amenity of the immediate and larger areas. We include Wylfa, on Anglesey, and Heysham, in this generalisation, as they all propose to use the Irish Sea as their heat sink – with admittedly unknown consequences.

As we point out in an early part of the document, the Braystones site was rejected for reasons which were deemed to be valid by a panel of experts. Almost all the points in their decision were the same as we had submitted to the Select Committee which had considered the sites.

Amongst their deep concerns was the proximity to Sellafield. That was despite the site being two miles away from Sellafield. Indeed, the reasons against Braystones are even more acute because of Moorside’s even closer proximity to Sellafield than the rejected R.W.E. one. It is inconceivable to us that, having stated the reasons for rejection of the earlier R.W.E. site so clearly, any rational person could now say that an even worse site just two miles away and much closer to an existing extremely high risk site, can be justified.

We do not consider that your consultation process complied with the required standards. As beach residents we were omitted from the distribution lists and failed to receive the appropriate literature in a timely fashion. We make further comments on the failures and misleading statements emanating as a result of the consultation within the documents. It is extremely aggravating to read that you have the backing of local residents, when it is plain that you do not.

For your information, we will be sending copies to a wide variety of journals and publications, protest groups, such as RAFL, CORE, Greenpeace, BANNG, Stop Hinkley, as well as the Department for Business, Energy and Industrial Strategy, the Environment Agency and M.P.s

Yours sincerely,
Visible in the background is St. Bees Head. The proposed RWE power station, which was rejected by the government in 2012 as unacceptable, would have been on the fields to the right.

In August, 2012, a landslip derailed a train at the top of the picture; a further one stranded the rescue train. The limestone patch on the right of the picture is the scene of a further landslip in 2014.

The railway serves Sellafield’s nuclear flask trains and is little changed from when it was completed in 1850. Residents have complained for years about what they see as an unsafe line.
NUGEN PROPOSED DEVELOPMENT AT MOORSIDE, SELAFFIELD, CUMBRIA

RESPONSE FROM BRAYSTONES BEACH RESIDENTS TO STAGE 2 CONSULTATION

INTRODUCTION

NuGen’s proposals to build a new nuclear power station at Sellafield is based on a web of deceit and omitted details, and would be an outmoded and dangerous addition to the nuclear complex already there.

The base-load model for the National Grid has been illustrated to be a fallacy. Most experts now agree that the model for the future, to improve flexibility and efficiency whilst avoiding unnecessary waste, lies in small-scale fast-reacting solar arrays, wind-farms and tidal installations, with a few modular reactors spread around the country in places where the need for electrical power is greatest. Such devices are already in existence, available from a variety of suppliers, and merely need encouragement from government and financiers.

For its own reasons, NuGen is endeavouring to perpetuate the myths that there is a need for a base-load generation, available at all times to provide electricity in case of a sudden surge in demand, and that nuclear is in some way clean, green, and secure.

It is known that the nuclear industry stems from the need for bomb-making materials at the end of the last century, and that the generation of electricity was, effectively, a side-line that gave superficial cover for the building of reactors. What is not usually considered is that since the plant at Sellafield stopped generating in 2003, the costs have gone on and are escalating at an horrendous rate. If the costs of disposing of the waste, contaminated equipment and resources, cleaning up spills and after incidents, were to be added in to the total cost of producing electricity by nuclear means, it would be prohibitively expensive. Even today, that remains the case.

In the base-load model, for every generator there has to be a second one of equal capacity running in case of failure of the first one.

Over 10 years ago, we suggested that the sole problem with production by wind-farms and solar arrays was that there was no storage available. Yet the basic technology has existed for decades to store electricity: either via accumulators (batteries) or by the development of capacitors. While these will only store direct current, the semi-conductor industry will soon be able to develop industrial “chopping” circuits to enable high-power conversion to the 50 Hz sine wave alternating current required for the National Grid.

In this document we explain some of the major omissions from NuGen’s documentation and the misleading statements that obscure the true impact of the proposals on the Cumbrian landscape and marine environment.

The local population is not in favour of any further development of the nuclear industry. This is another myth perpetuated by local politicians, most of whom are beholden to Sellafield, and clever PR companies milking the industry for its own advantage.

That a proposal such as “Moorside” can even be considered in the light of the findings of various committees and specialist groups looking into Sellafield’s parlous state, is beyond us.

How can it possibly be safe to build nuclear reactors – especially those with such a worrying lack of secondary containment and scant resistance to corrosion and physical attack – immediately alongside, and in the buffer zone of, the most dangerous chemical works in the world? It is tantamount to building a match-making factory alongside a petroleum refinery. Even if the existing site had an unblemished record this would be a stupid idea, but Sellafield is well-known to be the world’s greatest emitter of radioactive materials. At best the legacy discharges in the air and in and under the sea will be re-circulated. At worst there will be a domino-effect that will render a great deal of Western Europe uninhabitable till the end of time.
The government has a clearly-stated policy that no nuclear development will be permitted unless a means has been devised for safe, secure final disposal of the many highly-toxic wastes produced. This situation has not yet been arrived at and thus the project is prohibited from commencement by this government’s own policy.

It cannot be sufficient to say that a dump will be built and will be ready to receive high level waste by 2040. There can be no adequate guarantee of that, especially when no site has yet been identified. Future promises are inadequate.

Currently, the only means of temporary disposal is to encapsulate the materials in glass and then put them in an underground dump. The longevity of the capsules is insufficient to contain the materials until such a time as they become harmless. After the capsules have been dumped in this way, they will be irretrievable. Once they start to leach into the surrounding ground the effects will be deadly to all life that it touches.

NuGen endeavours to distance itself from Sellafield by saying that they won’t be doing anything similar. However, this is not true. NuGen will be using the same chemicals as Sellafield, will need to have the same level of security and safety, and at the end of the fuel’s life, they will have to store it for at least fifty years on their own site, before handing it over to Sellafield immediately across the road, to add to the stockpile that already exists on the Sellafield site. We understand that, because more energy will be extracted from NuGen’s fuels, the waste will be somewhat less in volume, but will also be intensely more radioactive than that from current nuclear generators.

Apart from misleading people about the full impact, whether by omitting vital items from consultation documents or the true extent of the changes that will be inflicted on the area — roads, rail, additional buildings and infra-structure, extra accommodation, burdens on the community’s services, need for fresh water extraction, sewage requirements, etc. — there is a misleading account of the cooling water requirements.

The impact of circulating billions of gallons of water from the Irish Sea and then returning it at 14° above intake temperature does not appear anywhere. The requirement, according to the literature is for 45 cubic metres of water per second. We illustrate the true meaning of this in our tables in the document.

As well as endeavouring to isolate the proposed “Moorside” site from Sellafield, there is scant mention in the NuGen literature of the other major sites around the area and around the Irish Sea all of which will have an impact on the environment by virtue of their need for cooling water. Combined these plants will utilise a third of the volume of seawater in the Irish Sea every year. They will all be discharging chemicals and used coolant at 14° above intake temperature, but no-one has yet analysed what impact this might have on marine life. If a rise of 0.1° can cause startling irreversible changes to marine life in the Irish Sea, what changes will these proposals wreak?

“Moorside” should not be considered in isolation, but in a holistic way, by considering the impact of the total number of sites utilising the sea.

We are unqualified to opine on financial matters, but it seems to us that the burden of paying for so many of the required changes, the insurance for incidents, and the final disposal of waste, coupled with the high cost of produced electricity would be sufficient to render the project non-viable.

Even government advisors have previously suggested the reasons why building in this area is wrong, albeit in a paper relating to a previous application. That previous application, by R.W.E., for sites at Braystones, at least had the sense to remove itself to outside the 2½ mile buffer zone around Sellafield, but even then it was considered to be too close to Sellafield for safety.

The project will infringe many residents’ rights and the poor quality, weaknesses and failures of the consultation exercise with its inadequate, incomplete and misleading information, absent survey results, etc., will surely lend itself subject to legal challenge as a properly informed decision cannot be formed.

The proposed development at “Moorside” does not make sense on any level. In this document we, as residents of Braystones Beach, explain why, using referenced evidence based research.
EXECUTIVE SUMMARY

1. **Nonsensical proposals**  
   Pages 1 - 3

   The NuGen proposals do not make any sense in any way and a previous proposal to build a new nuclear power station by RWE in West Cumbria was turned down by the Government in January 2010. We show again the key objections as recorded in Hansard, which describe why the Government chose to refuse permission. These reasons are still valid, relevant and as pertinent today. So why is the building of Moorside being described as a *fait accompli* by NuGen?

2. **It is not a *fait accompli* because:**  
   Page 4

   - massive subsidies required;
   - significant reactor design flaws;
   - public outcry re impact of the site;
   - lack of sufficient investment;
   - regular changes of government policy;
   - unsafe use of Sellafield buffer zone to build Moorside.

3. **Why stop Moorside?**  
   Pages 5 - 9

   - flawed design with no secondary containment;
   - disastrous environmental impact on the surrounding area and the Irish Sea;
   - lack of robust and competent planning, the proposed site is immediately alongside the most dangerous chemical works in Europe and to be built within the Sellafield safety buffer zone;
   - no published financial data or credible investment plans showing how proposal is to be funded;
   - use of sites which are already highly contaminated by radioactive material;
   - unnecessary and ruinous development of amenities will kill off the tourist industry;
   - use of outmoded, intrinsically unsafe large-reactor concepts;
   - no recognition of the grave risks and negative impact of infra-structure developments;
   - no statement from NuGen regarding the understanding of, or strategy for, ultimate waste disposal of highly dangerous and concentrated radioactive waste;
   - NuGen’s plan necessitates the building of two chains of highly intrusive massive pylons;
   - overuse of natural resources, particularly the drawing of water;
   - nuclear industry’s distortion of political and community scene with the nuclear industry having an excessive influence on the area - from commercial, educational, social, and political standpoints;
   - negative impact on the project following the referendum has not been taken into account, the plans are now more unrealistic.

4. **Devastating impact of cooling, of discharges and of additional structures**  
   Pages 10 - 17

   - NuGen do not know what impact dissipating twice the thermal equivalent of the electricity output of the reactors into the Irish Sea will have;
   - NuGen have not conducted an analysis on the potential effect of cooling on the environment;
   - the scale of the required amount of pumping for cooling waters and for additional structures is incomprehensible and probably unachievable;
   - according to NuGen a single reactor will require 2,565,730,080 gallons of cooling water to be provided from the Irish Sea per day to exchange the heat generated from the reactor;
   - temperatures in the Irish Sea will rise significantly due to heat dissipation, after use circulated water will be returned to the sea at 14° degrees above ambient temperature every day;
   - a slight rise in sea temperatures has already caused a decline in cold water species, has increased the spread of non-native species and a rise in the number and type of jelly fish;
if other schemes such as Heysham in Lancashire and Wylfa in Anglesey also dissipate heat in the Irish Sea, it will equate to the overall thermal equivalent of over six million 3 bar electric fires;

for Moorside alone this waste heat equates to the equivalent power for at least 1½ to 2 million homes per year;

the production of direct heat and its discharge into the environment will also have an adverse impact on local weather patterns;

cooling systems and additional structures will require biocidal treatment to prevent biological fouling of pumping systems etc., while discharged effluent is both heated and contaminated with residual traces of biocide which will necessarily kill off marine life;

the huge quantities of water being pumped through the system will generate enormous disturbance to the sands and silts of the sea bed and produce strong currents;

no mention is made by NuGen as to how they will mitigate the noise levels produced by the continuous pumping with hum transmitted through the bed rock;

are cooling towers going to be built as part of the proposal, and if so what account has NuGen made in relation to tritium discharges into the atmosphere in close proximity to such towers?

5. Design Safety – Tried and Tested?

Nugen have not told anyone about the significant concerns regarding design safety and there is no mention of the problems obtaining Generic Design Approval within the proposal.

Matters which are of concern to the Regulators:

- the major components of the reactor’s structural integrity and its mechanical engineering,
- significant technical and closure programme risks associated with completion of the work remain;
- the quality of submissions to the regulators is significantly below expectations in terms of scope and/or quality.

A senior staff scientist at the Union of Concerned Scientists has challenged specific cost-saving design choices made for the AP1000. He is concerned about the strength of the steel containment vessel and the concrete shield building around the AP1000, claiming its containment vessel does not have sufficient safety margins.

6 The Consultation, the Community and the Environment

- The many consultations are confusing, full of acronyms, jargon and unexplained technical terms;
- The initial consultation failed, as evidenced by the small number of respondents: 0.5% of Copeland’s population;
- Braystones Beach residents and many others across Copeland failed to receive NuGen communications in a timely fashion;
- The data from the current borehole survey will not be available until after the consultation process has closed.

NuGen’s highly misleading and minimalist illustrative impressions of the proposed site omit:

- the massive safety fencing around the site;
- the mud wall;
- the two harbours;
- plant, pump-housing, piping to handle massive amounts of water in and out of the sea 24 hours a day;
- the method of connection to the National Grid and massive pylons across the landscape;
- the cooling towers;
- the existing and new railway lines and station;
- the on-site high level waste storage facilities;
- minimized impact illustration of the on-site power station for emergency power supplies;
- the Sellafield site in its entirety and thus the context for the NuGen site;
this devastating proposal will bring scant benefits to the community. NuGen have offered a very limited, discretionary, compensation scheme for some affected home-owners, however the over-riding legislation to be used by the community to pursue compensation from NuGen will be through the Human Rights Act, rather than NuGen’s terms;

- NuGen are proposing to destroy our naturally beautiful environment completely, as a result of becoming home to even greater nuclear hazards than those already extant. No mitigation by NuGen will suffice;
- no information from NuGen on the impact and costs of that incoming workers and their families will have on local community services and facilities such as housing, health and social services provision;
- one of the basics of human rights is the supply of clean pure water, however the consultation document confirms that NuGen has “not included an assessment of the potential likely significant environmental effects of the Freshwater Water Supply”. Why Not?
- NuGen are expecting United Utilities to ensure potable water is provided. Moorside requires that the supply has to be guaranteed under all circumstances, so ever greater quantities will need to be extracted from local lakes, rivers, streams and springs to the detriment of the local community;
- NuGen are suggesting they could tap into Sellafield’s supply-line too, meaning further vast drainage of Wastwater at no cost to them;
- NuGen has failed to assess the huge problems with the 150 year old single track railway - risks with the line, unrecognised impact of the climate, storms etc. on nuclear journeys, poor track stability, recent history of landslides and derailments.

7 External Risks not Covered in the Consultation

- the use of Sellafield’s buffer zone to provide a building site for Moorside will reduced safety at the Sellafield site and destroy the protection for the community and the immediate environment;
- because of the very close proximity of the two sites any “incident” at either site will have an impact on the other;
- increasing risks to security at nuclear sites such as the use of new technology are referenced. There is the future possibility of terrorist attacks here. There is no evidence of robust security planning for Moorside in the consultation documents;
- insufficient thought has been given by NuGen in the planning document to the long term storage and eventual disposal of highly toxic nuclear waste;
- it is easy to corrupt computer systems, either accidentally, knowingly or otherwise, by handing over the supply of control equipment, or its components, to foreign companies, the U.K. is effectively handing control of our resources to a foreign country.

8 Political Action and inaction

There has been continuing political churn and inaction regarding energy policy, and the recent referendum has also left questions about the future.

However, five years ago the politicians announced several criteria that would have to be met before any consideration could be given to nuclear expansion:

- no subsidies;
- a method and location for the disposal of nuclear waste - legacy and new to be in place before further expansion could be undertaken;
- designs would have to be generically approved and safe in operation;
- energy security needs would have to be met;
- approval of local residents obtained before any project was permitted to start.

Legal challenges may be pursued if any of the above five criteria are not met at Moorside.
ADDITIONAL MATERIAL

Background material and relevant points which explain why the “Moorside” development should not be permitted to proceed.

1. The Master Plan
2. Financial Viability of Nuclear Generators
3. More Reliable Than Wind?
4. Cynical Ways – Inside Sellafield
5. Influential Friends and Politics
6. Weeding out the Truth
7. The Conditions to be met Before Nuclear Expansion can Take Place
8. Civil Service Manipulation
9. Accidents Will Happen
10. Table of Radiation Leaks
11. The Redfern Report
12. The View of Natural England
13. Features of the Area
15. Additional Interesting Facts
16. Other Relevant Developments
17. Brussels Still Awaiting Notification from NuGen
18. NuGen’s Limited Compensation Scheme for Home Owners
19. Westinghouse AP 1000 Design Flaws
20. Confuse the Public With a Consultation
21. A Matter of Trust
22. Articles in the Press.
1. **NONSENSICAL PROPOSALS FROM NuGen?**

**THE GOVERNMENT’S PREVIOUS DECISION RE. BRAYSTONES IN RELATION TO NEW NUCLEAR DEVELOPMENT BY R.W.E., JANUARY 2010**

We would like to remind people of the government’s own findings on the proposal to build a new nuclear development in Braystones, West Cumbria just a few years ago:

1. **Whilst jobs are welcome in West Cumbria, the overall effects of multiple nuclear developments would have many negative effects.** What is frequently referred to as an area of outstanding natural beauty, would be greatly defaced by such extensive nuclear industrial sprawl. This would have a detrimental effect on the visitor’s perception of West Cumbria as a tourist destination. At a time when the area is desperately trying to diversify its economy, tourism jobs would simply be displaced by more ‘nuclear’ jobs, thus not actually increasing real jobs with the numbers being promised. It would greatly increase the economic stranglehold that the nuclear industry has on the area and would discourage many other discerning businesses that might otherwise have chosen West Cumbria. (A £45m cheese factory planned for Workington in West Cumbria did not go ahead in 2007, because of plans by Studsvik to build a radioactive waste processing plant at Lillyhall.) There are already a number of nuclear developments proliferating in West Cumbria, with Copeland and Allerdale councils trying to coax the public into accepting even more.

2. **West Cumbria is not an economically suitable region for multiple reactor builds, as grid connectivity would prove particularly difficult and costly in such a remote area.** West Cumbria is not where energy production is most needed. Any multiple reactor builds should be sited close to centres of high energy demand, where more suitable infrastructures and grid systems already exist. The recent devastation from flooding in West Cumbria has highlighted the wholly inadequate infrastructure throughout the region, which already struggles to service existing industrial demand. Repair and replacement of crucial bridges is currently estimated to take years. The southern sector of the main arterial route through Copeland has been de-trunked and is literally the width of a single vehicle in places. Road closures due to accident or maintenance can require alternative diversion routes 120 miles long. Major road improvements take at least 10 years to provide. If the Braystones site was developed, it would seriously compromise the existing Emergency Arrangements for the Sellafield site.

3. **During construction of the proposed new nuclear builds, Copeland would be inundated with tens of thousands of migrant workers.** This would completely overwhelm the inadequate infrastructure, housing and public services. During the massive influx of construction workers for THORP in the 1980’s, there was an unacceptable increase in public disorder, crime and road accidents and Copeland never received the promised infrastructure upgrades. In the aftermath there was devastating unemployment, to the extent that it was noted in parliament that this must never be allowed to happen again.

4. **The Braystones site is the only undisturbed green-field site that is not adjacent to an existing nuclear site.** It would destroy prime, ancient greenbelt farmland, which affords highly valued views across the Irish Sea towards the Isle of Man, Ireland and south west Scotland. The site is of great archaeological potential and is adjacent to one of the most important Neolithic sites in Northern England at Gibb Tarn. Public enjoyment of the Grade II listed Victoria Jubilee Tower in Braystones would be greatly degraded by the overwhelming close proximity of 80 plus meter reactors.

5. **The stretch of coast between Sellafield and Whitehaven is ‘Undeveloped Coastal Area’ of ‘High Landscape Value’ containing many environmentally sensitive habitats.** The River Ehen is an important salmon and trout fishery and is unpolluted by industry: it skirts the proposed
Braystones site and would be vulnerable to pollution from such a major industrial complex. The upper reaches of the river are Freshwater Mussel breeding grounds and are given SSSI protection. Significant numbers of River Lamprey found in the River Ehen are particularly sensitive to industrial pollution and its habitats are nationally declining under threat from industry. The species is given SACS protection in Britain. Several times a year the river floods south onto the flood plain known as the ‘Boggles’. This is an environmentally sensitive habitat for Wildfowl, Natterjack Toads, Bats, Deer, Badgers and Barn Owls. Any pollution arising from the RWE site at Braystones would contaminate this area. The rare suite of kettle-holes located at the SSSI Silver Tarn would be highly vulnerable to the close proximity of such large scale industry. Medicinal leeches are harvested from water at the north end of Braystones. The marine cooling systems for new reactor builds near Sellafield would disturb the unique, accumulated radio-nuclides on the sea bed, releasing them into the environment. The proposed massive ‘heat dump’ into the Irish Sea by multiple reactor sites, could adversely affect marine environment temperatures.

6. The sea flood defences for the proposed RWE site at Braystones rely on a sand and shingle spit that didn’t exist 250 years ago. Reference to pre-1750 maps reveals a dramatically different coast line. It is reasonable to assume that the site would need to be quarantined and kept under surveillance for several hundred years. Given the predicted climate change and rising sea levels, reliance on current flood defences would be flawed. RWE suggest that there are concrete and masonry revetments local to Warborough point and the sand and shingle spit along which the railway runs. This is not the case and can be clearly observed on a site visit.

7. The RWE development would effectively trap the residents of Braystones and Beckermet between the sea and two major hazardous nuclear complexes. The site would engulf the road north out of Braystones, leaving two remaining roads, which are frequently impassable due to heavy flooding. In the event of an accident at either the Sellafield or Braystones sites coinciding with flooding, residents would be left with no Emergency Evacuation Route. Braystones and Beckermet residents would suffer the most extreme industrial blight of all the communities affected by new nuclear build, being sandwiched between two nuclear sites. Reference to a map of the area is recommended to understand the exact location of the RWE proposal north of Braystones in relation to Braystones, Beckermet, Nethertown and Sellafield.

8. Many Braystones residents' properties would be abutting the site boundary. Following the Bunsfield fire, there will be many concerns from residents and the HSE about building a major hazardous industrial complex in such close proximity to existing residential properties. The current regime at Sellafield of armed police challenging pedestrians walking close to the perimeter fence, would presumably be similar at the Braystones site. The close proximity of such major industrial construction and operations would greatly compromise residents’ rights to the peaceful enjoyment of their properties. The proposed transporting of large plant components via a marine off-loading facility, over the beach, the beach bungalow community and the rail line raises many serious safety concerns. Disruption to public rail services would be unacceptable at a time when road traffic congestion would need to be alleviated. Many Braystones residents on low income are particularly reliant on the rail service.

9. The proposed high concentration of nuclear reactors in Copeland is unacceptable. Sites that may otherwise have been situated in Scotland seemed to have simply been displaced into the single borough of Copeland. The proximity of so many reactors to the most sensitive nuclear site in Europe should be questioned. The people of West Cumbria have borne the major burden of the nuclear industry for more than 60 years. The responsibility for nuclear power should now be shared more fairly across Britain.

10. The Braystones development is not supported by the local public or local councillors (Councillors Norman Clarkson and David Southward) as was demonstrated at several public meetings (also County Councillor Tim Knowles in a letter to the Whitehaven News 30 April 09). Even the local MP, a prominent supporter of Nuclear Power, declared in the Whitehaven News in November 09, that there is no public support for the Braystones or Kirksanton sites and has shown a strong
preference for developing the existing Sellafield complex. DECC have conceded that the Braystones site fails several of their own criteria but claim that it is of overriding national interest to include Braystones in its list of reactor sites, due to a shortage of sites. There are sufficient existing nuclear sites to potentially generate at least 28GW of power. Given the many engineering, safety, environmental, economic and infrastructure obstacles posed by the Braystones site, it is hard to believe that other more suitable (brownfield) sites do not exist. Greenfield sites should only be considered near centres of high energy demand, to avoid transmission losses.

(5 January 2010)

Ref.: http://www.publications.parliament.uk/pa/cm200910/cmselect/cmnwest/memo/nuclearindustry/ucm1502.htm

In the first paragraph of that document, you will note that the people leading the public are the local politicians – a high number of whom are beholden to Sellafield, either directly or indirectly. There is a correct inference then that the majority of the public are not in favour, but are being led against their will.

In the final paragraph of the above, it is noteworthy that only the opinion of the local M.P., a former PR manager for Sellafield, indicates a “strong preference” for the Sellafield site. We do not believe that this is sufficient justification.

Another document issued by the government at the same time went on to say:

There are potential negative effects on nationally and internationally protected nature conservation sites including Drigg Coast, River Ehen, Wastwater and River Derwent and Bassenthwaite Lake; visual impacts on the landscape from the power station and new power lines that could be seen from several locations, including the Lake District National Park; effects on water quality and migratory fish in nearby coastal waters due to the abstraction and release of sea water for cooling; and potential effects on erosion and visual appearance of the coastline due to the need for new flood defences and a marine landing station. These effects are significant, but mitigation opportunities could be available following further study at the project level.


You will notice that the vast majority of the points which excluded Braystones from any further consideration pertain to the proposed “Moorside” site, too. This is hardly surprising, as the two sites are only 2 miles apart.

The points raised were the same as those we raised in our own document stating our opposition to the plan.

This new document contains all the above points together with many more. If one changes the name in the above paragraphs from Braystones to “Moorside” it would still be true.

The sole point which we have to concede is that “Moorside” has the advantage of not being in London, or near any other great user of electricity. Sadly, that means that the transmission line losses alone will be the equivalent of a small power plant. Cumbria has no need for these huge amounts of electricity.

Those making decisions about Cumbria are very happy to accuse those who object to these plans as being NIMBYs, but, in fact, it is they who are deciding that these developments should occur away from their own homes.
2. **A FAIT ACCOMPLI?**

1. **What NuGen say**

We have been told by NuGen staff and local councillors, "Nothing can stop this being built". We beg to differ for the following reasons:

- the European courts may be interested in the assistance offered to NuGen by way of subsidies and other financial benefits - some hidden;
- the reactor design has many flaws that may yet prove to be beyond the capability of Westinghouse to resolve at a viable cost;
- the public outcry when it is realised just what an imposition this site is and what its impact on the existing amenity would be;
- the lack of available finance at rates which would enable the project to be even slightly viable, exacerbated now by the result of the referendum
- a change in government policy, should ministers ever realise that nuclear is not financially viable.

In the unfortunate event of a nuclear incident occurring, anywhere in the world, the public will certainly have more serious thoughts about the risks posed by nuclear power generation. We would recommend other sensitive human receptors to make sure they read Chapter 23 (Summary of Effects) of NuGen's jargon- and acronym-filled plans of what they intend to do to our beautiful area - if no-one stops them.

One of the most interesting questions has to be how a series of fields that for centuries have been pasture for cattle, that have never before been built on for any purpose, and which was said to have been purchased for use as a “buffer zone” to protect the public from the most immediate devastating effects of an “incident” at Sellafield, can suddenly turn into a brownfield site which, despite all the planning restraints and sensible precautions, is suitable for three new nuclear reactors.

We have never thought of ourselves as "sensitive human receptors" before!

2. **What the Government really says**

Official documents from DECC published on the 7th July, 2016, illustrate how precarious the Moorside and similar projects are. This series of major developments is given an amber light, meaning that it may never go ahead.

To quote from the spreadsheet announcing the status of most major infra-structure projects:

> The primary objective of the programme is to site and construct a permanent geological disposal facility (GDF) as the safe, secure and environmentally responsible solution to the long-term management of higher-activity radioactive waste in the UK, excluding Scotland. The programme also supports the delivery of the UK’s nuclear new build programme because before development consents for new nuclear power stations are granted, the Government needs to be satisfied that effective arrangements exist or will exist to manage and dispose of the wastes they will produce.

*(Our emphasis)*

Ref.: [MajorProjectAssessment](#)

We understand that NuGen are running two years late already and there is still no completed design which has been approved by the Inspectorate.
3. **Why Stop Moorside?**

1. **Flawed design which has no secondary containment**
   - Potential for corrosion in reactor vessel - exacerbated by the dampness and salty atmosphere from its position on the coast.
   - Would not withstand a terrorist attack or airplane crash, even with a concrete outer shell.
   - Untried and untested design - despite what the NuGen staff told the public at the Braystones consultation meeting, there are no AP 1000 reactors "up and running".
   - Reactor widely condemned as unsafe - allegations that the design has cut corners to reduce costs.

2. **Environmental impact**

   The only way to dissipate the output of the thermal equivalent of over 6 GW (6,000,000,000 Watts - the equivalent of 2,000,000 three-bar electric fires) is via direct discharge to the atmosphere/environment. In essence, a tremendous amount of heat needs to be got rid of, either by heating the air considerably, or by warming the Irish Sea considerably; neither are likely to have a beneficial effect.

   We assume a thermal efficiency of 30% in our calculations, and this is confirmed as being reasonable by the government figures:


   This suggests a range of 25 to 33%, so it is likely that our calculations are kind to NuGen.

   NuGen have confirmed they do not know what impact discharging that amount of heat into the Irish Sea would have. Attendees at consultations have regularly been given misleading, incomplete, conflicting or incorrect information. For example, the disparate statements from two members of staff over the heating impact of the discharges were confusing. Would it be 1 - 2° or 10 - 12°, or the 14° mentioned in the literature? Or the 20° that reactors in the U.S.A. are discharging? According to the above-quoted document, it could be as much as 30° - so, once again, we are benefiting NuGen.

   We note that there have already been questions regarding whether the proposed cooling system complies with the requirement for Best Available Techniques.

   We also have concerns about the lack of detail of the cooling water terminals off the coast, as the above document notes that, “Offshore intakes have long tunnels from land, terminating either at a massive intake structure (Aberthaw, Hinkley Point A & B)” Where are the details for the proposed NuGen terminals? How can we offer any opinion when we have no idea what is being proposed.

3. **Lack of Planning**

   - The proposed site is immediately alongside "the most dangerous chemical works in Europe". An event at either could have devastating and exponential effect. I.e. The “domino” effect.
   - How would the alarm systems for the two sites be made distinctive and recognisable?
   - Any changes to the topography and ground-water flow may have an adverse effect on the SSSIs that are based on singular hydrological phenomena.
   - It is not possible to foresee all consequences and to provide mitigation against them.
   - NuGen propose mitigation for animals, but none is mentioned for residents.
4. No published financial data

Are NuGen going to gain from the Électricité de France (EdF) negotiations, which have been widely recognised as an extremely expensive and long-term commitment? Will they gain the same £92.50 per kW/h? Despite this being 2½ times the current price of electricity.

The deal with Électricité de France guaranteed this level of income, index linked, for 35 years. Have NuGen been promised the same conditions?

What subsidies and guarantees have the U.K. government made to NuGen and are the EU authorities aware of them?

We note that most of the advantageous aspects of planning depend on there being no tax-payer funded subsidies – are there any in this case?

According to The Times, 6/7/16, weak electricity prices have “dented the enthusiasm among investors in power stations”. Coupled with the withdrawal of the U.K. from the European Union, is there still sufficient financial backing for this project and the vast array of ancillary works all over western Cumbria?

Where is the money coming from for the new-build and all the additional resources - NuGen or the British taxpayer? Are NuGen paying for the new housing, roads, and railway changes?

Toshiba recently had to admit to overstating their profits by $1,220,000,000 - a fact known about by top management who were subsequently obliged to resign in disgrace. Are they deserving of our trust to build and supply our power?

5. The proposed sites have been contaminated by radioactive material

Land contamination at the adjacent Sellafield/Calder Hall/Windscale site amounts to 13,000,000 cubic metres of soil (Equal to 22,100,000 tonnes). The contamination is not likely to have been restricted to just those sites, but would also have affected the Moorside site, with the potential for affecting construction workers and local communities.

At least one aquifer near Sellafield is known to be radioactively contaminated. Digging large holes in its vicinity may change ground-water flow.

The two harbours proposed, together with the cooling water pipelines, are in the area where the highest number of finds of radioactive materials occurs. The disturbance of these sediments, sands and soils would inevitably pose a risk of more radiation-related illnesses amongst residents and workers. Furthermore, the area is a designated marine conservation zone. The immediate area affected is the only remaining section of undeveloped beach and is admired by visitors and holiday-makers from all over the country.

Details of the larger of the two harbours are not made known clearly.

Enquiries produced the statement that only the smaller one would be permanent - but the larger one may in fact, also become permanent, according to yet another of NuGen’s expert consultants.

6. Unnecessary development of amenities

The alleged “improvements” to the area are unnecessary and only of benefit to NuGen and its potential employees. Existing resources are mainly adequate for the current usage by locals and visitors. The development would kill off the tourist industry, in the same way that visitors are already deterred by Sellafield. The current landscape is natural and cannot be "improved" by anything that NuGen designs.

The development would be a significant encroachment on the seascape and an ugly intrusion, visible for long distances, thus producing an even greater loss of visual amenity from land and sea.
7. Outmoded concept

The large-reactor template is now to be superseded by smaller reactors which can be located nearer point of need, thus reducing transmission line losses and costs, major and expensive changes to the National Grid, while also providing more flexibility in the National Grid.

8. Infra-structure

Construction traffic - goods and personnel - would be using roads totally unsuitable for the traffic which would be generated and there are no means of by-passing any accident or incident which blocks the road.

The current road situation cannot handle even a single exodus of staff during shift changes, so, should there be an "incident" – at either one or both sites, or if shift changes at Sellafield and Moorside coincide, it will be impossible for emergency vehicles to get through and departing staff and the public to escape the area.

Any detour requires a 90 mile trip.

In the event of, say, heavy lifting equipment being required, or additional emergency services, it would take too long for them to get to the site.

Braystones residents have long complained about the state of the level crossing and railway infra-structure to no avail. They have pointed out that the line still relies on an infra-structure designed by Stephenson over 160 years ago. It is single-tracked and remotely controlled. No attempt is made to address the danger. None of the proposed railway spurs around the main site are included in the make-believe pictures provided by NuGen.

At Braystones, there have been 93 incidents between 5/1/10 and 3/4/15 (Network Rail data). Is such a line suitable for nuclear transport?

Other incidents include derailments, bridge collapse under a chemical train which resulted in the destruction of two bungalow, and several landslips.

There are still a number of complaints about the state of the railway line outstanding and unresolved. The proposed changes would not improve that section of line.

Increased rail traffic will cause problems for those living alongside the line: nuisance from greater and more frequent noise and vibration, more frequent and longer waits to cross the line. Will trains run during anti-social hours?

Who will police the site? Is it private or state owned? If private, will the private police be armed? If so, what safeguards will be taken to ensure staff integrity?

9. Ultimate waste disposal

There is no statement about the amount of waste that would be produced, how concentrated it will be, nor its ultimate disposal. It is likely that all high level waste would need to be stored on the site for at least 50 years. This means that there would be an even greater spread of highly toxic materials with all that would attract a terrorist attack.

The sole means of disposal of highly radioactive waste is a GDF (Geological disposal facility - or underground dump.) Where is this dump? None has been built, its location remains undecided, and its long-term ability to contain the high levels of radioactive materials is almost impossible to predict. Even if one were built, the necessary treatment of such waste needed to enable its dumping, is proving impossible to achieve and of insufficient longevity. Security will also prove to be problematical.

Statements about half-lives mislead. No human-built structure has ever lasted the many tens of thousands of years over which some of the materials would remain dangerous and need to be kept safe. For some of the
products arising from nuclear power generation, the passage of one half-life is insufficient to render them safe, and some would need the expiration of several half-lives before they can be handled.

Ultimately, the underground dump would leak. Is this a satisfactory solution – just leave it to other generations? When the inevitable leak does occurs, deep underground and in a highly radioactive environment, how would it be resolved and who would clean it up? By the time it was detected it would be too late anyway.

NuGen’s documentation (Consultation Document, Stage 2, May, 2016, P. 47, Para 5) envisages encapsulation in buildings which haven’t yet been built and whose process is not adequate to make the waste safe for the entire time that some of it would remain dangerously active. Even encapsulation does not endure indefinitely. Eventually, the capsules break down and the radioactive materials enter the environment. The higher the radioactivity contained in a capsule the shorter the lifespan of the encapsulation.

How would the waste be removed and transported to the envisaged encapsulation process and, ultimately, the underground dump?

The implied expansion of the site incorporating these additional buildings is ignored by the artist’s impressions. Presumably, like the Sellafield site, it must be anticipated that eventually the whole area will become a toxic industrial zone.

10. Intrusive nature of the National Grid connection

The plan necessitates the construction of two chains of highly intrusive pylons several miles long in an area only just outside the Lake District National Park, and they, the Moorside site and the Sellafield complex would all combine to produce the effect of a highly-industrialised area in a totally inappropriate setting, and clearly detrimental to the Lake District National Park which is only a short distance away.

The attractions of natural long-distance landscapes and seascapes will be adversely affected. Permanently.

11. Overuse of natural resources

The site would demand copious quantities of water which would be drawn from a variety of sources. Most of these contribute to the natural beauty of the Lake District landscape. Water supply is already fully utilised.

12. Distortion of Political and Social Scene

Suggestions have been published that the nuclear industry has been having an excessive influence on the area - from commercial, educational, social, and political standpoints.

When the need for construction workers abates, the area would become further depressed and unemployment would further exceed the national norm. Housing stock proposed to be built would become redundant as workers move away, thus depressing house-prices.

More nuclear development means ever-greater dependency on it for the economy, to the detriment of other livelihoods.

13. Nuclear fallout following the Referendum – Toshiba’s plans branded “unrealistic

The plans for Toshiba’s nuclear development are “unrealistic”, according to a Senior Analyst at Moody’s. The new Chief Executive Officer of Toshiba claims that the aims were achievable, despite having only taken over the job very recently, following the resignation of his predecessor after a $1.3 billion accounting scandal. We wonder whether he really knows yet what is going on and whether he fully considered the ramifications of the exit of the U.K. from the European Union - including the fall of the pound on international markets. This must surely mean that the cost of building Moorside will rise as most of the specialised materials and equipment will cost more and the rate of return will diminish following the lower strength of sterling, making the proposed development even less viable in the longer term.
According to the article published by Reuters, "Given strong anti-nuclear power sentiment after the Fukushima nuclear accident in 2011 and delays in plant construction, we believe this target is unrealistic."

Ref.:  http://uk.reuters.com

The U.K.’s nuclear authorities criticise the progress being made in rectifying the 51 faults in the Westinghouse AP1000 reactor. They are also concerned about the quality and tardiness of the associated paperwork. We are still supposed to believe that they are on schedule, even though we understand that progress is two years behind schedule.

We question how long it will be before the first delays are officially announced and how big will be the increases in construction costs.

Let us hope Toshiba have stopped cooking the books and won’t need to cut any more corners on the AP1000 design. In any case, given the number of similar reactors that Toshiba are hoping to build around the globe, won’t there be difficulties meeting the need for specialist steels, construction materials, control circuitry, and skilled manpower?

We are aware that other groups, similar to NuGen, have booked manufacturing times with specialist engineering firms, and wonder whether NuGen have booked timeslots – if so, how flexible can the manufacturers be?

Out of interest, Hitachi, planning on building a couple of nuclear power stations, including Wylfa, has said that they will have to "take stock and assess the situation".

Hitachi’s official statement says: "A potential departure from the EU creates uncertainty in terms of economics, trade, skills and talent - particularly in manufacturing, and would affect the stability that we need for continued investment and long-term growth."

Ref.:  http://www.hitachi.co.uk/about/press/pdfs/Hitachi%20EU%20statement.pdf

The referendum result caused losses of $2,000,000,000 for investors. These were the worst single-day losses in history. It would be amazing if Toshiba aren’t affected. Britain’s sovereign debt credit rating was lowered by Standard and Poor’s agency. The U.K.’s financial status was also down-graded by Fitch and Moody’s.

The other interesting thing will be the reaction to the departure from the EU on the part of our erstwhile friends.

As a result of the referendum decision the financial principles on which the “Moorside” plans were laid, will have changed beyond recognition and we need to be appraised of those changes before we can offer an opinion. We note the doubling cost of Hinkley in just ten years.

It seems unlikely that NuGen will be any different to every other reactor new-build in being over-budget and years late, even if they overcome the problems of waste disposal.
4. COOLING, DISCHARGES, ADDITIONAL STRUCTURES AND DESIGN SAFETY

1. Cooling water needs

The proposed works include the circulating water system which will provide cooling water from the Irish Sea. This is performed by exchanging the heat generated by the reactors for cooler water - which means, of course, that the sea will become a lot warmer, especially in localised areas around the discharge terminals. An effect which will be exacerbated during the summer months when there are relatively few storms to circulate the waters.

There is no mention in the literature provided by NuGen of the impact that dissipating twice the thermal equivalent of the electrical output of the reactors into the confines of the Irish Sea will have, either locally or globally. We wrote and asked them what the impact would be. They did not know.

According to NuGen’s specification, the water intake will pass 45 cubic metres/second (cumecs). Few lay people can envisage the quantity of water in a cubic metre. We know that there are 219.97 gallons in one cubic metre, and 3,600 seconds in an hour. So, in fact, this equates to 2,565,730,080 gallons per day, or 1,154,578,536 tonnes per day. (There being .45 tonnes per 100 gallons.) We therefore consider the quoted figure of 45 cumecs is significantly misleading, as the great majority of people with whom NuGen are consulting with are not from an engineering background. It is further misleading because it relates only to a single reactor when three are proposed. Thus the total intake will be 135 cubic metres/second.

The government suggests a figure of 30% efficiency for nuclear plant cooling, as noted in the document:


Viewed in isolation this scheme is bad enough, but there is no mention of other projects in the area which will also dissipate heat in the Irish Sea. Indeed, there seems to be no cohesive policy regarding these heat discharges. Similar works are happening off the coast of Anglesey, where Horizon wish to install 2.4 Megawatts of generating capacity, with the cooling being via tunnels under the sea bed. Heysham is already discharging heat into the Irish Sea via a similar system and so needs to be included. In this context, this means that the thermal equivalent of 18.4 gigawatts will be dissipated directly into the sea in total - the equivalent of over six million 3-bar electric fires.

In total then, when reactors for all sites are in commission, 0.088332376% of the total volume of the entire Irish Sea will be circulated through the reactors every day. After use it will be returned at 14° degrees above ambient. We calculate that this equates to almost exactly one third of the total volume of the Irish Sea each year. Put another way, the equivalent of the entire volume of the Irish Sea will pass through the reactors every three years.

The optimum temperature rise for efficient power station operation is between 10 and 15 °C but rises of up to 30 °C have been recorded. The normal increase from inlet to outlet (°T) for British fossil fuelled power stations is 10-12 °C, although discharge temperatures at nuclear power stations can be up to 15°C higher than inlet temperatures. (Langford et al 1998)

Most of the research for the impact on cooling systems conducted by the Environment Agency seems to concern itself with river and estuarine sources, rather than deep sea systems:

“Continuous thermal discharges to semi-enclosed bodies of water such as estuaries can result in a net increase in temperature of the water column. The heated effluent may reinforce stratification as the heated buoyant effluent is entrained in surface layers, increasing the temperature differential between the layers above and below the thermocline.”

It is difficult to see why each power station application is being isolated when the same heat sink is being considered for all of them.

2. **Table Showing Calculations for Total Nuclear Plant Cooling Water Requirements To be Drawn from the Irish Sea and Returned Heated by Approximately 14°**

<table>
<thead>
<tr>
<th>Moorside</th>
<th>Wylfa</th>
</tr>
</thead>
<tbody>
<tr>
<td>135* cu</td>
<td>100 cu</td>
</tr>
<tr>
<td>29695.95 gals/sec</td>
<td>21997 gals/sec</td>
</tr>
<tr>
<td>2565730080 gals/day</td>
<td>1900540800 gals/day</td>
</tr>
<tr>
<td>1154578536 tonnes/day</td>
<td>855243360 tonnes/day</td>
</tr>
</tbody>
</table>

- Although the specification published by NuGen states 45 cu per reactor, i.e. 135 cu in total, the scoping document, “Environmental Impact Assessment Scoping Report”, Volume 1, specifies 150 cu in total; requiring an increase of 11% on all Moorside values.

<table>
<thead>
<tr>
<th>Heysham</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 cu</td>
<td>285 cu</td>
</tr>
<tr>
<td>10998.5 gals/sec</td>
<td>62691.45 gals/sec</td>
</tr>
<tr>
<td>950270400 gals/day</td>
<td>5416541280 gals/day</td>
</tr>
<tr>
<td>427621680 tonnes/day</td>
<td>2437443576 tonnes/day</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Volume of Irish Sea</th>
<th>Cooling Water p.a. as % of Total Volume of Irish Sea</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,800 cubic kms</td>
<td>0.088332376 % circulated daily</td>
</tr>
<tr>
<td>280000000000 cubic metres</td>
<td>31.44632576% (*356)</td>
</tr>
<tr>
<td>6132000000000 gallons</td>
<td></td>
</tr>
</tbody>
</table>

3. **Impact of cooling**

The huge quantities of water being pumped through the system must generate enormous disturbance to the sands and silts of the sea bed and, in effect, an extremely strong current of water as the output is sucked back in again. This will happen regardless of how far apart the two terminals are.

It is a basic fact of physics that nature abhors a vacuum. Areas of low pressure – such as the intake – will draw water from an area of high pressure – such as the outflow. The further apart the terminals are, the greater the influence will be of interaction between the various sites.

CO₂ is not the sole producer of global warming. Direct heat may enable NuGen to promote the scheme as low carbon (actually only true if the whole life-cycle of nuclear materials is ignored), but adding such vast quantities of heat just cuts out the middleman. The production of direct heat and discharging it to the atmosphere is no different to CO₂ produced heat.

There will be an impact on the local weather, too, in the form of mists and extra rainfall as a result of the dramatically increased moisture content of the atmosphere. The Lake District may well depend on high annual rainfall for its tourist attraction, but, as recent flood events have shown, the rivers and natural drainage features cannot cope with even the current levels.

Presumably there will be a need for some mitigation of the noise that the pumps will produce. We anticipate that the noise produced will be a very loud hum which will be transmitted via the bedrock and thus will travel considerable distances, disturbing huge areas continuously.
This 18.4GW of waste heat is the equivalent of $\frac{1}{125}$th of all global power consumption. Or the amount of power consumed by between 3 - 6 million households. For Moorside alone the waste is nearly 7GW – the equivalent of approximately power for at least 1½ to 2 million homes.

NuGen’s proposals affect a Marine Conservation Zone, so we wrote to the appropriate government body: the Joint Nature Conservation Committee, or JNCC. The JNCC “co-ordinates nature conservation advice at a UK level and advises UK Government on scientific and policy matters relating to nature conservation internationally” according to their website. However, as the information they gave us was patently wrong - they told us the site in question was in Wales - we tried Natural England, another branch of the same government body.

There we found many interesting statements, assessments, and aims (see later) - all of which seem totally against what NuGen are proposing. Yet these are the people charged with giving government the best advice for the preservation of our environment. One has to wonder what information and advice they have given, or persuaded to give.

For example, they note that the sea surface temperatures vary considerably, range from 4 °C in winter to 18 °C in summer and note that a rise in sea temperature (no period given) has caused a change in seabed biological communities, particularly in the eastern Irish Sea. This, they say, has caused a decline in cold-water species and has contributed to the spread of non-native species. It will be interesting how a rise of 13° will affect the area, then. Although in other sections the proposed expansion of the nuclear industry is noted, there is no analysis of the potential effect on the environment arising from it. One point of interest is that they note the shortage of water supplies in the area, and forecast that due to global warming winters will become wetter and stormier, while the summers will become hotter and drier.

4. Additional Structures

NuGen states that it may be necessary to regulate the use of the marine off-loading facility and waters around it "in order to provide a safe marine management environment, so the DCO [Development Consent Order] Application is likely to include a request for powers to establish a Harbour Authority". No mention is made of the proposed longevity of this proposed harbour, nor any explanation as to why marine management - safe or otherwise, depending on viewpoint - might be necessary.

It is proposed that, as well as the reactors themselves there will be "support buildings, a substation and a circulating water system (including a fore-bay) using water from the Irish Sea.” The scale of the required amount of pumping is, frankly, incomprehensible.

Earthworks required to "accommodate temporary laydown areas and bunds (to be re-profiled post-construction) for screening, noise reduction and landscaping” will protect people from any unpleasantness, but only when considered from ground level. Nothing can preserve the landscape and the views, especially from the National Park and the beaches.

Reassurance is needed that the soil to be used will be used is free from any contamination from the 1957 Sellafield fire and other polluting incidents and practices. We have concerns that any radioactive materials, perhaps as dust, could be re-circulated in the disturbance.

"Elsewhere on the identified development site there will be replacement habitats, environmental offsetting, common land replacement, flood plain compensation (if required) and Public Rights of Way ("PROW") diversions and other amenity diversions."

NuGen appear to have been quite sensitive and evasive about “the” marine off-loading facility. It appears that there are going to be two of them. One will be very large and intrusive to facilitate deeper draught vessels at all states of the tide, while the second one will be smaller and only of use at limited times. We were assured that the larger one would be dismantled and taken away after the building of the project at Moorside was completed. The second one will become a permanent feature. Details of the neither harbour are on the plans presented at the consultation meeting. After some persistence, we were offered a version of the documentation on a memory stick. No explanation was forthcoming as to why the main harbour was not on
the published plans. We presume that the loads intended to be handled on the harbours will be quite considerable, therefore the structure will be very substantial, and its impact equally so.

It is obvious that there will be further impact on the tidal flows and hence the pattern for deposition of sands and silts, but will there be an impact on the holiday beaches of Seascale, Braystones and beyond, once the natural tidal flow has been stopped by construction, or diverted out to sea?

What is the expected impact the proposed construction will have on holiday-makers?

How will all this construction work affect the winter storms that cause beach residents so much concern and expense?

What will happen to all the radioactive toxins that are at present buried under those sands and silts?

As well as the marine off-loading facility, NuGen will build a bridge across the River Ehen floodplain and a Heavy Haul Road (sic), new rail spurs and facilities. Several new roads in the area are also planned. When it comes to drainage, everything will be discharged into the Irish Sea.

Will it be checked for radioactivity before being discharged? Even if so, how will they know whether it is Sellafield’s or NuGen’s own?

4. Cooling Towers

The literature skirts round the issue of cooling towers. The only mention of them that we can find seems to be in the scoping document, which states:

2.20 Alternatives are being considered for:

- Cooling systems including the possible provision of auxiliary cooling towers


If cooling towers are required, how many will be needed, where will they be sited, and how will they affect the impact of the proposed site? Nowhere are the cooling towers further mentioned, and we cannot find them included on any of the drawings.

If cooling towers are required, why aren’t they depicted? At a height of something between 330‘ and 660‘ they will be very prominent.

Why are they missing from the “indicative view of the Moorside site” supplied by NuGen? All will be plainly and intrusively visible across the whole of the coastal plain, the surrounding uplands and mountains, and the Lake District National Park.

One might think cooling towers are innocuous things, merely using water to get rid of unwanted heat. However, if seawater is used (we have yet to see), the drift of fine droplets emitted from the cooling towers contain nearly 6% salt, which is deposited on the nearby land.

One explanation, taken from an on-line encyclopaedia states:

“This deposition of sodium salts on the nearby agriculture/vegetative lands can convert them into sodic saline or sodic alkaline soils depending on the nature of the soil and enhance the sodicity of ground and surface water. The salt deposition problem from such cooling towers aggravates where national pollution control standards are not imposed or not implemented to minimize the drift emissions from wet cooling towers using seawater make-up.

“Respirable suspended particulate matter, of less than 10 micrometers (µm) in size, can be present in the drift from cooling towers. Larger particles above 10 µm in size are generally filtered out in the nose and throat via
cilia and mucus but particulate matter smaller than 10 µm, referred to as PM10, can settle in the bronchi and lungs and cause health problems. Similarly, particles smaller than 2.5 µm, (PM2.5), tend to penetrate into the gas exchange regions of the lung, and very small particles (less than 100 nanometers) may pass through the lungs to affect other organs. Though the total particulate emissions from wet cooling towers with fresh water make-up is much less, they contain more PM10 and PM2.5 than the total emissions from wet cooling towers with sea water make-up. This is due to lesser salt content in fresh water drift (below 2,000 ppm) compared to the salt content of sea water drift (60,000 ppm)."

There is no mention of radioactive materials being re-circulated from nearby sources – surely an inevitable consequence of building alongside Sellafield?

The entry continues:

"Being very large structures, cooling towers are susceptible to wind damage, and several spectacular failures have occurred in the past.

At Ferrybridge power station on 1st November, 1965, the station was the site of a major structural failure, when three of the cooling towers collapsed owing to vibrations in 85 mph (137 km/h) winds. Although the structures had been built to withstand higher wind speeds, the shape of the cooling towers caused westerly winds to be funnelled into the towers themselves, creating a vortex. Three out of the original eight cooling towers were destroyed, and the remaining five were severely damaged. The towers were later rebuilt and all eight cooling towers were strengthened to tolerate adverse weather conditions. Building codes were changed to include improved structural support, and wind tunnel tests were introduced to check tower structures and configuration."

Let’s hope that there are no corners cut to save on costs at Moorside. Flying building debris is not what is wanted around the adjacent Sellafield site.

An explanation of the requirements of cooling towers says that:

Coastal power stations entrain large volumes of cooling water, requiring biocidal treatment to prevent biological fouling. Discharged effluent is both heated and contaminated with residual traces of biocide and so it is necessary to quantify the impacts of this discharge.

Cooling water from Heysham 2 nuclear power station, NW England, UK, is discharged to the intertidal area, via a culvert (to minimise erosion and maximise dilution and dispersion by directing the effluent into the receiving water at all states of the tide) within which the effluent is contained at low water.

The culvert and surrounding coastal area support a population of blue mussels (Mytilus edulis). Mussel health was determined along a gradient of exposure, using three physiological indices: Scope for Growth, Gonad Mantle Index and Somatic Condition Index (K Factor). The Mussels within the culvert exhibited reduced physiological index values compared to an external site. A trend was identified down the length of the culvert, representing a gradient of exposure and indicating a potential negative effect on growth and reproductive output.


Talking about the impact of gas and oil platforms in the Irish Sea, The Centre for Environment, Fisheries and Aquaculture Science (CEFAS) say:

. . . However, in a recent study (Biological Effects of Contaminants in Pelagic Ecosystems; BECPELAG) a variety of sub-lethal biological effects have been demonstrated in caged organisms deployed in the vicinity of offshore platforms. The results of these recent work programmes monitoring the effects of produced water on pelagic ecosystems need to be fully evaluated before firm conclusions on the likelihood of wider field effects can be made.

Ref.:  CEFAS/197289/SEA6_Contaminant_CEFAS.pdf
A 2005 report from the same source, document C2436/01, looks at the discharges from Sellafield:

A slow steady decline in the concentration of Cs\textsuperscript{137} has also been observed in waters in the vicinity of the Sellafield pipeline, although there is evidence that level are being maintained at higher levels by remobilisation from the seabed sediment (McCubbin et al., 2002a).

\[ \text{Sellafield’s Discharges of Technetium (Tc}^{99} \text{), Plutonium (Pu}^{239+240} \text{), and Americium (Am}^{241} \text{).} \]

Later on it notes:

Although a new survey is clearly required, the available information, together with data from laboratory studies (McCubbin et al., 2002b), indicates that remobilisation of Pu is taking place and that this process will continue for a considerable time (in the order of 102 years).

Then:

Selected data are provided . . . for concentrations of Pu\textsuperscript{239+240} in winkles collected from Nethertown on the Cumbria coast close to Sellafield. Despite large decreases in discharges of Pu\textsuperscript{239+240}, there is only a small reduction in concentrations, with a small increase in 2001 – 2002 in both discharges and concentrations. A similar pattern is apparent for Am\textsuperscript{241} except for the lack of discharge increases (Smith et al., 2004). The observations are consistent with remobilisation from contaminated seabed sediments providing the predominant source term. Concentrations of Am\textsuperscript{241} are also influenced by in-growth from past discharges of Pu\textsuperscript{241}.

Remobilisation from sediments contaminated by historical discharges is now the predominant source of Cs\textsuperscript{137}, Pu\textsuperscript{239+240} and Am\textsuperscript{241} to the water column and appears to be largely governed by sediment mixing and re-suspension processes.

Artificial radionuclide activities in fish and shellfish are also a result of remobilisation from contaminated sediments and are responsible for dose to the local critical group.

Anthropogenic activities involving sediment disturbance such as trawling, installation of wind turbines and oil/gas pipelines likely to increase re-dissolution from the reservoir of contaminated sediment residing on the seabed. Their impact warrants further study.

We are not aware of any more recent studies. However, it is necessary to point out that the chemicals mentioned have half-lives of:

- Plutonium\textsuperscript{239} - 24,110 years,
- Technetium - 211,000 years,
- Caesium\textsuperscript{137} - over 30 years.
- Plutonium\textsuperscript{240} - 653 years,
- Americium\textsuperscript{241} - 243 years,
- Antimony\textsuperscript{125} - 2.6 years

Effectively, once Plutonium and Technetium have been released, they are present for eternity.
6. Additional information on cooling towers

Tritium, is a mildly radioactive by-product of industry production lines. It is the most heavily discharged waste across the nuclear industry. BNFL's Sellafield reprocessing plant in Cumbria and Chapelcross nuclear power station in south-west Scotland discharge millions of litres of tritiated water and air every year. Fourteen years ago, the Environment Agency launched a crackdown after a report by specialists from the National Radiological Protection Board and St Bart's Hospital in London disclosed that tritium was at least twice as dangerous to humans as previously thought.

Let us consider the implications of building cooling towers alongside a factory discharging tritium. According to Dr. Fairlie, "Because of the low range of its β particles, radiation exposures from tritium only occur when it is inside the body – that is, tritium is considered an internal emitter. This does not mean that tritium outside the body is harmless, as tritiated water vapour readily permeates the skin and, when inhaled, easily transfers across lung and buccal membranes."

Tritium has an affinity with water and easily combines with it. So, if Sellafield is discharging the chemical into the atmosphere - whether in gaseous or liquid form - and it is blown across the steam being emitted by the cooling towers, will the water droplets not become tritiated water, fall to the ground and pollute every living thing? Even the settlement ponds for the cooling water, which, according to the artist’s impressions, are to be at the Sellafield end of the proposed site, could become contaminated.

At Sellafield the problem already exists, and there are several areas where contamination source areas containing tritium the contamination has reached the groundwater table and an extensive area of tritium contaminated groundwater extends from the Separation Area of the site towards the coast. Sellafield's tritiated water is not alone, as technetium99 has a similar distribution to tritium in groundwater, and strontium90, carbon14 and uranium isotopes have also reached the groundwater table in some contamination source areas.

Material selected from:
http://www.hse.gov.uk/foi/releases/radioactiveleaks.pdf
http://www.ccnr.org/tritium_Fairlie.pdf

Tritium discharges:

Sellafield discharged 187 terabecquerels per annum into the atmosphere, and 1,090 terabecquerels per annum into the sea. If the cooling towers’ circuit is to use sea water, what will happen to any materials contaminated by this pollution? It seems highly likely that the materials will be picked up in the warm, moist air, and distributed over the Cumbrian fells and water-courses to end up in the lakes that are currently so attractive to tourists. The move to make a false distinction between the “Lake District” and the west Cumbrian coastal plain seems a bit nonsensical under those circumstances. Not only will the entire monstrous site and its cables, pipelines and industrial sprawl be plainly visible alongside the Sellafield complex, from the National Park, but the noxious products will be distributed all over it. Only a very short time will see the entire district polluted to the point of extinction.

There is nothing about any of this in NuGen's literature

In the book entitled "Sellafield Stories", edited by Hunter Davies (ISBN 978-1-78033-299-4), a genuine old-style Cumbrian tells of working at Sellafield. Most of the story is what might be expected, but we found one paragraph very interesting: "One thing here [in Wasdale] we don't get the mists since the cooling towers have gone." The narrative then goes on about the weather conditions that would produce the mists. Presumably the mists would be doing the same thing all the time, but just not visibly. Whatever was coming out of the cooling towers was being dumped onto the fells. The fells in the area all go into watercourses that feed into, for example, Wastwater - from whence Sellafield draws its cooling water, and down into rivers that flow through the Sellafield area into the sea. As the cooling towers (demolished in 2007) were situated alongside the two piles, one of which had the fire, is it unreasonable to assume that a lot of the radioactive material
exhausted through the pile also ended up on the fells? The NuGen cooling towers - assuming there are going to be some, even though we don't know how many - will be doing the same thing, so the narrator of the mist story can expect a lot more mist and, presumably, any other materials that are dispersed this way.

5. DESIGN SAFETY – TRIED AND TESTED?

According to the website Radioactive Environment (http://corecumbria.co.uk/) sites:

“... at the only four twin-reactor stations currently under construction (two in the US and two in China), build-time for the AP1000 reactors is taking over seven years – with criticism levelled at Westinghouse as having ‘oversold the system, oversold the technology and promised more than they could really deliver’.

Despite this chronic overseas experience, NuGen and West Cumbria’s nuclear-compliant media continue to peddle the myth that, with a construction start in 2020, Moorside’s triple reactors will all be producing electricity by 2026.”

Ref.: http://corecumbria.co.uk/briefings/regulatory-red-lights-warn-of-impending-delay-to-nugens-moorside-project/

The site also points out that, despite Westinghouse’s sales pitch saying that the technology is “tried and tested”. In fact these reactors have not been built anywhere else in the world. If this is the case, why were visitors to consultation venues still being assured that the system was up and running in several places and had been demonstrated to be safe after many years’ experience with them?

Why are there problems obtaining Generic Design Approval? It is worrying to read that the matters that are of concern to the Regulators relate not only to the major GDA components of the reactor’s structural integrity and its mechanical engineering, but also the quality of submissions. The regulators’ stated concern is that, for some of the aspects there remains significant technical and closure programme risks associated with completion of the work. They go on to say that the quality of submissions is significantly below expectations in terms of scope and/or quality.

Why are NuGen not telling anyone about these aspects of the proposal? According to the article on CORE’s site, in the regulators’ view, "a combination of these unresolved issues and any inevitable GDA slippage caused by them, will affect regulatory confidence in the subsequent site development programme." If true, this, too, should be announced to the public.

Westinghouse claims to achieve, "The highest levels of safety", when it relies "100% on natural forces for indefinite passive core cooling".

According to nuclear power expert, Arnie Gundersen (http://www.fairewinds.org/), if anything should cause the reactor vessel to be breached, natural convection currents will dissipate not only the heat, but also the entire radioactive contents over a very wide area, as there is no further method of containment.

Gundersen’s concerns are that if the dome rusted through the design would expel radioactive contaminants and the plant "could deliver a dose of radiation to the public that is 10 times higher than the Nuclear Regulatory Commission (N.R.C.) limit"

Edwin Lyman, a senior staff scientist at the Union of Concerned Scientists, has challenged specific cost-saving design choices made for the AP1000. Lyman is concerned about the strength of the steel containment vessel and the concrete shield building around the AP1000, claiming its containment vessel does not have sufficient safety margins.

Another American scientist, John Ma, a senior structural engineer at the Nuclear Regulatory Commission (NRC), was quoted on his stance about the AP1000 nuclear reactor:
In 2009, the NRC made a safety change related to the events of September 11, [the two plane attack on the World Trade Buildings] ruling that all plants be designed to withstand the direct hit from a plane. To meet the new requirement, Westinghouse encased the AP1000 buildings concrete walls in steel plates. Last year Ma, a member of the NRC since it was formed in 1974, filed the first "non-concurrence" dissent of his career after the NRC granted the design approval. In it Ma argues that some parts of the steel skin are so brittle that the "impact energy" from a plane strike or storm driven projectile could shatter the wall.

A team of engineering experts hired by Westinghouse disagreed. Given that they are selling the product they would not be expected to confirm weaknesses, surely? The inference is that an extremely experienced senior structural engineer does not know his subject.

In 2010, following Ma's initial concerns, the NRC questioned the durability of the AP1000 reactor’s original shield building in the face of severe external events such as earthquakes, hurricanes, and airplane collisions. In response to these concerns Westinghouse prepared a modified design – prompting the thought that Ma was correct all along and it was Westinghouse that were wrong.

This modified design satisfied the NRC, with the exception of Ma, hence the "non-concurrence". In contrast to the NRC's decision, Ma believed that computer codes used to analyze the modified design were not precise enough and some of the materials used were too brittle. A little later in this document we, too, make observations on the utter dependence on computer modeling.

A US consultant engineer has also criticized the AP1000 containment design arguing that, in the case of a design-basis accident, it could release radiation; Westinghouse has denied the claim. The NRC completed the overall design certification review for the amended AP1000 in September, 2011.

In May, 2011, US government regulators found additional problems with the design of the shield building of the new reactors.

The chairman of the Nuclear Regulatory Commission said that: computations submitted by Westinghouse about the building's design appeared to be wrong and "had led to more questions."; the company had not used a range of possible temperatures for calculating potential seismic stresses on the shield building in the event of, for example, an earthquake; and that the commission was asking Westinghouse not only to fix its calculations but also to explain why it submitted flawed information in the first place.

Westinghouse said that the items the commission was asking for were not "safety significant". Would they admit it even if they thought differently?

Later in this document we repeat our concerns about the number of flights that pass close by the Sellafield sites and the time it takes for any counter-measures to be brought to bear. This was explained at length in our submission of July, 2015.

One of the troubling aspects of the specification for the “Moorside” site is the apparent reliance on computer modeling for many assessments of the projected impact of various systems. We are aware of the weaknesses of many computer programmes, whether from the actual programming, or from incorrect data input, or merely because of a lack of imagination on the part of the programmer who overlooks a particular scenario, makes an error in devising a routine, or, having considered a chain of events determines that it cannot possibly happen and omits a routine which would control it.

**Human error at all stages is the biggest risk.**

While computer projects can cater for basic tasks, it is impossible for them to envisage scenarios that have not occurred to the programmer. Many of the problems involving nuclear incidents stem from operators meeting situations that were deemed impossible, and thus beyond a computer to solve. In another section we consider the safety and security of computers and their susceptibility to hacking and malicious interference.
The Consultation, the Community, and the Environment

1. The consultation process is flawed and contains misleading information

Braystones Beach residents (and others) failed to receive NuGen communications in a timely fashion.

The data from the current borehole survey would not be available until the consultation process has closed.

That the initial consultation has failed is evidenced by the small number of respondents: 0.5% of Copeland’s population.

We object to the copious use of acronyms and jargon, together with obscure technical terms - all of which lead to difficulties for the average person to understand. It is acknowledged that the residents of the coastal plains of west Cumbria have a lower than national standard for education. How can such a complex and difficult-to-understand piece of work be properly considered by them? How much of the material is one supposed to comprehend in order to reach a reasoned conclusion?

Does issuing reams of propaganda and sales literature, lining the walls of the consultation venues with huge propaganda posters and making statements that pretend the matter of building a nuclear reactor is already done and dusted - and the public can like it or lump it, constitute a meaningful version of consultation? Even pro-nuclear people will have been outraged by the scale of the changes to their environment that are proposed and believe that NuGen have been deceitful. We have already seen statements that “NuGen are liars”.

The engagement of a PR firm to do their dirty work for them does not excuse NuGen from their obligations to properly consult. This is about a development which is, after all, going to be a serious imposition on Cumbria for at least 100 years - probably an awful lot more.

PR companies are glorified salesmen, interested only in pleasing their client and obtaining their fees. They are not people in a position to explain the full impact of the proposals on the amenity, environment and lifestyle, of thousands of residents. They are not expert in the subject, nor do they offer an impartial view. This was amply demonstrated at the meetings.

There should be a moratorium on new nuclear building at least until the industry can demonstrate (not just theorise) that they can deal with the waste they produce and keep it safe from the environment and terrorists.

In their literature, NuGen have published “illustrative impressions” of the proposed site. They are noteworthy for omitting the Sellafield site in its entirety and, according to the illustration, the entire site appears to be unfenced. Still, they say they will build a (radioactive?) mud wall. Even the railway line between the site and the sea has been omitted – despite this being a line of defence against coastal erosion.

The proposed site is an electricity generating plant, yet there is no illustration of the method of connecting to the national grid on the pictures. National Grid staff say that they need 150' high pylons stretching across the landscape NuGen’s incomplete literature tends to mislead or could be seen to be dishonest.

Also minimised is the impact of the building of a power station, presumably to supply emergency power, and which will have to be of adequate capacity to sustain not only the plant and ancillary equipment, but also the pumping of the copious amounts of cooling water that is required. What fuel will this be using to provide emergency back-up and will its pollution include CO2?

If the additional plant does produce CO2, is that counted in the list of pollutants, or does it, as with so many other parts of the cycle, get ignored in order to perpetuate the myth that nuclear is in the slightest bit clean and green?

Why are parts of the nuclear generating cycle excluded from the overall assessments with regard to pollution and environmental damage?
2. **NuGen’s Limited Compensation Scheme for Home-owners**

Buried in the literature, on Page 93, is the following offer:

"For neighbours of the Moorside Project Sites, NuGen will make best endeavours to eliminate, minimise and mitigate the potential adverse impacts of its development. For those closest to the NPS designated area where development has been allocated, at the Moorside Site, NuGen is considering providing a discretionary Property Support Scheme and a Local Mitigation Scheme to which people can apply if an effect on their property can be demonstrated (e.g. by nuisance or reduction in value)."

We note the restrictions but do not think that the deprivation of the peaceful enjoyment of one’s property can be restricted to the terms NuGen are suggesting. Presumably the over-riding legislation will be the Human Rights Act, rather than NuGen’s terms.

It is difficult to imagine that the Braystones Beach properties, which have existed for over 100 years in peace, can be excluded. Some may be holiday homes, but the investment, in terms of purchase, maintenance and repairs is at least as great as permanently occupied ones. There seems little doubt that they will all be equally affected by nuisance and reduction in value.

3. **NuGen’s interpretation of views of local people**

We have already demonstrated that the touted statistic implying overwhelming support utterly misrepresents the view of the majority of residents who will be affected.

Having spent some considerable time reading the NuGen sales brochures supplied at the Braystones meeting, and knowing how people we have spoken to are so against the project, it was somewhat surprising to read the overwhelmingly positive view expressed by so many people to other questions like:

**Do you agree with our transport strategy for the Moorside Project being rail-focused to minimise road usage, particularly at peak times?** 88% agreed.

Is this a sensible, non-leading, unbiased question? Given the alternatives, what would any rational person expect in the way of responses to such questions? It is tantamount to asking whether people would enjoy sitting for hours in traffic jam. It should not be taken to mean that there is support for Moorside and the destruction of the existing environment. Yet that, it is suggested by NuGen, is what can be inferred.

The maps depicting analysis of the origin of the responses are equally misleading. NuGen say that up to 12,000 people use Sellafield’s canteen each day, but it seems that even the nuclear workers can’t be bothered to respond. The maps were meaningless – would someone who responded whilst at Sellafield have appeared on the map at Sellafield, his home address, or some hotel? There is no way of telling whether they have any reason to feel allegiance to the area, or to care about its future.

We wondered why Allerdale council are being given such a strong rôle, but note that Copeland and Allerdale Councils were the only councils in the whole of the U.K. that wanted to host the nuclear dump. Allerdale are as pro-nuclear as Copeland, and both have a disproportionate number of members who are beholden to Sellafield and the nuclear industry. They do not represent the opinions of the majority of Cumbrians.

In Keswick, at the end of May, 2016, 90% of the people spoken to by representatives of Radiation Free Lakeland are opposed to new nuclear build in Cumbria. As their website points out, this does not tally with what NuGen are saying, which is that, “Cumbria wants new nuclear build.” Radiation Free Lakeland also said that:

"A recent poll in the Evening Mail indicated that 85% of those voting do not want new nuclear build in Cumbria. Tourists said they would think twice about coming to Cumbria if dangerous new nuclear reactors were built here."

Ref.: [https://mariannewildart.wordpress.com/](https://mariannewildart.wordpress.com/)
In view of the foregoing, why are NuGen still saying that Cumbrians are in favour of nuclear development?

How many people have NuGen asked and what percentage of the total population does that represent?

Since the consultation process started over a year ago, we have submitted questions and a comprehensive document, but received no response to the points raised. This, then, is not a consultation, just a propaganda exercise promoting nuclear development and merely a cynical process attempting to alleviate the possibility of legal or procedural challenge. It fails to do either.

We would point out that, in all over the last nine years we have submitted responses to over ten consultations all related to nuclear developments in Cumbria. Even then we missed some.

4. **The proposals impinge on basic human rights**

NuGen should accept that their plans would have a devastating effect on residents during the construction and commissioning phases of the project and, effectively, forever. Just the announcement of the plans has blighted property prices and caused hardship, as well as feelings of stress, insecurity and instability. It also seems likely that NuGen’s plans would impinge on the human rights of residents, who are entitled to a peaceful enjoyment of their own homes.

For the above reasons, we believe that the flaws in the consultation process, together with the above concerns, are conducive to an application for a judicial review. Some of the failures and deliberate untruths must surely merit legal challenge, too.

When the nuclear plants have worn out, all that will be left for local Cumbrians is the toxic waste and spoilt and contaminated land.

The project at Moorside, if allowed to go ahead, is set to survive in one form or another for hundreds of years. Its legacy would endure far beyond that, probably for millennia. Is that really the best that west Cumbria can think of - to leave this dangerous, untreated, toxic mess to perpetuity? Surely we are better than that?

Reading through the NuGen sales brochure - it is not possible to consider it a consultation document - may unintentionally give some a misleading impression.

We note elsewhere the questions posed, and express our incredulity at, the published figure of 73% in agreeing in response to “Do you agree with the need to develop a new nuclear power station at the Moorside search area?” Then we considered the question and wondered, are respondents agreeing with the need for a new power station, or that it needs to be nuclear, or that it needs to be at Moorside? Or do they mean all three; or any combination of alternatives? Did we not see enough of this kind of “clever” trick question over the dump?

We then looked at the true meaning of the published figure of 73% “in favour”, and discovered that this equates to 263 people out of a mere 375. NuGen’s own documentation says that 12,000 people a day can be served in Sellafield’s canteen which, coincidentally, is where NuGen held one of their meetings.

Can the 73% figure suggested to be in favour of one of the points in the question be extrapolated to represent a proper indication of the wishes of the general population? No. Yet it seems that that is how it is intended to be interpreted.

How many thousands will be affected by the proposed development? According to official statistics, in 2011 (the latest we can find) there were 70,603 Copeland residents. So far then, NuGen have received responses from 0.5% of the residents. Of them 263 people or 0.38% of the entire population of Copeland agreed to whichever part of the question they thought they were answering. Not quite as pro-nuclear as the NuGen suggest. Some of the responses came from Allerdale residents who are virtually unaffected, but we have not included those in the calculations, to the benefit of NuGen.
Furthermore, we have to question why the second most-pro-nuclear council in the land, Allerdale, has been included. Adding in the 9,471 Allerdale residents to the above calculations roughly halves the above results.

From the maps, there is no way of telling what connection the respondent has with the nuclear industry.

However, such a low response to the consultation process does confirm our suggestion that the consultation is flawed and/or just not working. Properly done a reasonable consultation could be expected to attract at least 30% of the affected population, engaging them sufficiently to prompt them to respond. We believe that a proper census would reveal that the vast majority of residents are against any further nuclear development, especially on such a large scale and of such longevity. However, they have not been made aware of the full impact of the proposed Moorside development.

5. **NuGen's boundary maps**

The maps supplied to us on a USB stick have so many permutations of proposed boundaries that it is difficult to understand whether the Braystones Beach bungalows are included in the potential area for compensation, or how they will be affected. Some maps include the bungalows while others make a point of excluding them. For example, it seems that the first seven bungalows to the north of the station may be eligible, but not the others. How can it be that a few feet (in our case) can make a difference as to whether we will be affected or not?

The proper, fair, way to deal with the situation is to accept that all residents will be affected and compensate them accordingly.

The investment and loss is the same, whether the building is a holiday home or permanent residence, leasehold or freehold.

According to the Human Rights Act, Article One of the First Protocol imposes an obligation on the State not to:

- interfere with peaceful enjoyment of property;
- deprive a person of their possessions;
- or subject a person’s possession to control.


6. **Destruction of the environment not “improvements”**

NuGen's literature mentions the various improvements that will result to the environment as a result of becoming home to even greater nuclear hazards than those already extant: completely ignoring the fact that the area is naturally beautiful and wouldn't need any of the enhancements that NuGen are proposing if it weren't for the proposals submitted by NuGen.

Should we really be grateful for their proposed “improvements”? The losses will be far greater than the gains in our opinion. As we have always said, improvements in road and rail links, health services, education, sports facilities, leisure facilities, skills and training are the job of government and local politicians to provide, not the carrot at the end of the stick in a blackmail arrangement.

Who will be paying for all these changes? Will they be funded by NuGen, or by the general population? As they are purely at the behest of and to the benefit of NuGen, we hope they will be paying. If they are to be paid for by taxpayers – local and/or national – then surely it must be considered a subsidy.

Even so, we are at a loss as to understand how and why NuGen think they can improve the visual amenity, or why there needs to be investment in landscape and townscape to improve the visual appearance of the area. Are the improvements better than the amenities supplied by God then? At least His are natural and fit into the natural landscape as a result.
How does the imposition of the proposed reactor site, entailing as it does the destruction of a huge swathe of rural lifestyle, and its ugliness compounded by its proximity to Sellafield, actually fit into long-distance views? As with the distribution of radioactive materials, views do not recognise boundaries. The National Park boundary may well be a couple of miles away, but views out from the park will include Sellafield and Moorside which will appear to be part of one huge industrial landscape.

The pictures on NuGen’s information sheet are an object lesson in how to mislead the public without words.

West Cumbria was once an untouched and thus beautiful area. Then came Sellafield’s ugly and dangerous sprawl together with huge toxic discharges. Now it is proposed to add this set of reactors and ancillary resources in the farmland to the north of the Sellafield site.

Where is the road access and "Heavy Haulage Road" mentioned elsewhere in the glaringly misleading literature?

Fresh water needs have yet to be achieved. What natural features, such as the River Ehen and local lakes, such as Wastwater and Ennerdale, are likely to be affected?

Where are the fresh water supplies and site drainage facilities shown in the proposal? The Braystones sewage treatment works, it is suggested, could be used to service the site, but will it not require expansion to accommodate the additional materials? Where is it mentioned in the proposals?

What will be the impact on bathing water quality?

The cooling water pipes, we assume, are depicted at top right of the consultation diagram, but seem to be inadequate for the purpose of cooling three reactors? Will the depicted small pipes really be able to move over two and a half billion gallons of water a day?

We note that the cooling water settling ponds are open to the atmosphere, with all the potential for leakage and environmental impact that that entails. How will NuGen cope with any influx of radioactive sea birds from the Sellafield tanks?

As shown, and despite the low-lying nature of the proposed site, there will be absolutely no protection from either coastal erosion or the winter storms. Yet for the last three years there have been huge storms over winter, and this design is supposed to endure for over 120 years.

It is suggested that NuGen can rely on the presence of the railway line to protect from storm surges. Given the history of the coastal railway line, we don’t think this is a good idea, but, in any case, if the railway line fails to protect, then won’t NuGen’s site be at risk? Network Rail is currently (July, 2016) in debt to the sum of £33 billion. Our experience of their work is that they will only do what is absolutely necessary and they have to be forced into doing it. It is our belief that they act retrospectively and are unwilling or incapable of preventative measures. Even so, is it right to depend on other organisations to provide NuGen with protection from coastal erosion for at least the next 150 years?

Network Rail is a publicly-funded organisation, should they be forced into protecting a private company, or should NuGen be made to protect and ensure the safety and security of their site themselves, including coastal protection?

It is our opinion that so much is missing from the artist’s impression of the site’s appearance that the whole thing is a travesty and can only have been designed to be misleading. By viewing it from on high the artists have minimised the vertical intrusion, and the fact that the reactor vessel alone is 91' high does not come across, but then, that is probably intentional.

A more honest view would have had all the missing components included and the picture drawn from, say, Cold Fell, so that the full impact of the works would be visible and in the correct context.
NuGen say they will be helping to "improve" the towns in the area, too. If the buildings designed by the people working for Sellafield in the Copeland area are anything to go by, then we can look forward to modern blocks which will have no connection whatsoever with the characteristic Georgian style of Whitehaven and its hinterland. We do not consider this to be advantageous or attractive, but destroy the charm, character, and heritage of a beautiful area that would remain so without NuGen trying to gild the lily. NuGen say they will give us the benefit of cycling and walking connectivity, supply chain opportunities, training, and everything else that even retired people would regard as Utopia; but don’t we already have sufficient for our needs? There are already cycle-paths and coastal walks, none of which are the result of NuGen’s efforts.

Who will be the main beneficiaries of these so-called improvements? Presumably, the schemes have been devised to appeal to NuGen staff. So, if there is no NuGen nuclear site, there will be no need for all the “improvements” and refinements that will allegedly be better than nature intended. Nature and its wildlife will be able to continue undisturbed as it has done for centuries.

The cultivation and nurturing of local politicians is certainly paying off handsomely. How many of these people are in some way beholden to the nuclear industry? Anywhere else in the country would be up in arms about the ideas that are being presented by NuGen as a fait accompli. Here they are supposedly being welcomed. Why? In actual fact, they aren’t by anyone other than those with vested interests. Until a referendum on the matter has been held, it cannot be said that Cumbrians are in favour of nuclear development in any form.

7 Public Health Concerns - Ugly Alternatives

The peak number of employees working on the proposal is stated by NuGen to be 6,500 (or 6,400 depending on which bit you read). As there are only around 4,000 unemployed people in the whole of Cumbria these workers, or at least the large majority, will have to come from outside the area, so the "virus", brought in by outsiders, that has caused so much trouble with cancers and leukaemia in the area will become even more prevalent.

What if it isn’t really a "virus", but down to the pollution emanating from nuclear power plants and associated effluents, how many more cancers and radiation-related illnesses can we expect?

Has anyone checked with vets to see how many cancers, etc., they have noticed amongst animals?

Does any data suggest that there is an excessive number of cases in comparison with the rest of the world, or even just in the U.K.? We believe that figures are likely to confirm excesses, and that the cause is radiation and the many leaks and discharges from nuclear sites.

How many cases should we expect before the number of people sacrificed is deemed intolerable?

How many years will it take before any impact of this nature is known?

Will NuGen set up a compensation fund akin to that at Sellafield, for workers and local people?

Of the 4,000 unemployed people in the whole of Cumbria, it seems highly likely that many of them would not have the skills required to perform technical tasks to the level required in this project, hence our statement that the majority of employees will have to come from outside the area.

Radiation is known to cause cancers and leukemia, so that is where our beliefs lie; so we would also say that disturbing age-old discharges, whether in the soil, on the ground, in the watercourses, on the sea bed, or on the beaches, cannot be considered sensible or safe under any circumstances.

Even if there are no "incidents" - a euphemism if ever there was one - the nuclear industry continually produces, and in some cases discharges, considerable amounts of the most toxic materials in the world. How can they be allowed to do this? It is obvious that NuGen’s proposals will only add to the stockpile.
8. **Impact on Services in the Community**

Nothing appears in the brochures to explain how many people will really be coming into the area. We are told that the peak number of workers will be 6,500. Cumbria CC’s figures (July, 2016) show 4,600 unemployed, so we know that the majority of employees will be from outside Cumbria. Presumably they will be bringing with them family and, perhaps, friends. Assuming the national norm of a partner and some children will be brought in with the breadwinner; this means that there will be around 13,000 adults. According to national statistics, families are comprised of two adults the (13,000) and an average of 1.8 children, producing a further 11,700 (6,500*1.8) incomers. In total then, 24,700 new residents can be expected to arrive. Rather more substantial than NuGen’s figures suggest.

The next glaring omission is any suggestion as to how the requisite increases in health and social services provision will be achieved. Presumably there will be a need for sexual, physical and mental health services to be greatly increased to meet the likely demand. How many extra GPs will be required and from whence will they come? It is forecast that there will be a shortfall of 16,000 GPs by 2025.

Ref.: **ITV GP Shortfall**

Care quality: interestingly, only 8 of the total of 3,972 staff offered an opinion on whether Whitehaven Hospital was a place they would recommend for its level of care. Of them, only 5 people would actually recommend its care provision.

Using the same spin as NuGen, this is advertised as “63% of staff would recommend it.” Actually, out of the nearly 4,000 only 5.04 people would actually recommend its care provision – equating to 0.13% - a somewhat different picture and hardly a recommendation. We could go on and pick out other examples of totally misleading, but superficially good publicity statements.

We are not criticising the staff at the various institutions in any way, but it must surely be obvious that while NuGen believe that the current services can simply be expanded to suit, there are just not the properly trained staff available in the country. Two years ago the Independent newspaper illustrated the problems of getting nursing staff, and, according to the Royal College of Nursing, there is a current shortfall of over 10,000.

Ref.: **http://www.independent.co.uk**

This is with current demand levels and servicing the needs of only the current number of residents. How will any of the many branches be able to cope with the influx of 23,000 additional people? What have the local health authorities said about the ability of these services to cope?

In the event of an emergency with many injured, burned, or contaminated people, will those affected have to travel long distances for treatment? How will they get there?

It is a similar case with all the emergency services. More police, ambulance and fire service personnel and equipment will be required. Even now the transport network is inadequate. Will emergency personnel be expected to travel by train to any incident, as the roads will probably be impassable?

The roads do not permit emergency vehicles to travel at great speeds, and blue lights and two-tone horns are of little benefit down our kind of road.

Will the potential 5,200 incoming additional children all manage to find places in schools, colleges, etc.? According to our reckoning even if all the schools in the locality were to be emptied for newcomers, there still wouldn’t be enough room for them. So where will places be found for them? How many school places are spare at the moment?

The industry journal, “The Engineer”, forecasts a deficit of 66,800 construction workers and 36,800 engineers by 2050. Where will the requisite number of workers come from? Abroad?

Ref.: **http://www.theengineer.co.uk/issues/january-2013-online**
One of the basics of human rights is the supply of clean pure water. NuGen are expecting United Utilities to come up with an answer to their needs - presumably following Sellafield’s example of not paying for anything either. Yet United Utilities do not magically produce water on demand. It has to come from a stream, river, well, or spring, in a form suitable for treatment to provide potable water. Because of the great reliance on water for places like Moorside, the supply has to be guaranteed under all circumstances. For this area it will mean pipelines being laid, tapping into a canalised and covered River Ehen, ever greater quantities being extracted from the local lakes. (We note that NuGen are suggesting they could tap into Sellafield’s supply-line, which would mean further vast drainage of Wastwater, recently voted the most beautiful view in Great Britain. We would emphasize that Wastwater is within the bounds of the Lake District National Park.)

Will this huge drain on a landscape, whose great virtue stems from copious amounts of water on view, not affect the hydrology in a way that will cause far-reaching damage to the landscape, perhaps in unforeseen ways? Wherever all this comes from - or goes to once used - the impact on the environment is not going to be good. Such schemes may benefit those who live in towns and cities far away who want electricity to waste, but, rest assured, Cumbria is not going to be enhanced by any of these proposals.

We note from NuGen documentation another omission: "does not include an assessment of the potential likely significant environmental effects of the Freshwater Water Supply". We recognise how convenient that is to NuGen.

Ref.: Moorside Stage 2 Consultation Document. May, 2016, Item 5.9

To our minds, it seems imperative that we know just what is being planned in this respect, as well as so many others, in order that we can properly respond to the consultation.

We mention elsewhere the unsuitability of the transport network and roads. There is considerable congestion at peak hours already, even with only the Sellafield traffic. Nowadays, 40% of families have second cars, so extrapolating from the NuGen figures for peak numbers of employees, around another 9,100 cars may be expected to add themselves to the traffic jams. This is without construction traffic and heavy loads.

9. Railway Concerns

NuGen have grandiose plans for railway “improvements, working with Network Rail”. We have been “working with Network Rail” for most of the last decade, trying to persuade them to bring the level crossing at Braystones and the coastal railway line up-to-date. Virtually nothing of any consequence has changed, even after residents averted a passenger train derailment observed by an inspector from the Office of the Rail Regulator. Sadly, the latter individual didn’t recall hearing the train driver explain why he hadn’t acted on the urgent message from the Sellafield signaller: "We got a garbled message over the radio, but couldn’t understand it, so decided to continue on to Sellafield to find out what the problem was. Radio signals are always rubbish on this stretch". This action would have entailed passing over the very section that was likely to cause the train to derail in order to get to the signaller at Sellafield signal box. Naturally, it did little for our respect for the O.R.R.

We have a photograph of an accident caused by the failure of a small girder bridge about 400 metres to the south of Braystones, that had badly corroded. As a result of the bridge collapse, a railway wagon and load derailed and dropped off the embankment, completely demolishing two bungalows. By pure good chance they were both empty at the time. A slightly different time would have resulted in several fatalities.

Braystones Residents’ Group’s railway concerns include:

- The antiquity of the signaling and train-control system. This is 160 years old and does not comply with modern safety standards. It puts crossing users at risk and would be difficult to justify in the event of an accident, especially when seen in the light of modern technological advances. These advances include radar detection of the presence of people, vehicles, and other obstructions. Such a modern system would automatically inform all parties – users, signalers, and train staff – of the status of the crossing, and is available now;
The stability of the banking on the landward side of the track.

The integrity of the bridge to the north of Braystones. Not just from the stream that washes its foundations, but the amount of water that seeps through the block-work.

The physical requirements to operate the crossing gates, and the unreliability of the telephone communications system.

The state of the ballast due to poor drainage at Braystones station.

Failure to achieve any material safety changes at the crossing, despite several years of lobbying by Braystones Beach residents, individually and collectively.

A survey needs to be conducted to assess whether the angles of the embankments is suitable for the level of stability required of them.

Assessments need to be conducted to assess the impact of the corrosive salt atmosphere on an infrastructure now over 150 years old and which has received scant attention in that time.

Network Rail should undertake a more positive rôle when it comes to protecting its assets and ensuring the safety of residents and crossing users. The proposed plans do not resolve any of these, indeed they can even be said to aggravate them, as NuGen’s plans will impose heavier and more frequent trains on the aged line.

As we have noted earlier, even the onus for protecting the proposed new nuclear site from storm damage and tidal surges is to be placed on Network Rail. The idea apparently being that it will be Network Rail’s responsibility to maintain the sea defences in order to protect its own interests and property which will benefit NuGen by offering free protection – furthermore, Network Rail will be expected to do so for the next 150 years, probably a lot more. The “Moorside” site is at a very low level above datum level and the winter storms are forecast to get worse over the next decades.

Following NuGen’s announcements, residents now have additional questions:

i. How much extra traffic are they supposed to endure as a result of the proposed development;

ii. What mitigation can there be for Braystones Beach bungalow owners against the noise and vibration of frequent heavy railway trains;

iii. Will the more frequent passage of trains mean that beach residents will have to spend considerably longer each day awaiting permission to cross;

iv. Will there be trains during anti-social hours?

v. What compensation will be offered to those whose lives will be disrupted by these plans? The conditions attached to the plans in NuGen’s literature are so limited as to exclude the great majority of people, even though those people will be directly affected by any development and will suffer as much as those who find themselves eligible.

The level crossing at Braystones has 65,312 vehicle crossings a year - substantially more than the 23,180 suggested by a brief assessment by Network Rail. (Network Rail figures from a FOI request for copies of the log book maintained by the Sellafield signalers.) Between 5/1/10 and 3/4/15, there were 93 incidents at the crossing. Increased traffic will surely mean increased incidents. As we have said from the beginning, a single accident involving a nuclear train will cost far more than bringing the line up to current standards.

We posed the question: if you were building a line here today would you build it like this? There was no answer. We have recently written to the OND, who are responsible for the safety of transportation of
hazardous loads, asking whether they think that conditions along the line are the best for transporting nuclear loads.

Our concerns relate to the current traffic loads and frequencies. The proposed development will greatly exacerbate the problems and accelerate wear on an already-tired railway line. Powerful low-frequency vibrations, already a problem for beach-side properties, will inflicts even more costly damage on vulnerable buildings.

Reading a newsletter from "Stop Hinkley", we were puzzled by mention of an event where they joined up with stopnucleartrains.org - an organisation of which we were previously unaware. However, a quick look at the ideals of stopnucleartrains.org has produced the following (their numbering, we have omitted those less relevant):

3. The remaining nuclear power stations (PWR pressurised water reactors and AGR) should be shut down as they are a continuing source of radioactive pollution and waste, damage to health, and risks of accidents and terrorism. [The Westinghouse AP1000 design for Moorside is a Pressurised Water Reactor - or PWR]

8. Nuclear accidents require specialist treatment, so emergency services personnel need specific technical training to deal with such accidents as quickly and effectively as possible.

Ref.: http://nonucleartrains.org.uk/demands.html

As part of the concerns about the level crossing at Braystones - with nuclear trains in both directions sometimes several times a day - we have pointed out that the cost of just one incident involving a nuclear flask train would probably exceed the cost of doing the right thing and making the line safe.

Private Eye's Old Sparky did include some of the problems of the line in an article last year entitled "Coastal Fission". While not 100% accurate, it does give a good idea of the parlous state of the line. The new project apparently intends to continue using this line, even running spurs off it to service the NuGen site.

The stopnucleartrains organisation points out that the nuclear flasks are designed to sustain a drop of 9 metres (29'), which must surely be somewhere near the drop off the Cumbrian coastal line. They say that major risk areas include level crossings. As we have mentioned earlier, Braystones residents have been pushing for years to get better safety on the line.

7 EXTERNAL RISKS NOT COVERED IN CONSULTATION

1. Risk of Terrorism - Threats to Security

Sellafield’s buffer zone was not intended to be a planning opportunity. It was intended to provide a modicum of safety for the protection of the immediate environment and the local residents. Instead, they are now under greater threat than ever.

We have long raised concerns about security of nuclear sites, especially Sellafield.

Members of NuGen’s PR staff are keen to distance themselves from anything to do with Sellafield - as if that concept might occur to any terrorist.

“We are not Sellafield and we will not be doing the same things as Sellafield”, we were told at one meeting.

This statement is superficial, to say the least. Whether they believe it or not, Sellafield’s industry is the same as NuGen’s. As we have already said, an “incident” at either site will have an impact on the other.
However, there is no escaping the fact that nuclear reactors have become easy targets during military conflict and, over the past three decades, have been repeatedly attacked:

1977 – 1979. Attacks on Lemoniz Nuclear Power Plant in Spain while it was still under construction.
1980. Iran bombed the Al Tuwaitha nuclear complex in Iraq, in Operation Scorch Sword.
1981. Israeli air strike completely destroyed Iraq’s Osirak nuclear research facility.
1982. Umkhonto we Sizwe attacked Koeberg Nuclear Power Station, South Africa.
1991. The U.S. bombed Iraq’s three nuclear reactors and an enrichment pilot facility.
1991. Iraq launched Scud missiles at Israel’s Dimona nuclear power plant.

The end product of NuGen’s fuel programme cannot be dealt with. It will need to cool for decades – possibly centuries. During that whole period the materials will be at risk – either from “incidents” or from determined attacks by the world’s terrorists. Even after that period has elapsed there is no procedure yet available to safely and securely deal with the materials. Some of the products will remain dangerously active, effectively, forever. The best that can be hoped for at the moment is that some form of packaging of the materials can be perfected. That has not yet been achieved, despite all the E billions spent on trying to find a way.

No dump has been found yet, either. Despite this fact, an interchange in the House of Commons on the 7th July, 2016, saw the Energy minister telling M.P.s that the process of finding a place willing to host the dump will start next year, with a view to becoming operational by 2040. How this can be honoured is unknown. There is nowhere in the U.K. that is willing to host the dump, other than those councillors in Copeland and Allerdale. However, as pointed out during the Nirex Enquiry, the rock in those areas is totally unsuitable for the task. Politicians can change most truths, but not rock formations.


Even so, it seems unlikely that burying the material deep underground and hoping never to see it again can ever be considered a sound idea. The questions as to whether the waste will be retrievable, whether the dump will be sealed and forgotten, are still to be decided on. As no final and robust means exists of rendering safe extremely dangerous radioactive materials it seems nonsensical to be adding to an untreatable stockpile.

2. New Technology

The advent of new technology brings its own threats. The ubiquitous USB stick can be used to port programmes, apps and data. There is thus the potential for any computer with an open USB port to be corrupted, either accidentally, knowingly or otherwise. Already there have been many incidents where computer software control of sensitive processes has been interfered with. Fortunately none have yet caused serious problems. Expensive and difficult to clear viruses, like the Stuxnet one, have yet to reach their potential. It is inevitable that one day one of the control processes will be corrupted with disastrous results.

Interestingly, almost all the control chips (mostly varieties of ROM – read only memory) used in are made abroad. Almost every network device, router, or controller, contains specialised integrated circuits manufactured and programmed abroad, mainly in China. More on this was in our document of last July.

In Las Vegas, in front of a conference, an analyst demonstrated how it was possible to access, re-programme or shut down the programmable logic controllers (PLCs) of a similar design to those used in nuclear control circuitry. By handing over the supply of control equipment, or its components, to foreign companies, the U.K. is effectively handing control of our resources to a foreign country.

One of the latest fads is the use of drones. Hobby drones range in price from around £30 (including camera) to over £10,000 and they are capable of spying on “sensitive” sites. In France they have been spotted in ever-increasing numbers over government and nuclear establishments. Attempts to catch the operators of these devices have failed. Given their size and portability that is hardly surprising. Even the heaviest of them only weighs about 5 kg (10lbs). They can be controlled from up to around 2kms away, can carry either still or video cameras, and use any of 14 channels to communicate with the controller. The task of finding operators thus becomes almost impossible.
Although it is an offence to fly any machine within half a kilometre of any nuclear site at a height of less than 1 km, catch me if you can, seems to be the idea. What does it mean that people are willing to play chicken with the authorities? If just a bit of a lark, or prank, not much. As a means for a terrorist to obtain up-to-the-minute detailed plans and photographs of a nuclear establishment, very sinister and potentially extremely serious. Taking photographs is not going to harm anyone, agreed, but what if the material gathered is given to those who do not have the nation’s interests at heart? How long before a drone is developed that can carry a more malicious payload?

Ref.: http://www.bbc.co.uk/news/world-europe-29831897
Ref.: http://www.bbc.co.uk/news/world-europe-31599903

Along with laser pens, the price of the equipment has reduced considerably, so that the most recent fully equipped drone is now under £350. Laser pens can be bought as an entity or fashioned from the components of domestic audio equipment. Even at considerable distances these lasers can blind. There is an obvious scenario which involves security at nuclear sites.

On our website, we have pointed out the vulnerability of nuclear sites to terrorism and attacks by air - including the use of drones. Any possibility of an attack on Moorside or Sellafield poses a considerable risk.

In an article in the Scottish Herald, 29/5/16, Rob Edwards wrote about a report concerned security. The report suggests that not only would the authorities struggle to deal with the aftermath of an attack, but they are also failing to consider the potential threats and their aftermath seriously. The first article says that in October, 2015, a worker was reportedly marched off the Hunterston nuclear site in North Ayrshire after he was seen studying bomb-making websites on his laptop. The report by Dr. David Lowry who is a senior research fellow with the Institute for Resource and Security Studies in Cambridge, USA, and a former director of the European Proliferation Information Centre in London, points to “disturbing” evidence that suspects linked to the Paris and Brussels terror attacks in November, 2015, and February, 2016, had files on nuclear facilities, and had been monitoring nuclear workers.

A second report, for the Nuclear Free Local Authorities (NFLA), was written by Dr Ian Fairlie, an independent radiation scientist, and focuses on the stable iodine tablets that can prevent radiation poisoning after some nuclear accidents.


8. POLITICAL ACTION AND INACTION

1 The Conditions to be met Before Nuclear Expansion can Take Place

Five years ago the politicians announced several criteria that would have to be met before any consideration could be given to nuclear expansion:

- no subsidies;
- a method and location for the disposal of nuclear waste - legacy and new to be in place before further expansion could be undertaken;
- designs would have to be generically approved and safe in operation;
- energy security needs would have to be met;
- approval of local residents obtained before any project was permitted to start.

We have already demonstrated the fallacy that the last requirement has been met. The failure of the consultation process to engage an adequate and representative number of residents says all that needs to be said. The “clever” questions that do not allow for alternative answers, or cover too many aspects of the projected build should never have been put to people who cannot understand the full ramifications of what is being asked.
Much is made, too, of how much benefit there will be to the area as a result of nuclear expansion. Yet, looking around, Egremont or Whitehaven, it is difficult to see how the area has benefited. Large numbers of charity shops now occupy once-thriving stores. Just as many buildings are just empty and lying semi-derelict. This is after more than half a century of the nuclear industry. Services of all kind have been closed down or reduced. Even the local hospital is struggling to keep its head above water. Following the instigation of the plans determined by Bolter and his colleagues, the main beneficiaries at the moment appear to be educational establishments, which are, as required, enabling the industry to capture the minds of young children.

The rewards for Cumbria's involvement with nuclear are shown in The Times of 4th November, 2015. In a statement from the pro-nuclear MP, Jamieson Reed: "... health services around Sellafield are suffering major cuts, local courts and police stations are closing and major civic amenities are closing down."

An alternative viewpoint might be that such deprivations are vital to the nuclear industry, and are being deliberately introduced in order to indicate to the local residents just how necessary the nuclear industry is - whether they like it or not. At the very first meeting we attended, in Whitehaven, seven years ago, at the time of R.W.E.’s application to develop at Kirksanton and Brastones, we objected to the many posters around the room as they indicated that many of the projected improvement to social and health amenities and services were dependent on residents approving the nuclear developments which would have a devastating effect on the beautiful countryside of Copeland. NuGen seem to think in the same way that RWE did. There is no allowance for dissenting views. No opportunity to install counter information. We were concerned, too, that the majority of those pushing so hard for the development had links to Sellafield, either in the way of past employment, or because they were in some way beholden to the industry.

The Citigroup report, "New Nuclear - The Economics Say No", dated 9/11/09, was clear in the fact that nuclear was too expensive compared to alternative generation methods. It is interesting, therefore to study the way in which the six major companies have manoeuvred to bring their prices in line with the promised subsidy which will be enjoyed by Électricité de France when/if the Hinkley Point reactor is commissioned. Much grumbling by the politicians indicates either stupidity or, more likely, cunning. It must have been apparent to all that the prices being demanded by Électricité de France would become the base line for all of them. In the same way that the 30 m.p.h. speed limit becomes both the minimum and maximum speed in a built-up area.

The cost of the Hinkley development has now increased to £37 billion – more than double its original cost in just ten years. We see no reason why Moorside will not follow the same pattern.

People are still pushing the global warming mantra and reiterating untrue stories about the lights going out. Whatever one believes about the former, the U.K.’s CO₂ contribution, when compared to the likes of China and America, is minimal and any reduction will be equally so. There is certainly no need to stampede into an even more dangerous energy policy such a nuclear. However, the nuclear industry does like to stampede people into things, as if they have time to think they will realise that they are being misled.

So, no secure and safe waste disposal capability, despite production of chemicals far more damaging than carbon dioxide, grave risk to the planet in the event of an incident, no energy security, most equipment manufactured abroad, no secure source of raw materials, no local approval, old designs that have never been completed on time or on budget, working to fulfill an old-fashioned premise in respect of maintaining a base load availability, and heavy index-linked subsidies to foreign companies for decades to come.

Sellafield exists solely to service the needs of Sellafield and the nuclear industry - mainly cleaning up pollution caused by Sellafield.

Although the contrary illusion is maintained, Sellafield does not make a profit and thus has no spending power other than that provided by the tax-payer. It is now just a £1½ billion p.a. drain on the public purse. As it does not earn any money, the largesse spread (albeit very thinly) around the communities in Cumbria stems purely from central government. Stories that Sellafield are to fund such and such a project are thus totally illusory - they are in fact just spending tax-payer’s money whilst skimming off substantial payments for the companies and individuals involved. Any other project, for example, tourism, could be funded in this way without the corruption and pollution of the nuclear industry; the local community would be a lot better off.
In many ways, the NuGen pattern is the same. Whilst purporting to be a private enterprise, all the changes to the infra-structure will be paid for by others. Yet if that kind of money is available to be invested in the region, why has it not been?

2. Brussels Still Awaiting Notification from NuGen

We have received a letter from the Director for nuclear energy, safety and ETIR (The European Commissioner). This tells us that:

"New construction projects shall be communicated to the Commission under the scope of Article 41 not later than three months before the first contracts are concluded with the suppliers or, if the work is to be carried out by the undertaking with its own resources, three months before the work begins. At the moment of drafting this response, the Commission has not received such notification regarding the nuclear project in Moorside. If and when this notification is received, the Commission will review it and issue its Point of View to conclude whether or not the investment project fulfils the objectives of the Euratom Treaty.

Furthermore, Article 37 of the Euratom Treaty lays down that prior to granting a planned nuclear operation an authorisation to discharge airborne and liquid radioactive effluents into the environment, a Member State shall provide the Commission with such information that allows the Commission, after consultation of a dedicated group of independent experts, to release its opinion on whether the implementation of said plan is liable to entail a radiological exposure, significant from the point of view of health, of the population of another Member State. Guidance on the information to be provided by the Member State is given in Commission Recommendation 2010/635/Euratom on the application of Article 37 of the Euratom Treaty. The Commission opinion is formally transmitted to the submitting Member State and, for public information, published in the Official Journal of the European Union."

3. Legal Challenge

Combined with the various other failures to achieve even basic credibility, it might seem that legal challenges to the whole enterprise could be successful - whether in the U.K., or in the E.U.

The core-sampling that has been undertaken by the drilling platform off Braystones drilling boreholes was obviously not completed before the documentation given to the public was published, so how can people assess, digest, and comment on the results? We see this as yet another failure of their consultation process and another opportunity for legal challenge.

It seems highly unlikely that boreholes in the area in question could avoid finding radioactive materials. Were any found?

If so, what action followed and where did the material come from?

The Radiation Free Lakeland website includes a 2014 letter from the Whitehaven News “about the Sellafield Mafia” as they are known, which confirms our views on the corrupting nature of the industry, and the role of the local and national politicians.


Although aimed at the dump consultation, the principles seem to apply to nuclear development throughout the area, such as the way in which the hundreds of bore-holes currently being drilled were approved after extremely limited consultation with local parishes and committees, except for Copeland Council, who were too busy debating the impact of a single wind turbine, apparently, to give their attention to such important matters as the drilling of hundreds of boreholes. We understand that the ultimate decision was made by a single, delegated council officer. Given the serious nature of the undertaking and the severe risks involved, we believe that this was inappropriate and should be investigated.
For over a year now Braystones Beach residents affected by the proposed “Moorside” development have been seeking information as to what the impact will be on their homes. We still have no information. Even the local M.P. failed to answer our queries in over 12 weeks. When he eventually got round to replying, it seems he has so little interest, all he did was to forward our questions to NuGen for response. NuGen seem to have difficulty comprehending that there will be any impact on Braystones Beach folks at all. They do manage to assert that there will be no compensation claims considered, however. Their maps suggest differently.

We think we have a right to know what is planned for the beach bungalows - now. However, he seems intent on ignoring even the formal complaint.

With the inevitable assistance of politicians and councillors, this picturesque (provided you don't look towards Sellafield's ugly structures) part of Cumbria is the target of a foreign consortium who wish to build a vastly expensive and risky nuclear power station. Immediately adjacent to the existing Sellafield site - literally just across the road - the project will blight the Braystones and Beckermet areas.

The disposal of waste is also still an unresolved problem. Let us not forget that some of these chemicals will remain too radioactive to handle for millions of years. As we have already stated, even the oft-quoted half-life times fail to indicate the length of time before they become "safe", as many will require several half-lives to pass before they can be deemed to be non-injurious, even to the strange and misleading ethics of the nuclear industry.

For reasons which patently have no regard to the practicalities or true financial viability of nuclear sites, but may have a lot to do with share-holding and personal grandisement, the whole national planning system has been changed to enable politicians to dictate what will be built where and remove the local residents' right to object. With the collusion of various politicians - local and national - and peers, it seems the entire west coast of Cumbria may succumb to nuclear development, regardless of logic, financial sense, geology, or practicality.

It is obviously debatable quite how sensible is this proposal to gamble on never having an accident which will affect Sellafield and its great stocks of radioactive materials.

There are many points which we would like answers to - including those in our first consultation document of last July. An additional question is:

4. How does the proposal scheme fit with Town and Country Planning Regulations 2012?

The requirement (under Part 4, 10-1(c)(i& ii)) is that when preparing their Local Plans, local planning authorities need to have regard to the prevention of major accidents and limiting their consequences.

Also to be considered are the long-term need for appropriate distances between hazardous establishments, the population, or environmentally sensitive areas, and whether additional measures for existing establishments are required, so that risks to people in the area do not increase. Yet, should a major incident occur at either Sellafield (which does have a certain history) or the proposed new site, there must inevitably be a risk of a domino-like impact on the other plant, with no buffer zone anymore, the risk to residents must be vastly increased.

There is an inference amongst nuclear personnel and government officials that it is utterly impossible for both plants to suffer incidents simultaneously. Logic says differently.

The National Grid excuse their plans for huge pylons by saying that it is far too expensive to bury cables, and that 150' high pylons are the only answer to get the power to London and elsewhere. We can choose a design, and yes, they do allow a choice from three possible routes, but burial of the cables is not an option.

This organisation have just tabled yearly results: pre-tax profit rose 15% from the same period in 2015 to £3.03bn. Adjusted earnings per share were up 10% to 63.5p, while adjusted operating profit increased 6% to £4.1bn. A full year dividend of 43.34p compared with 42.87p the previous year was recommended.
Is the pursuit of profit for a select few more important than the preservation of the environment and local amenity?

How much extra would burial of the cables cost when expressed in pence per kilowatt/hour over the lifetime of the programme?

We have already pointed out that the only reason for the additional pylons striding across the landscape is the proposal to build Moorside. Do away with Moorside and the landscape can be preserved without any expense, so it is a relevant factor for the consultation.

One of the main planks of the argument for developing nuclear power, alongside the CO₂ argument has been "preventing the lights from going out".

Several years ago, at the time of the RWE application to build at Braystones, we reported the statement by the head of the National Grid, that there was no likelihood of the lights going out. That statement was ignored in the typical "scare the public into submission" style that governments and politicians so like. Amusingly, perhaps by accident, the previous incumbent of the Energy Minister post, Andrea Leadsom, recently told a committee of MPs on 24/5/16 that there was no possibility of the lights going out. The adequacy of supply is reiterated in an article in The Times this week.

Sadly DECC figures point to the fact that actually, despite assertions by those who should know better (and in all honesty, probably do), that energy demand is rising and has to be catered for; it fell again last year by 2%. This means that overall the demand for electricity nationally has been falling for over a decade at more than 1% year on year. With modern innovations this trend is set to continue, reducing the necessity for Moorside even further.

**ADDITIONAL MATERIAL**

1. THE MASTER PLAN

A point, stemming from a meeting recounted in the book "Inside Sellafield", by Harold Bolter, has been the impact of CO₂ on the environment.

According to the published anecdote, the management of Sellafield decided that, to overcome a long period of deservedly bad publicity, they would adopt a strategy of promoting the idea of a link between global warming and emissions of CO₂. The strategy has obviously worked. Yet few seem to ask whether the rise in CO₂ levels causes a rise in temperature, or whether, in fact, the rise in temperature causes increased CO₂ in the atmosphere. Which comes first?

While a lot of the world’s authorities are happy to accept global warming - or climate change as it is now named - and forecast terrible consequences, we would point to the paucity of real data available on which judgement could realistically be based. Weather has never been a stable, forecastable science.

Even if measurement of temperature and rainfall, etc., had always been accurate to the 0.1% accuracy that might give some meaning to it and the records went back to the beginnings of our time, the sample size being used would only be 0.00000057%. We know of no other system that would accept such a small sample size as representative and the sound basis for projections and trends.

The records used only indicate that there has been a short trend towards warmer, wetter weather—the result of which has been increased storms. Happily for the promoters, they have made an awful lot of money out of the subject.

Over time, this country has been subject to ice ages and for a time was even tropical. Given the scant evidence over such a short time-line, it may be that the earth is just following the normal course of events. Such is the level of agreement amongst climatologists that some say we are emerging from a mini-ice-age, others, encouraged by the nuclear industry are keen to promote warming, accompanied by much more
extreme conditions. No doubt pollution in all its forms have a role to play in the overall picture, but as we keep asking, is the production of nuclear waste, the risks accompanying nuclear generators, the discharges to the environment, the disturbance to the marine environment, or the direct heat being discharged as a result of nuclear generators any better than the ones it is being promoted to replace? We think not. Given the cost, there can surely be no future for nuclear reactors.

Climate change, however one interprets it, may possibly cause the end of the human race. It will not cause the end of the planet.

It is noteworthy that most of the CO$_2$ producing processes utilised in the production of nuclear fuel: manufacture of the components for the specialised build demanded by nuclear plant and ancillary equipment; transport of materials, manufacture of specialised steel, discharges to the atmosphere and environment, mining and processing of ores, and manufacture of control equipment, direct dissipation of heat, etc. All have to be ignored if you wish to suggest that nuclear is “clean”.

In fact, DECC specifically excludes anything detrimental to the nuclear industry which occurs outside the U.K. Every process in the construction, commissioning and running of a nuclear reactor produces waste and emissions, such as CO$_2$.

Notwithstanding, we have always asked whether CO$_2$ emissions are worse than plutonium, polonium, caesium, americium, tritium, and all the other toxic products of a nuclear reactor which always seem to leak into the environment.

As we have pointed out, the mantra is now well established: ‘No animals are hurt, the leak was contained before any damage was done, and there was never any danger’.

In 2011, this mantra was taken to an extreme – even for the nuclear industry - in a propaganda sheet entitled Britain’s Energy Coast, the chairman, Brian Wilson, tried to tell the world that there was no melt-down at Fukushima, when all three cores had melted. A complaint to the Press Complaints Council was upheld and a retraction published. The gentleman said that he hadn’t known there had been a melt-down.

The correction issued read:

“An article published in the Britain’s Energy Coast supplement, distributed on May 26 (‘Lessons will be learned from events in Japan’), stated that the reactors at the Fukushima nuclear plant ‘remained intact in spite of both earthquake and tsunami’.

“We would like to make clear that, in fact, all three of the reactors failed following failure of the cooling system.

“The events led to a failure of the power supply and water cooling systems, with the result that the cores melted through the bottom of the reactors, releasing radioactive chemicals. We apologise for the misleading statement.”

Published by the IPCC: 28/09/2011
The article goes beyond what is euphemistically called “spin”. This is downright dishonest propaganda. Once something is published, any correction is largely ignored, so some Cumbrians probably believe that there was no melt-down and, because Fukushima is rarely mentioned in the press these days, that everything in Japan is under control and working out well.

Of course, this is not the case and the $300 million “ice wall” project, once hyped as the most reliable method to substantially reduce the volume of contaminated water by preventing groundwater infiltration into the wrecked reactor buildings, has become a fiasco. The “wall,” is now derided as being a “lace curtain.”

The entire Fukushima site is now full of containers of irradiated water in drums. They are running out of room.

In September 2013, Prime Minister Shinzo Abe shamelessly lied to win the 2020 Olympics for Tokyo, claiming that the contaminated water leaking from Fukushima Daiichi Nuclear Plant was “under control” and there had been “no health problems,” nor would there be. As many as 173 child thyroid cancer or suspected cancer cases have appeared in the last five years. The incidence rate in Fukushima is around fifty times that of the general population.
At the time of Fukushima, DECC worked with Électricité de France secretly in order to synchronise a cover-up and limit press and television coverage, aided by the I.A.E.A. - until they got caught out by the press.

Most people think the I.A.E.A. is an independent and honest body. However, its aims are plainly stated on its website: To work with its member states and multiple partners worldwide to promote the safe, secure and peaceful use of nuclear technologies.

2. **Financial Viability of Nuclear Generators**

The Times, 31/5/16, carried an article on how ministers in charge of the £18 billion project at Hinkley - deemed by rational people to be a rather large white elephant - refuse to say whether the deal is good for taxpayers.

David Lowry's request on behalf of the Institute for Resource and Security Studies under the terms of the Freedom of Information Act, was turned down as it would "adversely affect international relations, defence, national security or public safety". Sadly, even the Information Commissioner backed DECC's decision apparently. It does rather seem that there may be something to hide by DECC in terms of whether Hinkley is good value for money. Yet everybody knows that it is not. Any more than the "Moorside" one is.

Are there similar terms and conditions, government subsidies and underwriting available to NuGen, too? Or aren't we allowed to know that, either?

The organisation "Stop Hinkley" sent us their newsletter. In that is a report which explains the reason for the FOI request:

"The government said that anyone building new reactors in Britain must manage and pay for the cost of handling waste products, unlike the existing situation where all radioactive materials are effectively dealt with through the public purse via the Nuclear Decommissioning Authority. However, although the operator must agree to take responsibility for the spent fuel and other radioactive waste, the cost is expected to be passed on to the domestic electricity user through higher bills.

"Under the new arrangements, the prospective nuclear operators must enter into a waste transfer contract (WTC). Those contracts, like the one covering Hinkley, must be submitted for scrutiny by the EC under its state aid rules. It is the pricing methodology of the WTC that Lowry wished to review and which remains under wraps.

"John Sauven, the executive director of Greenpeace, said, “The government has repeatedly said that Hinkley is great news for the British public and our energy security. But they refuse to back this up with hard evidence. In fact, DECC is incredibly cagey and is failing to answer questions on where the dangerous radioactive waste will go or how much Hinkley will cost us.”"

Ref.: [http://stophinkley.org/StopPress.htm](http://stophinkley.org/StopPress.htm) (Newsletter for June, 2016.)

It remains a fact that, without subsidies, nuclear would never even be remotely sustainable or financially viable. What is the situation with NuGen? Are they in line for subsidies?

Some of the subsidies for the nuclear industry which are paid for by the tax-payer:

a) Limitations on liabilities: The operators of nuclear plants pay much less than the full cost of insuring against a Chernobyl-style accident or worse.

b) Underwriting of commercial risks: The Government necessarily underwrites the commercial risks of nuclear power because, for political reasons, the operators of nuclear plants cannot be allowed to fail.

c) Subsidies in protection against terrorist attacks: Because protection against terrorist attacks can only ever be partial, the Government and the public are exposed to risk and corresponding costs.
d) Subsidies for the short-to-medium-term cost of disposing of nuclear waste: In UK government proposals, the Government is likely to bear much the risk of the risk of cost overruns in the disposal of nuclear waste.

e) Subsidies in the long-term cost of disposing of nuclear waste: With categories of nuclear waste that will remain dangerous for thousands of years, there will be costs arising from the dangers of the waste and the need to manage it. These costs will be borne by future generations, but they will receive no compensating benefit.

f) Underwriting the cost of decommissioning nuclear plants: In UK government proposals, the Government is likely to bear much the risk of cost overruns in decommissioning nuclear plants.

g) Institutional support for nuclear power: the UK government is providing various forms of institutional support for the nuclear industry.

3. MORE RELIABLE THAN WIND?

The nuclear industry is keen to persuade the public of its inherent reliability and robustness. In an article on the Herald Scotland website on 14th December, its environment correspondent Rob Edwards reports an analysis by nuclear consultant Pete Roche for fifty NFLA (nuclear-free local authorities) which reveals that the UK’s 15 reactors have had 62 unplanned shutdowns in the last three years, involving electrical, boiler and valve defects, fires, storms, vibrations and the discovery of tiny cracks. When coupled with the hundreds of lucky escapes that nuclear sites, especially Sellafield, have had, we would undoubtedly be better off with the solar, tidal or wind power. None of them have the potential to poison whole countries.

In June this year it was announced that more power had been produced by solar panels than by coal-fired stations.

An article in The Times of 14th July, 2016, announces that more than 60 companies have expressed interest in a “colossal energy storage scheme to provide 200 MW of back-up electricity, mainly using industrial-scale battery arrays. When these have been perfected and have been installed in sites around the U.K., then all the “green” methods of electricity generation will come into their own, rendering huge power stations obsolete. We forecast of the development of this type of system many years ago, as noted in the introduction to this document.

4. CYNICAL WAYS – INSIDE SELLAFIELD

Earlier, we told of one-time manager at Sellafield, Harold Bolter, who wrote the book, “Inside Sellafield”, and we have made a habit of pointing out the section in this book - which presumably is a true account of events from the time - that refers to the methods proposed in order to counter the bad publicity the nuclear industry was (deservedly) getting. In particular, the promotion of the rôle of CO₂ in what was then labelled global warming. This description, as we have already noted, needed to be changed to climate change when it was proved that the earth was actually cooling.

Bolter states that it was also decided necessary to "capture the minds, if not the hearts, of younger children". Presumably the aim was to inculcate them with the pro-nuclear doctrine. (Something similar used to be referred to as brain-washing.)

There can be little doubt that the aims of that meeting are now coming to fruition. One local school, the West Lakes Academy in Egremont - about four miles from Sellafield – uses the selling point for its services thus:

"We are sponsored by two of the most important energy organisations in the UK and two of Cumbria’s largest employers: The Nuclear Decommissioning Authority and Sellafield Ltd. They provide invaluable resources and industry support to our specialism in Science."

An article in Private Eye, 1422, even refers to “Sellafield-backed Energy Coast University Technical College".
One of the more satisfying pastimes is to look at the manipulation of the local community by Sellafield’s managers. Bolter’s publication explains how some of it works. In the book “Sellafield Stories”, which we mention elsewhere, there are wonderful examples of management speak and illustrations of how practice and theory vary and diverge.

Also interesting is how critics of Sellafield and the nuclear establishment can become its staunchest supporters when money is offered. Several of the more able wordsmiths have rightly started off being concerned about the practices that have occurred at Sellafield, but then have been persuaded to work on the pro-nuclear PR side of things. Once ensnared, they then become so blinkered and swayed by their own propaganda that they think anyone who dares contradict them is, “from the soft, fluffy, green end”.

Some of the results of wanting to protect a much-loved environment can be scary. Following our fight with R.W.E. a photographer from somewhere just happened to want to have a chat about our background and take a photograph. MIS, Kroll’s, R.W.E., or Sellafield? I’m sure we have nothing to fear.

However, we got off lightly. A Greenpeace representative found that she was travelling in a car on which the wheel nuts had been loosened. (Living in the Shadow, Jean McSorley, ISBN 0-330-31331-2) In 1985, the French government (the people with whom DECC want to do business with to buy their nuclear reactors for Hinkley) blew up the “Rainbow Warrior”, a vessel owned by Greenpeace which had been slightly annoying the French who wanted to test nuclear weapons conveniently far from their homes. One person was murdered.

The people involved have a distorted view of democracy and integrity. One ex-senior manager boasts that he knew everyone and everyone knew him, so if he wanted a job done he just picked up the phone to chief executives of county councils, senior politicians, and the like. He is quoted as saying, “I think the reason I was so effective [here] is because I’d created a huge influence network in West Cumbria.”


Is it us, or is this a form of corruption? As Sellafield intentionally holds a number of purse strings we believe it is.

Also in Hunter Davies’ book, each of the managers tells how they have considerably improved things, completely failing to see that it is too late. The toxicity of the materials that were being discharged into the atmosphere and environment have not gone away, but will continue to cause illnesses and cancers for decades, perhaps millennia, to come. Even if one takes them at their word, the Irish Sea and beyond has already received enough to stay contaminated till the end of time. Every child in the U.K. has plutonium in their teeth as a result of Sellafield and atomic bomb testing. At least 50 kg of plutonium has been discharged into the Irish Sea, along with caesium, americium, et al. Sellafield’s contamination has reached Nova Scotia and beyond, and round the Scottish coast to Scandinavian countries. It is marvelous that they have reduced the amount they are discharging, but that doesn’t make it alright, as it already too late.

No-one admits to the amount of nuclear waste in drums and containers that has been dumped at sea – an obviously unsafe practice. Yet NuGen intend to add to the accrued stockpile which has no disposal or treatment available to make it safe. There is an inference that the new-style plant will produce less waste than other designs, but while that may be true to a point, the waste that will be left will be far more toxic and difficult to deal with.

The Sellafield/Seascale/Braystones areas are no longer suitable for promotion in tourist guides - leastways without a radiation warning. Fifty or so years ago, Seascale’s beach was packed so tightly with holiday-makers, brought by six or eight coaches and several very full trains, that there was hardly room for one to put down a towel. The nuclear industry certainly put paid to that. Strangely, as it is outside the “Lake District” so Cumbria Tourism with their conveniently short-sighted policies need not worry, and no fear of upsetting big industry. Yet from Sellafield to Wastwater is only about nine miles as the radioactive seagull flies; there are many long-distance views from the raised areas of the Cumbrian hills within the National Park that overlook the coastal plain.

Radioactive materials do not recognise boundaries, however.
It is not the rôle of the Nuclear Decommissioning Authority to promote nuclear development, but they seem to do it anyway. After all, it is they who decided to sell off the land that NuGen hope to build on - NuGen having taken a £70 million option to buy the site – thereby enabling nuclear development. Could, or would, the Nuclear Decommissioning Authority have sold it to anyone else? It seems highly unlikely. After all, it is the buffer zone for Sellafield.

At a meeting of Cumbria County Council not long ago, of the 50 members present, 31 had to declare an interest when a matter involving the nuclear industry or Sellafield was to be discussed. Again, how does this equate to democracy?

It is this type of thing that suggests to us that Sellafield’s policies, as laid down by the likes of Bolter, have been fully implemented. Influence and control of so many aspects of Cumbrian life and the brain-washing of youngsters must surely have pleased Sellafield management and the government. Do these things form part of Dunster’s experiment, too? (See page 49.)

5. Influential Friends and Politics

We have long noted, on our website, the connections that exist between those who will benefit from nuclear expansion and those in a position to force through the necessary arrangements. We would welcome a thorough investigation into the rôle of members of DECC, Allerdale and Copeland councils, politicians, and big industry. One of the ex-Prime Minister’s sound bites suggested that lobbying (a polite euphemism) is “the next big scandal”. Sadly, he did nothing to abate it.

It is only necessary to spend a few minutes on the internet to discover a huge number of associations, affiliations, and shady organisations that are linked to the multi-billion pound propaganda network that represents the nuclear industry and the associated supply and construction companies. It has been the case that many of those in authority have been connected to those companies wishing to develop in the U.K.

Politicians have a reputation for self-interest and a light touch when it comes to integrity. For example, in June, 2007, the then Energy Minister, Mr. C. Huhne, had the following to say:

- “Nuclear is ‘tried, tested and failed’ and urged ministers to stop the ‘sideshow of new nuclear power stations now’.”

- Earlier he had said that no private sector investor in the world had built a nuclear power station without “lashings of government subsidy” since the tragedies at Three Mile Island and Chernobyl. “Our message is clear, no to nuclear, as it is not a short cut, but a dead end.”

In 2010, Huhne announced that the government was firmly behind the development of nuclear power stations. Observers thought this a bit strange as he had previously been seen to be anti-nuclear. It is not known what influenced him to change his stance.

There are many other instances of dubious actions involving politicians, such as these:


See: [http://www.publications.parliament.uk/pa/ld201314/ldselect/ldprivi/94/9405.htm](http://www.publications.parliament.uk/pa/ld201314/ldselect/ldprivi/94/9405.htm) and [Daily Mail Article](http://www.dailymail.co.uk)

Another who changed his mind was Sir Bernard Ingham, advisor to Mrs. Thatcher. He attended the meeting at Sellafield mentioned elsewhere when it was determined that the promotion of CO₂ production caused global warming – later renamed to climate change – and the brain-washing of children in the education system. Ingham’s views became more obvious after he retired, joining Supporters of Nuclear Energy as secretary. It seems that he was not the most logical thinker, nor did he countenance contrary views. When the Irish government registered concern about Sellafield’s discharges he branded them hysterical and
ignorant, suggesting that there was no evidence that the discharges were harming anyone or anything. He wrongly suggested that there was no evidence to the contrary. He currently opposes wind farms.

Ref.: http://news.bbc.co.uk/go/pr/fr/-/hi/uk_politics/5149676.stm

It is worth spending a little time following links on the internet to gain a better picture of how the nuclear industry has infiltrated every corridor of power and promoted their biased and plainly wrong propaganda.

Let’s face it, it is not a coincidence that these links have been forged.

The situation at Hinkley demonstrates the lack-lustre performance of those in command at DECC. Small wonder that the department has been done away with. Their whole aim was to award billions of pounds to Électricité de France and claim that they had done what was necessary in order to prevent the lights going out. That the whole scheme was vastly over-priced and would add hugely to the cost of electricity doesn’t seem to have bothered them. The fly in the ointment was that Électricité de France couldn’t afford to build it, and it is certainly indicative of problems when even the head of finance says it is too dear to build and would ruin the whole company. With debts approaching £34 billion, even the French government is reluctant. Such an investment would draw funding for the necessary servicing of the French nuclear sites, and thus has attracted opposition from the French unions. Then there is the matter of subsidies, which caused problems for the EU commissioners. When will it end?

In The Times, 20th July, 2016, Robin Pagnamenta, the Energy Editor, wrote an article entitled “Ditch nuclear and fire up gas to avoid power cuts’, in which he stated:

“Britain should shelve plans for a nuclear revival and fast-track proposals for new gas-fired power stations, a leading energy industry boss has warned.

“Keith Anderson, chief corporate officer of Scottish Power, of the six big energy providers, said that government policy was failing to deliver urgently needed investment in new conventional power stations, putting the country at risk of price rises and power cuts.”

He continued:

“‘As a country we have been saying we are committed to new nuclear for ten years. How long is Hinkley Point going to take to come through? Let’s get on and build what we know how to build. The risk is we are sitting here in five years’ time and we have not built anything.’

“He expressed concern that at a time of considerable political uncertainty linked to Brexit, the U.K. was also facing an energy crunch. ‘As an economy we should be taking control of our own energy supply,’ he said, pointing out that last winter the gap between peak demand and supply fell to its lowest level in ten years.

“With wholesale energy prices at multi-year lows, many energy companies are reluctant to invest in expensive power plants without government support. One measure that the government has deployed to boost investment is the so-called capacity market, a scheme by which generators are paid to supply extra power at short notice. However, Scottish Power, which supplies gas and electricity to more than five million British homes and businesses, criticised the scheme, which is rewarding small-scale diesel power plants at the expense of less polluting and more efficient large-scale gas plants.

“‘We need to make sure that these auctions work and do not reward small-scale diesel generators,’ Mr Anderson said. ‘What the UK does not need is another seven gigawatts of diesel generation.’

“Renewables, including wind and solar power, generated 25 per cent of Britain’s electricity in the second quarter of this year. However, the growth of renewables is fuelling a need for reliable back-up generation. The problem has become more acute since the shutdown of three big coal plants this spring, including Scottish Power’s Longannet plant.”
We agree. The answer is not to build huge nuclear power stations, but to use alternatives. If funding similar to that available to the nuclear industry were to be diverted instead to renewables then the problems of intermittent supplied would soon be overcome.

Even abroad the financial viability of nuclear power is obvious:

John Rowe, chair of Exelon (the largest nuclear power producer in the US), has said that the nuclear renaissance is "dead". He says that solar, wind and cheap natural gas have significantly reduced the prospects of coal and nuclear power plants around the world. Amory Lovins says that the sharp and steady cost reduction in the cost of solar power has been a "stunning market success".

There can be no doubt that discharging copious amounts of direct heat is no different to churning out CO₂, and the impact on environment of using trillions of gallons of sea water for cooling purposes, discharging radioactive materials and having no method of dealing with the ultimate waste all point to the nonsense of using such high-level technology to boil a kettle.

6. WEEDING OUT THE TRUTH

With modern methods, Sellafield’s wastes can indisputably be detected in most of the waters from Nova Scotia to Sweden. Even worse is that the site continues to dump radioactive materials, despite agreements, such as the London Agreement of 1972, which prevent dumping at sea.

The pipeline out from Sellafield continues to pump radioactive materials into the sea. The agreement didn’t mention pipelines and sadly, no-one seems to have the heart to demonstrate the cynicism of the arrangement.

By the late 1980s, Sellafield had exposed the whole of Europe to more radiation than the combined levels of exposure from all other nuclear sites, weapons testing, the Chernobyl incident, and packaged solid wastes. Given that the greatest concentration is likely to be close to the point of origin, does it really make sense to be disturbing the soils and Irish Sea sediments to build another of these dangerous scientific dreams?

A while back we asked the Environment Agency why there are no longer any of the seaweeds that we remembered as kids on the rocks along the beach from Sellafield to Nethertown. In particular, we note the absence of the porphyra variety.

Two ladies who lived on the beach at Braystones used to collect it by hand. Several times a week the sacks of the seaweed were dispatched by train to Wales to be made into laver bread. Then the bakers discovered that Cumbrian seaweed was radioactive and contained sufficiently high levels of Sellafield’s pollutants to make it unsafe to eat. Unsurprisingly the shipments ceased.

The official version, however, is that the ladies who collected it "became too old to continue", and the Environment Agency pretends that the marine life is fine.

Many years ago we noted that as children we used to go out with shrimping nets and our small hauls always incorporated fry, sand eels and other marine life. The rock pools were teeming with life: small fry, shrimps, worms, periwinkles, star fish, sea anemones, etc. Recent attempts to demonstrate the art to grandchildren produced virtually nothing. Again, the Environment Agency disagrees with our first-hand observations, saying that the sea is becoming healthier.

The same agency also disagreed with our opinion that the particles being found along the shore by Sellafield’s sub-contractors, Nuvia, would be dangerous. It is a fact that none of the beach bungalows have ever been checked for radiation. Noting the distribution patterns in Sellafield’s own published findings, it seems highly unlikely that no particles will have been washed ashore, dried out and then blown in the wind. Some of them must, inevitably have blown onto the beach properties. Nuvia have noted that there are more particles being found following winter storms, as the sea bed is disturbed. Their equipment can only detect particles in the sand to a depth of around 6" and the finds are pretty much luck of the draw. Yet the tidal flows move more
than that on each tide. Certain areas of the beach have been omitted, too, as the vehicle used by Nuvia cannot negotiate the rock pools or difficult terrain along the foreshore.

We entered into copious correspondence with one agency, the publisher of a posh-sounding report on the subject of particle in the environment. Our view was that it was highly possible that particles could be ingested or inhaled by playing on, or even just walking along the beach, were dismissed. Those residents who lived on the beach permanently must surely have faced considerable risks. Some considerable time later we found another paper with a different author who concurred with our views.

As writer Bill Bryson comments, "I am no expert, but it does seem on the face of it that human beings are not quite grown-up enough yet to be trusted with nuclear fuels." It does seem that the ultimate aim of scientists is the eradication of the human race.

7. THE CONDITIONS TO BE MET BEFORE NUCLEAR EXPANSION CAN TAKE PLACE

Five years ago the politicians announced several criteria that would have to be met before any consideration could be given to nuclear expansion:

- no subsidies;
- a method and location for the disposal of nuclear waste - legacy and new to be in place before further expansion could be undertaken;
- designs would have to be generically approved and safe in operation;
- energy security needs would have to be met;
- approval of local residents obtained before any project was permitted to start.

We have already proved the fallacy that the last requirement has been met. The failure of the consultation process to engage an adequate and representative number of residents says all that needs to be said. The “clever” questions that do not allow for alternative answers, or cover too many aspects of the projected build should never have been put to people who cannot understand the full ramifications of what is being asked.

Much is made, too, of how much benefit there will be to the area as a result of nuclear expansion. Yet, looking around, Egremont or Whitehaven, it is difficult to see how the area has benefited. Large numbers of charity shops now occupy once-thriving stores. Just as many buildings are just empty and lying semi-derelict. This is after more than half a century of the nuclear industry. Services of all kind have been closed down or reduced. Even the local hospital is struggling to keep its head above water. Following the instigation of the plans determined by Bolter and his colleagues, the main beneficiaries at the moment appear to be educational establishments, which are, as required, enabling the industry to capture the minds of young children.

An example of just how rewarding Cumbria’s involvement with nuclear has been is quoted in The Times of 4th November, 2015, in a statement from the pro-nuclear MP, Jamieson Reed: “... health services around Sellafield are suffering major cuts, local courts and police stations are closing and major civic amenities are closing down."

An alternative viewpoint might be that such deprivations are vital to the nuclear industry, and are being deliberately introduced in order to indicate to the local residents just how necessary the nuclear industry is - whether they like it or not.

At the very first meeting we attended, in Whitehaven, seven years ago, at the time of R.W.E.’s application to develop at Kirksanton and Braysstones, we objected to the many posters around the room as they indicated that many of the projected improvement to social and health amenities and services were dependent on residents approving the nuclear developments which would have a devastating effect on the beautiful countryside of Copeland. NuGen seem to think in the same way that RWE did. There is no allowance for dissenting views. No opportunity to install counter information. We were concerned, too, that the majority of those pushing so hard for the development had links to Sellafield, either in the way of past employment, or because they were in some way beholden to the industry.
The Citigroup report, "New Nuclear - The Economics Say No", dated 9/11/09, was clear in the fact that nuclear was too expensive compared to alternative generation methods. It is interesting, therefore to study the way in which the six major companies have manoeuvred to bring their prices in line with the promised subsidy which will be enjoyed by Électricité de France when/if the Hinkley Point reactor is commissioned. Much grumbling by the politicians indicates either stupidity or, more likely, cunning. It must have been apparent to all that the prices being demanded by Électricité de France would become the base line for all of them. In the same way that the 30 m.p.h. speed limit becomes the minimum, as well as the maximum, speed in a built-up area.

The cost of the Hinkley development has now increased to £37 billion – more than double its original cost in just ten years. We see no reason why Moorside will not follow the same pattern.

People are still pushing the global warming mantra and reiterating untrue stories about the lights going out. Whatever one believes about the former, the U.K.'s CO2 contribution, when compared to the likes of China and America, is minimal and any reduction will be equally so. There is certainly no need to stampede into an even more dangerous energy policy such a nuclear. However, the nuclear industry does like to stampede people into things, as if they have time to think they will realise that they are being misled.

So, no secure and safe waste disposal capability, despite production of chemicals far more damaging than carbon dioxide, grave risk to the planet in the event of an incident, no energy security, most equipment manufactured abroad, no secure source of raw materials, no local approval, old designs that have never been completed on time or on budget, working to fulfill an old-fashioned premise in respect of maintaining a base load availability, and heavy index-linked subsidies to foreign companies for decades to come.

Sellafield exists solely to service the needs of Sellafield and the nuclear industry - mainly cleaning up pollution caused by Sellafield. Although the contrary illusion is maintained, Sellafield does not make a profit and thus has no spending power other than that provided by the tax-payer. It is now just a £1½ billion p.a. drain on the public purse. As it does not earn any money, the largesse spread (albeit very thinly) around the communities in Cumbria stems purely from central government. Stories that Sellafield are to fund such and such a project are thus totally illusory - they are in fact just spending tax-payer’s money whilst skimming off substantial payments for the companies and individuals involved. Any other project, for example tourism, could be funded in this way without the corruption and pollution of the nuclear industry; certainly the local community would be a lot better off.

In many ways, the NuGen pattern is the same. Whilst purporting to be a private enterprise, all the changes to the infra-structure will be paid for by others. Yet if that kind of money is available to be invested in the region, why has it not been?

A recent BBC programme gave further food for thought. One of the most illustrative sentences being, "Whatever you do, do not put anything on the ground."


The much vaunted "clean up" and the alternative, but not quite so graphic "decommissioning", of Sellafield does not mean the safe and complete disposal of nuclear materials. It merely means the re-packaging (at best) of the contaminated material to a different location within the site. There is currently no way of cleaning up radioactive material in the sense that it is rendered completely free of radiation and thus safe. Some of the materials contaminated to a somewhat lesser degree are dumped at the Drigg site, where, apparently due to an oversight, illegally dumped higher-level contaminated materials were found by Greenpeace. Sadly, there is nothing surprising in this. Other material is sent to landfill sites with no independent check on what it is that is being dumped. Historically, of course, Sellafield management do not have a reputation for being open and honest.

Most recently, equipment designed to check the levels of materials due to be dumped was found not to have been calibrated and was, naturally, indicating that everything that passed through it was safe to dispose of in a normal landfill site. It is impossible to believe that NuGen will not follow suit, as it is such an easy, cheap route.
8. Civil Service Manipulation

From the content of e-mails obtained, there was an obvious attempt by civil servants to minimise the impact of Fukushima on the proposed (but obviously, as we have always said, pre-determined) nuclear expansion in the U.K. The material can be read here:


This article demonstrates quite clearly that, without even waiting for the full scale of the Japanese disaster to be revealed, the official view is that there was a need for the information to be kept pro-nuclear and that the plans for the U.K. had to be kept within the established timetable.

Even the explosions at Fukushima, which ultimately released radioactive material from the melted-down cores into the atmosphere, were to be promoted as safety devices! Our concerns regarding honesty and integrity lead us to ask:

- Is it the rôle of a civil servant to distort the democratic process?
- Is it the rôle of a civil servant to pass information to the private companies?
- Is it the rôle of a civil servant to promote the hiding of relevant information from the public who have a right to know?
- Is it the rôle of a civil servant to promote nuclear power regardless of demonstrated dangers?
- On whose behalf was the civil servant sending the e-mails?
- Why was the civil servant stating what the industry's response will be in order to promulgate misleading information on a co-ordinated front?
- What is the government and civil servants' reward for this publicity service?
- What benefits will be forthcoming to those involved?
- Is this just another example of what we see as the corrupting influence of the nuclear industry?
- Why is it necessary for civil servants to be anonymous? Surely, like us, they should have their heads on the chopping block.
- How did Special Advisers (Spads in parliamentary language) working on behalf of commercial interests gain so much power, access and influence?

In 2011, a review of the safety of U.K. nuclear sites was undertaken by Dr. Weightman following the events at Fukushima. We have intimated our opinion elsewhere about the initial office-based review and believe that it had only one possible conclusion. This premise is confirmed in one of the e-mails (quote below) between Whitehall and one of the developers.

With quotes (a great deal of black marker pen obscures both the originator's and recipient's identities) such as:

"We need to quash any stories trying to compare this to Chernobyl - by using the facts to discredit."

"We do not want to be on the back foot with this. People at new build sites are likely to be following closely."

"We should all work together - including with the NIA to be robust. Everything in life is with risk - but the mitigation with nuclear is so high that the risk is minimal - as demonstrated in Japan - despite the extraordinary context the plant has gone through."

Nevertheless, inspectors still found 38 areas in which safety could be improved.

We query why these suggestions for a common response to legitimate public concerns originated from a government department, whose responsibility remains to protect the public - not blindly promote nuclear.

Other, more expert opinion concurred with ours: Dr. Paul Dorfman, a senior researcher at the University of Warwick, and a member of the Nuclear Consultation Group, said the review was partial and flawed.
As he explained:

"It has not looked at the size of emergency planning zones around UK reactors [about 3km] compared with the 30km evacuation area in Japan; it leaves open key questions about flooding and security risks.

Accidents are by nature, accidental. The cost of occluding this commonsense axiom can prove radiologically catastrophic."

He was not alone, another scientist, independent nuclear analyst, John Large, said the review was a "whitewash".

"I see the hidden hand of the industry being very influential. There is nothing here to counter the gung ho contention that everything is fine. Everyone acknowledges the severe failures in the way that the Japanese reported Fukushima. If the UK regulators have depended on the Japanese they have not taken good advice."

Large questioned why aircraft crashes had not been considered and said that security issues had been glossed over. "Fukushima was a gift to terrorists. They now know how vulnerable these reactors are. The real gap [in the report] is that UK reactors would not survive more than an hour without power. They have not released the reports done under stress testing.

I fear the regulators have just fallen into line with government. This is a 'let's not rock-the-boat response'."


Yet here we are expected to believe that building another three reactors alongside Sellafield and all its problems is sensible; that the buildings for NuGen will somehow be protected from any incident at Sellafield, and has absolutely nothing to do with Sellafield. It seems that the scenario involving crashing planes is unresolved even after the twin towers events fifteen years ago – at either Sellafield or the proposed new site.

Repeatedly we are assured that we are nowhere near fault lines and need have no worries about tsunamis. Yet in August, 2013, a scale 3.3 earthquake occurred in the Irish Sea, with after-shocks for days afterwards. A scale 3.8 earthquake occurred off Anglesey in May of the same year. The new system of fracking is believed to cause earthquakes, and the nearest site for exploration is only 50 miles away. One must wonder whether the Irish Sea earthquakes could be aggravated by inland fracking, possibly resulting in a tsunami. We recall reading about the need to extend the Sellafield off-site emergency planning area:

George Sallit, ONR Deputy Chief Inspector said: “Although the risks on the Sellafield site have not increased (the overall radiological risk presented by the site has not changed significantly) better understanding of several elements, particularly potential seismic damage to facilities that leads to the release of radioactive materials, indicates that the extent of the off-site emergency planning area should be increased. I believe that the enhanced REPPIR emergency planning is in the best interests of public safety, demonstrating our commitment to continuous improvement.

Ref.: http://www.cumbriacrack.com/2015/01/08/sellafield-off-site-emergency-planning-area-extended/
9. ACCIDENTS WILL HAPPEN

The 2,000 incidents which have been admitted by the industry over the last seven years, but which fortunately did not escalate to a full-blown catastrophe, clearly demonstrate that human failings are just as important.

Presented as an abnormal event, on 29th June, 2011, the two reactors at Torness in Scotland, owned by Électricité de France (or EdF as they prefer to be known), had to be shut-down after jellyfish blocked the cooling water intakes. Jellyfish like warm water, and that is what NuGen, Horizon and Électricité de France will be filling the Irish Sea with.

Similar events have taken place in Sweden, Israel and Japan.

Jellyfish may be a natural occurrence resulting from the environmental consequences of discharging heated water into the sea, but there have been many “proper” accidents involving nuclear facilities over the years:

1957 - Mayak, Russia;
1957 - Windscale (now part of the Sellafield complex – next to NuGen’s proposed development);
1961 - SL1, U.S.A.;
1966 - Frenchtown, Michigan, U.S.A.;
1969 - Lucens, Switzerland;
1975 - Sosnovyi, Russia;
1975 - Griefswald, East Germany;
1976 - Jaslovske Bohunice, Czechoslovakia;
1977 - Jaslovske Bohunice, Czechoslovakia;
1979 - Davis-Besse, Ohio (two events in the top five of the scale of serious accidents);
1984 - Athens, Alabama, U.S.A.;
1985 - Athens, Alabama, U.S.A.;
1986 - Plymouth, Massachusetts, U.S.A.;
1986 - Chernobyl, Soviet Union;
1986 - Hamm-Uentrop, Germany;
1987 - Delta, Pennsylvania, U.S.A.;
1987 - Lycoming, U.S.A.;
1989 - Lusby, Maryland, U.S.a.;
1992 - Sosnovyi Bor, Russia;
1996 - Crystal River, Florida, U.S.A.;
1999 - Ibaraki, Japan;
2002 - Oak Harbour, Ohio, U.S.A.;
2004 - Fukui, Japan;
2006 - Forsmark, Sweden;
2011 - Fukushima, Japan;
2011 - Marcoule, France.
### Table of Radiation Leaks – Ten Years Out of Date Now

<table>
<thead>
<tr>
<th>F/Stream Number</th>
<th>Location</th>
<th>Nature of Incident</th>
<th>Radionuclides</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 2003 - June 2004</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>166/03</td>
<td>Sellafield</td>
<td>Legacy Leak on site</td>
<td>Plutonium</td>
</tr>
<tr>
<td>177/03</td>
<td>Sellafield</td>
<td>Radioactive particle on beach</td>
<td>Radioactive Particle</td>
</tr>
<tr>
<td>243/03</td>
<td>Sellafield</td>
<td>On-site leak</td>
<td>Fission Products, Cerium, Strontium, Technicium, Including trace</td>
</tr>
<tr>
<td>369/03</td>
<td>Dounreay</td>
<td>Legacy leak on site</td>
<td>Strontium</td>
</tr>
<tr>
<td>520/04</td>
<td>Sellafield</td>
<td>Radioactive item on beach</td>
<td>Radioactive</td>
</tr>
<tr>
<td>536/04</td>
<td>Bradwell</td>
<td>Leak to ground on site</td>
<td>Fission Products</td>
</tr>
<tr>
<td>841/04</td>
<td>Dounreay</td>
<td>Leak from primary containment</td>
<td>Fission Products</td>
</tr>
<tr>
<td>441/04</td>
<td>Dounreay</td>
<td>Radioactive particles on site (legacy)</td>
<td>Unknown</td>
</tr>
<tr>
<td>72/04</td>
<td>Sellafield</td>
<td>Airborne release from primary containment</td>
<td>Uranium</td>
</tr>
<tr>
<td>85/04</td>
<td>Capenhurst</td>
<td>Leak off site during transport (cleaned up)</td>
<td>Uranium</td>
</tr>
<tr>
<td>163/04</td>
<td>Bradwell</td>
<td>Airborne release from primary containment</td>
<td>Fission Products</td>
</tr>
<tr>
<td>171/04</td>
<td>Hartoppool</td>
<td>Leak from primary containment</td>
<td>Tritium</td>
</tr>
<tr>
<td>176/04</td>
<td>Sellafield</td>
<td>Leak from primary containment</td>
<td>Uranium</td>
</tr>
<tr>
<td>July 2004 - June 2005</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>219/04</td>
<td>Sellafield</td>
<td>Historical contamination on site</td>
<td>Substance Unknown</td>
</tr>
<tr>
<td>243/04</td>
<td>Sellafield</td>
<td>Leak from primary containment</td>
<td>Plutonium</td>
</tr>
<tr>
<td>259/04</td>
<td>Sellafield</td>
<td>Leak from primary containment</td>
<td>Plutonium</td>
</tr>
<tr>
<td>291/04</td>
<td>Sellafield</td>
<td>Leak from primary containment</td>
<td>Fission Products</td>
</tr>
<tr>
<td>307/05</td>
<td>Sellafield</td>
<td>Leak from primary containment</td>
<td>Plutonium</td>
</tr>
<tr>
<td>41/05</td>
<td>Sellafield</td>
<td>Leak from primary containment</td>
<td>Plutonium, Uranium, Cobalt</td>
</tr>
<tr>
<td>79/05</td>
<td>Sellafield</td>
<td>Contamination event</td>
<td>Alpha</td>
</tr>
<tr>
<td>62/05</td>
<td>Devonport</td>
<td>Leak from primary containment</td>
<td>Cobalt, Manganese, Silver</td>
</tr>
<tr>
<td>112/05</td>
<td>Sellafield</td>
<td>Leak from primary containment</td>
<td>Plutonium, Uranium, Cobalt</td>
</tr>
<tr>
<td>126/05</td>
<td>Devonport</td>
<td>Leak from primary containment</td>
<td>Trace Activity</td>
</tr>
<tr>
<td>130/06</td>
<td>Sellafield</td>
<td>Sea line leak (off site) found during maintenance</td>
<td>Substances Unknown</td>
</tr>
<tr>
<td>July 2005 - July 2006</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>152/05</td>
<td>Sellafield</td>
<td>Leak from primary containment</td>
<td>Unknown</td>
</tr>
<tr>
<td>216/06</td>
<td>Aldermaston</td>
<td>Leak from primary containment</td>
<td>Low level Sludge, various radionuclides</td>
</tr>
<tr>
<td>203/06</td>
<td>Sellafield</td>
<td>Off site contamination</td>
<td>Unknown</td>
</tr>
<tr>
<td>207/06</td>
<td>Sellafield</td>
<td>Airborne discharge off site</td>
<td>Beta Activity</td>
</tr>
<tr>
<td>258/05</td>
<td>Chapencross</td>
<td>Particles on foreshore</td>
<td>Cobalt, Cerium, Americium</td>
</tr>
<tr>
<td>259/06</td>
<td>Duneston A</td>
<td>Reactor gas release from primary containment</td>
<td>Fission Products</td>
</tr>
<tr>
<td>202/06</td>
<td>Hinkley Point A</td>
<td>Radioactivity in beach sediment</td>
<td>Strontium</td>
</tr>
<tr>
<td>014/06</td>
<td>Devonport</td>
<td>Leak from submarine not licensed site</td>
<td>Unknown</td>
</tr>
<tr>
<td>020/06</td>
<td>Hoysham 1</td>
<td>Leak from primary containment</td>
<td>Fission Products</td>
</tr>
<tr>
<td>022/06</td>
<td>Sellafield</td>
<td>Elevate radioactivity levels in bore holes</td>
<td>Tritium, Technetium</td>
</tr>
<tr>
<td>029/06</td>
<td>Sellafield</td>
<td>Leak from primary containment</td>
<td>Fission Products</td>
</tr>
<tr>
<td>63/05</td>
<td>Dounreay</td>
<td>Leak from site to foreshore</td>
<td>Unknown</td>
</tr>
<tr>
<td>66/05</td>
<td>Sellafield</td>
<td>Leak from primary containment</td>
<td>Uranium</td>
</tr>
<tr>
<td>071/06</td>
<td>Dounreay</td>
<td>Leak to ground</td>
<td>Cobalt, Strontium</td>
</tr>
<tr>
<td>073/06</td>
<td>Springfields</td>
<td>Leak from primary containment</td>
<td>Uranium</td>
</tr>
<tr>
<td>080/06</td>
<td>Hinkley Point A</td>
<td>Leak from primary containment</td>
<td>Fission Products</td>
</tr>
<tr>
<td>101/06</td>
<td>Devonport</td>
<td>Radioactivity release to the dock bottom</td>
<td>Cobalt, Tritium</td>
</tr>
<tr>
<td>102/06</td>
<td>Dounreay</td>
<td>Leak from primary containment</td>
<td>Plutonium</td>
</tr>
<tr>
<td>115/06</td>
<td>Devonport</td>
<td>Leak from primary containment</td>
<td>Fission Products</td>
</tr>
<tr>
<td>127/06</td>
<td>Dounreay</td>
<td>Airborne release</td>
<td>Krypton</td>
</tr>
</tbody>
</table>


We cannot find any more recent information.
## Serious Nuclear Power Plant Accidents and Incidents – to 2011

<table>
<thead>
<tr>
<th>Date</th>
<th>Location of accident</th>
<th>Dead</th>
<th>INES level</th>
</tr>
</thead>
<tbody>
<tr>
<td>29 September 1957</td>
<td>Mayak, Kyshtym, Russia</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>26 July 1957</td>
<td>Simi Valley, California, United States</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>10 October 1957</td>
<td>Sellafield, Cumberland, United Kingdom</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>03 January 1961</td>
<td>Idaho Falls, Idaho, United States</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>05 October 1966</td>
<td>Frenchtown Charter Township, Michigan, United States</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>21 January 1969</td>
<td>Lucens reactor, Vaud, Switzerland</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>28 May 1905</td>
<td>Sosnovyi Bor, Leningrad Oblast, Russia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>07 December 1975</td>
<td>Grafswald, East Germany</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>05 January 1976</td>
<td>Jaslovske Bohunice, Czechoslovakia</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>22 February 1977</td>
<td>Jaslovske Bohunice, Czechoslovakia</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>28 March 1979</td>
<td>Three Mile Island, Pennsylvania, United States</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>15 September 1984</td>
<td>Athens, Alabama, United States</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>09 March 1985</td>
<td>Athens, Alabama, United States</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>11 April 1986</td>
<td>Plymouth, Massachusetts, United States</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>26 April 1986</td>
<td>Chernobyl disaster, Ukrainian SSR</td>
<td>56 direct; 4,000 to cancer</td>
<td>7</td>
</tr>
<tr>
<td>04 May 1986</td>
<td>Hamm-Uentrop, West Germany</td>
<td>0</td>
<td></td>
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<tr>
<td>31 March 1987</td>
<td>Delta, Pennsylvania, United States</td>
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<td></td>
</tr>
<tr>
<td>19 December 1987</td>
<td>Lycoming, New York, United States</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>17 March 1989</td>
<td>Lusby, Maryland, United States</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>01 March 1992</td>
<td>Sosnovyi Bor, Leningrad Oblast, Russia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20 February 1996</td>
<td>Waterford, Connecticut, United States</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>02 September 1996</td>
<td>Crystal River, Florida, United States</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>30 September 1999</td>
<td>Ibaraki Prefecture, Japan</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>16 February 2002</td>
<td>Oak Harbor, Ohio, United States</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>09 August 2004</td>
<td>Fukushima Prefecture, Japan</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>25 July 2006</td>
<td>Forsmark, Sweden</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>12 March 2011</td>
<td>Fukushima, Japan</td>
<td>2+</td>
<td>7</td>
</tr>
<tr>
<td>12 September 2011</td>
<td>Marcoule, France</td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

It is always worrying when the number of dead, or injured, is at serious odds with what those on the ground. Reading material about, say, Three Mile Island, from well-qualified qualified people can be very enlightening. One major study “Found that the number of cancers within 10 miles of TMI rose from 1731 to 2847 between 1975-79 and 1981-85. A 64% increase.” There was also, “a plague of death and disease among the area’s wild animals and farm livestock. Entire bee hives expired immediately after the accident, along with a disappearance of birds, many of whom were found scattered dead on the ground. A rash of malformed pets were born and stillborn, including kittens that could not walk and a dog with no eyes. Reproductive rates among the region’s cows and horses plummeted.” Who do we believe? Has anyone checked Cumbria?

Ref.: [http://www.nukefree.org/news/people died at three mile island](http://www.nukefree.org/news/people died at three mile island)
11. **The Redfern Report**

The integrity of those in charge of medical aspects of the nuclear industry was called severely into question when the report of the Redfern Inquiry announced its findings in 2011.

The report has 96 findings, all of which are concerning.

It is unclear from the report just how many bodies were actually used in the harvesting of samples, but seems to be in excess of 3,500, plus 95 fetus, and the exercise was not limited to just West Cumbria.

Redfern stated, “Pathologists often removed organs at both coronal and hospital post mortem examinations, without consent and hence in breach of the provisions of the Human Tissue Act 1961.” (P.562, para. 86)

All of the findings are worrying, but some stand out:

91. **Coroners who did know that organs which did not bear upon the cause of death had been taken for analysis without their consent failed to act.**

92. **Coroners ignored the constraint that the law permitted them to request radiochemical analysis, which was a special examination, only if they had decided to hold an inquest.**

93. **Coroners asked BNFL to prepare analytical reports and used the information to guide them when determining whether the death was the result of an industrial disease. They ignored the potential conflict of interest in asking the deceased’s employer to comment on the likelihood of the death having been caused by the deceased’s employment.**

94. **Coroners did not ensure that the results of organ analysis were made available to them; in particular, on several occasions inquests were held and the results of the analysis, performed at the request of the coroner, were not adduced in evidence.**

95. **Coroners assisted BNFL, the NRPB and the MRC to obtain organs for their research, heedless of whether the necessary consent was obtained.**

96. **The relationship between the coroners, the pathologists and the Sellafield medical officers became too close. There were failures to adhere to professional standards.**

The full report can be found at [http://www.theredferninquiry.co.uk/](http://www.theredferninquiry.co.uk/)

We wrote to the Chief Constable of Cumbria to enquire what action would be taken, and whether a report had been sent to the Director of Public Prosecutions as a result of the findings of criminal action.

After being ignored for several months, we eventually received a response from the Temporary Acting Chief Constable, who told us that no action had been taken, no enquiry commenced, and no report produced for the Director of Public Prosecutions.

The reason given: “It would not be in the public interest”. This is despite the offences disclosed fitting almost every one of the requirements listed by the DPP’s office.

The police force has been the subject of a great deal of criticism in recent years, including cases of failure to investigate crimes properly.
12. THE VIEW OF NATURAL ENGLAND - SALIENT POINTS

“The coast from Walney Island to St. Bees, including the Duddon Estuary and the estuary complex at Ravenglass, has a number of internationally and nationally designated nature conservation sites. These are important for their coastal sand dune, vegetated shingle and salt marsh communities as well as for breeding seabirds, wintering waders and wildfowl, natterjack toad and specialist flora. As well as the coastline, the area supports nationally and internationally protected lowland rivers in the form of the Ehen and Derwent and lowland raised bogs around the Duddon Estuary.

“The area has a diverse economy historically based on coal mining, open cast mining, ship-building and agriculture, with the developing and expanding energy industries and tourism being important employers and adding to development pressures.

“Tranquillity as well as a strong sense of place and history all contribute to the area’s recreational value which, combined with its nature conservation interests associated with the rivers and the coast and strongly influenced by water quality, makes the area attractive to both residents and visitors. The West Cumbria Coastal Plain [area] provides the access gateway to the western fells and lakes of the Lake District National Park for those seeking quiet recreational experiences. The St. Bees Heritage Coast, Hadrian’s Wall World Heritage Site, and Hadrian’s Cycleway (part of the National Cycle Network), and the Coast to Coast path and England Coast Path all cross the [area], bringing visitors to experience the area’s natural and cultural heritage.”

Statements of Environmental Opportunities:

“SEO 1: Conserve and enhance the unique open coast and estuarine landscapes with their distinct geology, improving and connecting habitats and their species, and enabling natural coastal processes to occur to enhance and improve the coast’s ability to adapt to and mitigate the impact of climate change. [Or the impact of the heating of the Irish Sea by a huge nuclear generating plant.]

“SEO 2: Manage and enhance the farmed environment to secure viable and sustainable farming, improving water quality of the rivers and coast, reducing soil erosion, strengthening historic landscape character, conserving heritage features and archaeology, supporting species populations that are dependent on this area, and improving habitat connectivity. [Or by covering the land and shores with a huge nuclear generating plant, relying on NuGen to transplant flora and fauna under their mitigation plans, hoping that the affected flora and fauna don’t object, curl up and die.]

“SEO 3: Improve and enhance sustainable recreation, enabling people to experience the peace and beauty of the area and learn more about its biological, geological and heritage assets and natural processes, while managing visitor pressure to conserve the highly valued tranquillity and protect the sensitive semi-natural habitats and species found there. [Or by covering the land and shores with a huge nuclear generating plant, relying on NuGen to provide entertainment and redesign the natural world.]

“SEO 4: Manage industrial and former industrial sites to accommodate both their economic and environmental potential by managing new energy industries, growth areas and their associated infrastructure to provide social and environmental gain while minimising pollution and disturbance and to improve ecological connectivity in the landscape, particularly in urban-fringe areas.
13. **FEATURES OF THE AREA — (QUOTES FROM THE DOCUMENT DRAWN UP BY NATURAL ENGLAND)**

“Popular features for visitors and locals seeking quiet recreational experiences include the coastline, coastal ports, historical assets such as Hadrian’s Wall, forts, the Lake District National Park and the St. Bees Heritage Coast. The area also acts as gatekeeper to the isolated, ‘dead-end’, west-facing valleys of the western Lake District. National Trails include the Hadrian’s Wall Cycleway (part of the National Cycle Network) from Ravenglass northwards, the Coast to Coast Walk heading east from St. Bees Head, and the England Coast Path National Trail.

“The coastline, distinctive coastal settlements, historic assets, Hadrian’s Wall World Heritage Site and associated forts, the Lake District National Park (12% of which is in the area) and the St Bees Heritage Coast are also popular features for visitors and locals seeking quiet recreational experiences.

“One aim is the protection of the expansive views across the Irish Sea to the Isle of Man and south Scotland and across Morecambe Bay.

“Decline of fishing and mining industries has led to the increasing importance of recreation and tourism and associated pressures for holiday accommodation and other visitor facilities. (We would add that this does not need NuGen's palliative schemes. No NuGen, no need.)

“There are many extant routes through the area: the local National Cycle Network from Ravenglass extends northwards, the Coast to Coast Walk heads east from St. Bees Head, and there is the England Coast Path National Trail.”

Some of the Aims:

“Maintain, manage and enhance the distinctive coastal landscape with its diverse range of coastal salt marsh, sand dune, and vegetated shingle communities, pebble beaches, honeycomb worm reefs, open coast soft cliffs and St. Bees Head high sandstone cliff characters and their associated semi-natural habitats.

“Conserve and maintain areas of undisturbed coastline from development to protect its open views and tranquillity.

“Manage, conserve and restore lowland river valleys and their riparian habitats, in particular those in the catchments of the rivers Derwent, Ehen, Esk, Irt and Mite.

“Protect and conserve the character of traditional rural villages, linear mining settlements and historic civic buildings by using local vernacular styles and building materials for restoration and new developments, such as use of red St. Bees sandstone. [So, will we see red St. Bees sandstone nuclear reactor buildings?]

“Seek developments that allow the natural environment to act as an asset to attract investment and skilled professionals to the area to drive economic growth based on a high quality natural environment.

“Promote the wider green infrastructure benefits of development that accommodates biodiversity, with a particular focus on species characteristic of the area for both economic and environmental benefit.

“Significant industry and processing plants, including nuclear power generation and manufacturing, are key water abstractors.”
14. **CAMPAIGN FOR THE PRESERVATION OF RURAL ENGLAND'S VIEW**

These are the CPRE’s observations on the area:

“Based on the CPRE map of tranquillity (2006) the most tranquil part of the NCA is along the coast, particularly between Millom and St Bees Head and at either end of Walney Island.” [i.e. one of the bits that NuGen wish to build their reactors on.]

“The CPRE state that tranquil areas are under threat. New power lines to service planned nuclear power stations with 15 miles in Cumbria within the Lake District national park alone. Highest level of intrusion includes Sellafield complex.”

How many of these laudable aims and ambitions are going to be viable if NuGen is permitted to build its reactors?

15. **ADDITIONAL INTERESTING FACTS**

- The land around Sellafield was purchased by them in order to provide a buffer zone. Initially set for 2½ miles it was increased to 6 kms (approx. 4.5 miles) in 2015.
- Some of the products of these reactors will stay dangerously radioactive for 250,000 years, others over a million years. A large number of the components discharged cannot be filtered out of the discharges and there is no way of disposing of them other than burying them and hoping never to see them again. - should we not consider it now, before adding more, even hotter, waste to the existing waste heaps?
- All nuclear reactors produce radioactive cooling water as a result of its contact with the steam generator, this water is then discharged into the environment. The cooling system will require prodigious quantities of water.
- If sea water from the Irish Sea is used, then the toxic chemicals, historically and currently discharged by Sellafield will be re-circulated and will eventually find their way back into the wider environment.
- One millionth of a gram of plutonium in a lung is sufficient to cause lung cancer.
- Cancers and cases of leukaemia are not the only results of exposure to ionising radiation.
- According to a report in The Guardian, 23/4/99, more than 50 kilograms of plutonium have "gone missing" and can be expected to be found in sea sediments.
- Manx and Irish amenities and, especially, commercial Irish Sea fishing are going to be badly affected.
- More than 1500 particles have been retrieved using a very inefficient and scientifically unsound method along just a couple of miles along accessible parts of the Cumbrian sea shore. These represent a fraction of the total still "in the wild" which are likely to be re-circulated by Moorside. Storms and tides are constantly moving these particles around in a process that will be aggravated by pumping the cooling water.
- Statements by various authorities and Sellafield that discharges have been substantially reduced are pretty meaningless against what has already been released and still exists in the environment and are still active enough to cause harm.
- In the last 50 years the oceans have warmed by 0.1° which has led to considerable climatic changes - such as more numerous hurricanes and other ferocious storms.
- Nuclear power plants have to run continuously - you can't just shut them down when there is too much power being produced.
- Nuclear power plants often trip out or have to go off line, which means that the current requirement for a base-load availability necessitates the production of an equal amount of electricity which will be unused. If Moorside is expected to produce its 3 GW then a further 3 GW has to be immediately available from elsewhere if any circumstance causes Moorside to go off line. 6GW to “guarantee” 3GW.
- The premise that there has to be a base-load supply permanently available is outmoded. There is no reason why small, local, modular fast-acting generators could not meet demand.
The factors that will prove the Achilles heel for NuGen are: cooling, proximity to Sellafield, finances, political and public opinion.

More nuclear reactors are being shut down or are in long-term maintenance than are operating.

The nuclear industry was declining well before the events at Fukushima, which merely accelerated the downward trend.

Some nuclear construction projects last decades. To date the longest is 40 years for the Watts Bar 2 project for Tennessee Valley.

Next door to Moorside, Sellafield has over 112 tonnes of plutonium stored. That site also discharges pollution to the environment on a daily basis.

The operational phase of the NuGen project will involve discharges of process chemicals used in the power station and, potentially, discharges of disinfectants and their by-products arising from use of chemicals to keep the cooling water intake/outfall clear of marine fouling growth. (NuGen’s literature - Chapter 23 - Summary of Effects.)

U.S. authorities are contemplating extending evacuation zones around nuclear establishments from 10 miles to 50 miles. The current evacuation zone for Sellafield is 4½ miles . . .

The U.K. has 1,420 cubic metres of high-level radioactive waste, 364,000 cubic metres of intermediate-level radioactive waste, 3,470,000 cubic metres of low-level radioactive waste. The vast majority on the Sellafield site.

This material will be dangerous for between 10,000 - 1,000,000 years.

To deal with it the government estimates costs around £80-100 billion and rising. What would be the true cost of electricity if it included these costs?

No secure estimates for ‘deep disposal’.

Nuclear is uninsurable.

Currently, UK nuclear accident liability is capped at £134 million. Any costs above that level will have to be met by the U.K. taxpayer. The E.C. aims to raise this to £1.2 billion per major accident. Can Toshiba and its partners afford anything like this? How could this condition be enforced on a foreign company?

Starting estimates for Fukushima stand at £100 billion and rising, so should the private company responsible for building and running the plant not be required to provide an indemnity prior to any work being started?

Worldwide wind power added 51GW in 2014.

New additions represented 44% year-on-year growth.

Wind’s cumulative installations to 369.55GW at the end of 2014.

‘Nuclear sites, based on the coastline, may need considerable investment to protect them against rising sea levels, or even abandonment or relocation in the long term.’ (UK Institute of Mechanical Engineers.)
16. **OTHER RELEVANT DEVELOPMENTS**

Several important alternative projects have been excluded from anything beyond an acknowledgement in the consultation documents, but they, like the projected Moorside, will have a devastating effect on the area - what will it be like if they all get the go ahead?

- National Grid – North West Coast Connections (National Grid);
- West Cumbria Mining Project (coal mine) (West Cumbria Mining);
- West Cumbria Water Supply Pipeline (United Utilities);
- Walney Extension Wind Farm (Dong Energy);
- Barrow-in-Furness Site (BAE Systems);
- Ulverston Biopharmaceutical Manufacturing Facility (GSK);
- Heysham New Nuclear Power Station (EDF Energy); and
- Tidal Lagoon West Cumbria (Tidal Lagoon Power).

Ref.: 15.10.2 Marine and Coastal Physical Processes of NuGen’s consultation documents.

Also, if so many large-scale projects are to commence, where will all the labour come from? Will this cause even more problems with the “virus”? The Moorside project should not be considered in isolation and all these other destructive projects should be considered along with the holistic effect. Moorside is planned to be immediately alongside Sellafield, where more than 1500 cases have been submitted to the Compensation Scheme for Radiation Linked Diseases as a result of contracting illnesses probably caused by their exposure to radiation as a result of their work.

Are NuGen concerned for the health and well-being of their workers?

Dr. John Dunster, director of the National Radiological Protection Board (NRPB), reported in the 1958 proceedings of the Geneva Conference on the Peaceful Uses of the Atom, "Discharges (from Sellafield) have been deliberately maintained... high enough to obtain detectable levels in samples of fish, seaweed and shore sand, and the experiment is still proceeding. In 1956 the rate of discharge of radioactivity was deliberately increased, partly to dispose of unwanted wastes, but principally to yield better experimental data."


We believe that it long past time that Braystones Beach residents and other inhabitants of the Cumbrian coastline ceased to be part of this apparently on-going experiment.

17. **BRUSSELS STILL WAITING NOTIFICATION FROM NUGEN**

We have received a letter from the Director for nuclear energy, safety and ETIR (The European Commissioner).

This tells us that:

"New construction projects shall be communicated to the Commission under the scope of Article 41 not later than three months before the first contracts are concluded with the suppliers or, if the work is to be carried out by the undertaking with its own resources, three months before the work begins. At the moment of drafting this response, the Commission has not received such notification regarding the nuclear project in Moorside. If and when this notification is received, the Commission will review it and issue its Point of View to conclude whether or not the investment project fulfilis the objectives of the Euratom Treaty."
"Furthermore, Article 37 of the Euratom Treaty lays down that prior to granting a planned nuclear operation an authorisation to discharge airborne and liquid radioactive effluents into the environment, a Member State shall provide the Commission with such information that allows the Commission, after consultation of a dedicated group of independent experts, to release its opinion on whether the implementation of said plan is liable to entail a radiological exposure, significant from the point of view of health, of the population of another Member State. Guidance on the information to be provided by the Member State is given in Commission Recommendation 2010/635/Euratom on the application of Article 37 of the Euratom Treaty. The Commission opinion is formally transmitted to the submitting Member State and, for public information, published in the Official Journal of the European Union."

18. **NuGen’s Limited Compensation Scheme for Home-owners**

Buried in the literature, on Page 93, is the following offer:

“For neighbours of the Moorside Project Sites, NuGen will make best endeavours to eliminate, minimise and mitigate the potential adverse impacts of its development. For those closest to the NPS designated area where development has been allocated, at the Moorside Site, NuGen is considering providing a discretionary Property Support Scheme and a Local Mitigation Scheme to which people can apply if an effect on their property can be demonstrated (e.g. by nuisance or reduction in value)."

We note the restrictions but do not think that the deprivation of the peaceful enjoyment of one’s property can be restricted to the terms NuGen are suggesting. Presumably the over-riding legislation will be the Human Rights Act, rather than NuGen’s terms.

It is difficult to imagine that the Braystones Beach properties, which have existed for over 100 years in peace, can be excluded. Some may be holiday homes, but the investment, in terms of purchase, maintenance and repairs is at least as great as permanently occupied ones.

There seems little doubt that they will all be equally affected by nuisance and reduction in value.

19. **Westinghouse AP 1000 Design Flaws**

A wide variety of sources provide information on the design flaws of the proposed Moorside reactors. Most of them report the Fairewinds submissions by Arnie Gundersen:

*Despite what Westinghouse misleadingly say, the proposed AP1000 reactors uses a new and untested single containment system design.*

The Fairewinds report goes on to say:

*The pattern of recently uncovered weakness in the overall integrity of the current operating containment system design methodology proves that presumptions made for the AP1000 containment system considered in the containment design bases lack the level of prudence and caution as required to protect public health and safety.*

Gundersen records that in a 1992 report, Naus and Graves chronicled thirty two reported incidences of steel containment or liner degradation that are particularly germane to anticipated problems with the proposed AP1000 containment system.

The claims are supported by Italian nuclear expert, Dr. Petrangeli, whose concerns are with respect to new containment-design leakage rates and the detailed history of at least 77 containment system failures nationwide. He goes on to demand a whole new analysis to determine exactly how the newly proposed AP1000 design accommodates leakage through the wall of its unique hybrid containment system.
The consensus of opinion is that as a result of the flawed design:

1. More radiation is likely to be released than previously analyzed.

2. Radiation will be released sooner than in other scenarios because the hole or leakage path exists prior to the accident.

3. Radioactive gases entering this gap are not filtered or delayed.

4. Moisture and oxygen, routinely occurring between the containment and the shield building in the AP1000 design, exacerbates the likelihood of larger than design basis containment leaks.

Ref.: [http://www.fairewinds.org](http://www.fairewinds.org)  

There is no explanation in NuGen’s documentation as to what happens to the eight million gallons of contaminated water that would be produced should a leak of the containment vessel occur, triggering the emergency cooling system - dumping the whole tankful onto the reactor casing. The Moorside site is slightly more elevated than the Sellafield one, so maybe it would flood that site?

Westinghouse has stated,

“There is no secondary containment provided for the fission product control following a design basis accident.”

Ref.: [AP1000 DCD, Rev. 16, Section 6.5.3.2](http://www.fairewinds.org)

Elsewhere on the internet, it is reported that in America a record of over 13,500 public comments expressing concern about the AP1000 design have been presented to the Nuclear Regulatory Commission.

The AP 1000 design has a tank of water containing eight million gallons, which is situated above the containment vessel. It is possible that this tank may leak over time, providing additional moisture to aid the propagation of holes. As the owners of beach property in the immediate vicinity of the Moorside site, we are extremely aware of the effects of corrosive sea air. It seems that the AP1000 containment vessel will be attacked from within and without. Gundersen points to the problems that inspections may face, in that some vulnerable points of the containment vessel are inaccessible and/or hidden, preventing early detection of problems.

One of the main planks of Westinghouse's containment system relies very largely on the coating applied to the containment vessel itself to protect against corrosion. However, although paint manufacturer test their products to industry standard, because of the hostile and highly radioactive environment, they would not expect a coating to last more than ten years in the harsh environment of a nuclear reactor. The proposed life of the AP1000 is 50 years.

We believe that, presumably to reduce costs, the thickness of the containment vessel, at 1¾”, is less than some of those that have already failed . . .

"The AP100 has significant and unacceptable design problems. These reactors are nuclear accidents waiting to happen. Fukushima has shown us that we cannot afford to take safety for granted. Instead of fast-tracking its review, the NRC should reject this reactor design."


According to the Office for Nuclear Development, as of April this year, there are still 51 faults to be rectified. Somewhat alarmingly, these potentially fatal flaws were not detected by the American experts who initially gave tentative approval, later withdrawing it. Given that the design has so many flaws after so much amendment, it is difficult to understand why U.K. regulators are still entertaining the design.
We have already mentioned that it remains unclear if the design can withstand earthquakes, tornadoes and airplane crashes. In our document of last July, a response to the first consultation, we pointed out that over 700 aircraft fly within 57 miles of Sellafield each week. It would take less than six minutes for a plane to divert to the site. The last time the RAF flew to the area following the appearance of a light aircraft over Sellafield, it took them 14 minutes to get there.

20. **CONFUSE THE PUBLIC WITH A CONSULTATION**

A pile of documents, some with over one hundred and twenty pages, all full of jargon, technical drawings and acronyms (DCO, GDA, NPPF, NPS EN-6, NN NPS, LEP, TTWA, AOD, BLF, MOLF, and so many more - most without explanation!) does not, in our opinion, have any resemblance to a consultation. The whole edifice is based on the premise that the proposed construction will inevitably go ahead, and the text is designed to convey only that. Whether the documentation is in any way suitable for a sensible debate with people who are more at home dealing with more mundane things is doubtful.

Does anyone from the public understand what a Harbour Empowerment Order is? They are expected to.

21. **SELLAFIELD’S OWN ENVIRONMENTAL SURVEY**

According to a sustainability appraisal that was undertaken in 2012 by Sellafield and NDA (the Nuclear Decommissioning Authority), the Sellafield nuclear site emitted 258,000 tonnes of CO₂ and equivalents, a significant amount arising as a result of the consumption of 397,000 MW/h of energy, compared to 281,000 tonnes of CO₂, and 411,000 MW/h of energy in 2011. [From that we arrive at 539,000 tonnes of CO₂ and 808 MWh of electricity. It is not clear whether those figures include the resources used by the Fellside power generating plant which produces electricity for Sellafield.] Sellafield stopped generating electricity in 2003, but still produces all this CO₂.

NuGen’s site will require permanently available emergency power generation. What will happen if this fails?

Both sites are located between 5 m and 50 m Above Ordnance Datum (AOD) along the Cumbria coastline. They are generally protected from coastal flooding by cliffs, the shingle spit of the Ehen and a railway embankment. However, coastal erosion and sea level rise has the potential to affect the southern end of the Sellafield site within the next 100 years if existing defences are not maintained.

Given the proposed longevity of the NuGen site, is it unreasonable to expect similar inundations will affect that site, too?

An estimated 1,600 m³ of soil is contaminated with radioactive material to Intermediate Level Waste (ILW) levels at Sellafield. This contamination reflects the industrial activities that have taken place on the site. We believe it is likely that the Moorside site must be similarly contaminated.

As well as the estimated 1,600 m³ of soil contaminated to ILW levels there is also estimated to be just over 1,000,000 m³ of soil contaminated to LLW levels. There is also estimated to be some 11,800,000 m³ of soil contaminated with radioactive material which will require management as High Volume Very Low Level Waste (HVVLWL). [So, nearly 13,000,000 cubic metres of contamination, not to mention the aquifer that is carrying leached radioactivity into the sea.]

Since 2006, the application of enhanced beach monitoring near Sellafield using the techniques developed for Dounreay has identified a number [over 1750 to March, 2013] of contaminated finds on local beaches. These are more diverse and generally contain less active radionuclide material than the material identified at Dounreay. Arrangements are in place to monitor for these items and recover those which are found. We believe that the greater majority will not be found by the beach monitoring system.

It is noteworthy, too, that the beach at Dounreay was closed to the public; despite more radioactive particles being found on Cumbrian beaches, they are still open to the public and no warning notices are in place.
In 2012, some 6.02 million m$^3$ of water was abstracted from a number of sources. During this period the net amount of water used by the Sellafield site was 3.48 million m$^3$. NuGen intend to apply to add their needs to this abstraction. Will NuGen, unlike Sellafield, be required to pay commercial rates for this water?

As we mention elsewhere, the requirement will be for a billion (1,000,000,000) gallons a day of cooling water. Yet, in Section 3.7 of NPS EN-6, ‘Nuclear Impact: Water Quality and Resources’, it states that:

"There should also be specific measures to minimise impact to fish and aquatic biota by entrainment or by excessive heat or biocidal chemicals from discharges to receiving waters."

22. A MATTER OF TRUST

Japan’s Toshiba Corp overstated its operating profit by 151.8 billion yen ($1.22 billion) over several years in accounting irregularities involving top management, according to an independent investigation.

In Japan’s biggest corporate scandal in years, the findings could lead to the restatement of earnings, a board overhaul and potentially hefty fines at the computers-to-nuclear conglomerate.

Toshiba President and Chief Executive Hisao Tanaka and his predecessor, Vice Chairman Norio Sasaki, were aware of the overstatement of profits and delay in reporting losses in a corporate culture that "avoided going against superiors' wishes," the investigating committee said in a report filed by Toshiba to the Tokyo Stock Exchange.

The overstatement was roughly triple Toshiba’s initial estimate. Sources have said Tanaka and Sasaki would resign in the coming months and most of the board would be replaced to take responsibility for the shortcomings.

The report said Tanaka and Sasaki had set operating profit targets that the heads of divisions were required to meet, applying pressure by hinting at withdrawing from areas that underperformed.

"Within Toshiba, there was a corporate culture in which one could not go against the wishes of superiors," the report said.

"Therefore, when top management presented 'challenges', division presidents, line managers and employees below them continually carried out inappropriate accounting practices to meet targets in line with the wishes of their superiors."

Sources said previously that one of the investigators’ theories was that top executives, worried about the impact of the 2011 Fukushima disaster on nuclear business, set unrealistic targets for new operations such as smart meters and electronic toll booths.

Ref.:  http://www.reuters.com/article/us-toshiba-accounting-idUSKCN0PU0E920150720

The large capital requirements of such construction projects always results in temptation, it appears. When such large sums of money are involved there will always be those who wish to profit, whether legally or otherwise. Dishonesty seems to be a common trait amongst nuclear companies and those who service and supply them. Toshiba are no exception.

Similar traits are to be found amongst construction companies, as more than forty companies such as various subsidiaries of Amec, Amey, Balfour Beatty, Costain’s, Wimpey, Kier, Laing O’Rourke, Morgan Est, Sir Robert McAlpine, Carillion, and many other big names, have recently been obliged to come to an agreement with GMB union after more than 3,200 construction workers were found on an illegal blacklist database run by The Consulting Association. The database had been compiled over 40 years and contained personal details of workers who had raised concerns, for example, about health and safety. The firms admitted they “engaged in a terrible abuse of the civil rights of thousands of UK workers”. Will any of these companies be barred from tendering to build?
The Sunday Times, May 1st, 2016, included an article by John Collingridge on the desperate state that NuGen are in as they struggle to find finance. The report says:

A South Korean energy giant that was embroiled in a forgery scandal has been tapped up to invest in a new nuclear power station planned for the Cumbrian coast.

Tom Samson, chief executive of the plant’s developer, NuGen, is understood to have approached potential investors including Korea Electric Power Corporation (Kepco) in recent weeks as its Franco-Japanese backers struggle for funds.

NuGen’s owners, Engie (formerly GDF Suez) and Toshiba, aim to build a 3.8 gigawatt plant, capable of powering 6m homes, at Moorside in Sellafield. Along with Hinkley Point C in Somerset and Wylfa in Anglesey, it is one of three projects whose goal is to unblock Britain’s nuclear power logjam.

But like the long-delayed Hinkley Point, finding investors prepared to fund NuGen’s £10bn-plus project is proving a challenge. The Sunday Times revealed in March that Whitehall has asked for Japanese taxpayer funds to help get Wylfa and Moorside off the ground.

Rothschild, which is advising Wylfa’s Japanese backer, Hitachi, is understood to have written to the UK government to suggest it also take a stake in the Wylfa project.

Stephen Lovegrove, who until March was permanent secretary at the Department of Energy & Climate Change, flew to Tokyo last month for funding talks with Japanese ministers and executives. On his way back he stopped off in Seoul for similar discussions.

Kepco held talks about joining the NuGen consortium in 2013, according to reports, but no deal materialised. Japanese trading house Itochu, which owns car repair chain Kwik-Fit, is also understood to have been approached by NuGen about injecting funds.

A scandal at Kepco in 2012 threw Korea’s energy industry into turmoil when forged safety certificates for replacement parts for nuclear plants were uncovered.

Before joining NuGen last summer, Samson was chief operating officer of Emirates Nuclear Energy Corporation in Abu Dhabi. Kepco is the prime contractor on the UAE’s rollout of nuclear power plants.

NuGen said: “We are looking for funds and are talking to all the relevant people across the globe.” Kepco could not be reached for comment.

Our emphasis . . . but haven’t we heard of forged documents in the nuclear industry before, along with various other examples of large-scale corruption? Is it right to expect the public to trust people who have previously shown such a lack of integrity?

One union national official has claimed that the 40,000 people engaged in the nuclear industry have a right to have their voices heard. What about the voices of the other 65,090,977? How many of them will be asked? Or does the right to make such an important decision lie only with union members and those who have a vested interest?

One final thought:

If nuclear power generation is safe, without unreasonable risk, has little impact on the environment, can be made to blend in with the landscape – no matter how beautiful that may be, provides lots of employment, and is pollution free, why does it have to be sited so far away from the point of use in areas of natural beauty, losing so much of its generated capacity down the power transmission lines, and why does no-one else want the alleged benefits?
ARTICLES IN THE PRESS

(i) PRIVATE EYE

KEEPING THE LIGHTS ON

"OLD SPARKY"

The dithering, leaks and lobbying on the future of the nation's electricity supplies are now coming to a head as the government prepares to announce its "reform" package - aka a subsidy jamboree for the nuclear and offshore wind industries.

Since the coalition took office, potential developers of soon-to-be-needed new electricity generation plant have scented subsidy in the air on a grand scale. Egged on by the banks (who are hoping for a lending bonanza to the new generators with the risks being borne by electricity customers), the developers have told the government that not a megawatt of electricity will be developed unless they are featherbedded with a new range of "bungs".

These bungs will effectively penalise conventional producers and drive up the overall price of electricity to the benefit of the "cleaner" nuclear and wind generators. They include a "floor" on the penalty price of CO₂ emissions (to be paid by those who burn coal and gas) at five times its current level; electricity suppliers being compelled to buy quantities of renewable and nuclear power at inflated prices; and "capacity payments" for power stations just being there, whether they are generating or not.

The government seems to have swallowed the lobbying whole. In speeches and interviews, ministers from David Cameron down have been laying the ground for a significant U-turn on the "no public subsidies for nukes" policy, and a package of "reforms" giving developers everything they want. This, they will argue, is the price of Keeping the Lights On - and a very high price it will be for electricity users who foot the bill. "Prices are on an upward trajectory because so much of our electricity infrastructure is out of date." Cameron claimed in the Commons.

The normally timid regulator, Ofgem, meanwhile, has said it thinks prices are already too high. Its belated response to Centrica's recently-announced inflation-busting rises has been to launch an inquiry due to report in March. Stung by the rebuke, Christin McGourty, director of the suppliers' industry body Energy UK immediately blamed the government's numerous "green" impositions on energy companies as the reason consumer prices have risen faster than wholesale prices.

All this is before the planned new subsidies have even been announced, let alone paid out and added to electricity bills. If the government imagines it can slop these extra charges through without consumers noticing, it should think again: suppliers won't be slow to let the public know where the increases come from.

COASTAL FISSION
"OLD SPARKY"

In summer, 2013, government spin doctors said a deal with the French to build two new nuclear power plants in the U.K. was in the bag (Eye 1351). It wasn’t. Now the spinners are in action again.

This time they are hinting that during the state visit in October of China’s president Xi Jinping, he will commit Chinese money to rescue the endlessly delayed nuclear projects. With his country’s dire record on industrial health and safety, Xi should feel at home in the ramshackle edifice that is much of Britain’s nuclear infrastructure.

The BBC was last week allowed to “uncover the secret story of Sellafield”, with physicist Professor Jim Al-Khalili gushing at his “exclusive and unprecedented access” to the Cumbrian nuclear waste facility, complete with hi-tech robotic storage processes. He faithfully parroted government policy: “Nuclear power, alongside renewable, is crucial for our future energy needs – the cusp of a new nuclear age!”

What the professor didn’t see, just two miles up the coast, was the very low-tech 165-year-old single-track Barrow - Carlisle railway that is the industry’s Achilles heel. All UK nuclear waste travels along this storm-lashed line in “flask wagon” trains weighing hundreds of tonnes. They run the gauntlet between: four landslips in less than two years (in one, when a train became derailed, another sent to rescue the passengers was itself stranded by a second landslip); a stone-built Victorian railway bridge with gaps in its flood-eroded mortar; a frequently-flooded culvert last repaired in 2009; manually operated level crossing gates; a signal-box usually only manned until 7-30 p.m., although nuclear flask trains sometimes run at midnight.

In May 2010, a torrential rainstorm washed away the embankment to within six feet of the track. Residents called the signaller but a train had already passed him and could not be contacted by radio. The train was only flagged down by locals waving their coats at it. In September 2013, a nuclear flask train was derailed in nearby Barrow-in-Furness; and in January 2014, 70 metres of sea wall was destroyed by a storm, leaving the line suspended in mid-air.

The “new nuclear age” may be ushered in on Chinese money – but what about the Victorian infrastructure?

Two beach bungalows are buried under a bulk powder railway wagon, 1977.
Despite devoting a whole page to the impact of the proposed “Moorside” site, the Cumbria Wildlife magazine failed to object to NuGen’s plans?

We have to ask why.

The writer happily acknowledges the impact that the proposals will have on a whole raft of wildlife, from orchids to toads, yet there is not a word of complaint from the main local magazine involved in protecting and nurturing local flora and fauna.

The excuse given was that, as a charity, they have to be very careful about being seen to take sides in political arguments.

Yet there is nothing political about a private company building on greenfield sites, spoiling the landscape, causing immense changes to the rural way of life, and requiring wildlife to be “re-homed”.

There are plenty of reasons to object on the basis of environmental impact, and no reason to be anti-nuclear in the approach at all.

The Trust’s stated objectives set out in the Memorandum of Association are:

1. **For the benefit of the public to advance, promote and further the conservation, maintenance and protection of:**
   (i) wildlife and habitats;
   (ii) places of natural beauty;
   (iii) places of ornithological, botanical, geographical, zoological or scientific interest;
   (iv) features of landscape with geological, physiographical or amenity value; in particular, but not exclusively, in ways that further biodiversity.

2. **To advance the education of the public in:**
   (i) the principles and practice of sustainable development;
   (ii) the principles and practice of biodiversity conservation.

3. **To promote research in all branches of nature study and to publish the useful results thereof.**

The Trust’s three main areas of activity are said to be: ‘Standing up for Wildlife’, ‘Creating Wildlife Havens’ and ‘Raising Environmental Awareness’. It is difficult for us to see how these commitments preclude the Trust from raising objections to such a destructive proposed development as Moorside.
“Nuclear power plants must be prepared to withstand everything from earthquakes to tsunamis, from fires to floods, to acts of terrorism.”

Ban Ki-moon

“Eight years involved with the nuclear industry have taught me that when nothing can possibly go wrong and every avenue has been covered, then is the time to buy a house on the next continent.”

Terry Prachett.

“For fifty years, nuclear power stations have produced three products which only a lunatic could want: bomb-grade plutonium, lethal radioactive waste and electricity so dear it has to be heavily subsidised. They leave to future generations the task, and most of the cost of making safe, sites that have been polluted half-way to eternity.”

James Buchan.

“If our nation wants to reduce global warming, air pollution and energy instability, we should invest only in the best energy options. Nuclear energy isn’t one of them.”

Mark Z. Jacobson.

“It’s ridiculous that time and time again we need a radioactive cloud coming out of a nuclear power station to remind us that atomic energy is extraordinarily dangerous.”

Pierre Schaeffer.

“It’s just hard to justify nuclear. It’s really a gas and wind world today, at some point economics must rule.”

U.S. company, General Electric's Chief Executive Officer, Jeff Immelt.

"Even without the link to nuclear proliferation, nuclear power carries dangers of a magnitude that we ought not to accept. There is something profoundly stupid about continuing to multiply a series of engineering marvels that contain fifteen billion curies of radiation. We do not know enough about radiation and cannot be sure enough of our technical prowess to allow this system to dominate our energy supply. Moreover, the instinctive fear of radioactivity is not irrational, as the nuclear advocates assert; it is also so universal and so enduring that it is a political fact of life."

"The Nuclear Barons" by Peter Pringle and James Spigelman
ISBN 0-7221-7029-7

"Just the thought of Tepco’s name is disgusting."

Tepco’s Chairman, Kazuhiro Shimokobe, after figures reveal that 70.5% of Japanese want to see an end to nuclear power.
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