

SAFE ENERGY E-JOURNAL No.48

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1.0 Draft National Policy Statements

The UK Government published its draft National Policy Statement on nuclear power ([Nuclear NPS](#)) in November, along with five other NPSs covering energy. The consultation period ended on 22nd February 2010. The Government hopes to finalise and formally approve ('designate') the energy NPSs in 2010, but is unlikely to complete the process before the General Election.

The designated NPSs will be the primary consideration for the Infrastructure Planning Commission (IPC) when deciding on applications. Under the Planning Act 2008 the Nuclear NPS will establish the 'need' for new reactors, so the subsequent planning process will only deal with site specific issues. For an overview of the Nuclear NPS see [New Nuclear Monitor No.19](#), and the NFLA [response](#) to the consultation.

February Update: The [draft Nuclear NPS](#) (EN-6) lists ten sites judged to be potentially suitable for new reactors by the end of 2025. Eleven were originally nominated, but Dungeness has been dropped, because Natural England made a strong case for the protection of the fragile eco-system, as did RSPB. But [Michael Howard](#) – the MP for Folkestone and Hythe – and Shepway District Council have launched a campaign to have it re-instated.

Probably the most contentious point made in the [consultation document](#) (See Annex G page 142) is the Government's preliminary conclusion that it is satisfied effective arrangements will exist to manage and dispose of the waste produced by new reactors. "*As a result the IPC need not consider this question.*" Consequently the need to store spent nuclear fuel at the reactor sites for up to 160 years - is not even going to be examined by the new IPC. Nor is the disposability of the new type of high burn up fuel which will be used in new reactors.

Another contentious point is that the Draft Nuclear NPS states that nuclear power should be free to contribute as much as possible towards meeting the need for 25 GW of new non-renewable capacity. That means between 15 and 25 new reactors. Renewable energy does not get anything like the same encouragement.

Apparent errors in the consultation process have opened up the possibility of legal challenges, according to [Planning magazine](#). The Government should have consulted local authorities adjacent to those where reactors are proposed – 110 authorities altogether, but no more than 20 have been involved in discussions. Friends of the Earth (FoE) says there were flaws in the strategic environmental assessment procedure - alternatives were inadequately explored and the policies poorly justified. Local opposition groups have also condemned the process. Professor Andy Blowers, told [Planning](#) "*Local people feel that the process is there simply to get these power stations built and that they are being out-gunned. The document is vast and almost incomprehensible. My general impression of the consultation is that it is a farce*".

2.0 Energy and Climate Change Committee

The draft National Policy Statements are also subject to Parliamentary scrutiny. But the Energy and Climate Change Committee is only taking account of submissions made before January 15th, despite the fact that the consultation period is open until February 22nd. Oral hearings have been held with witnesses including the Royal Town Planning Institute and Town and Country Planning Association, Greenpeace, Friends of the Earth and WWF, and some local groups. The NFLA submission to the Select Committee is available [here](#).

Oxford University professor of energy policy, [Dieter Helm](#), told the Committee the Energy National Policy Statements (NPSs) are “incoherent”, “amazingly complicated”, “badly written” and wide open to judicial review.

[Hugh Ellis](#), the Chief Planner at the Town and Country Planning Association said “*the whole issue of public engagement around the NPSs needs to be re-examined and thought out systematically and also properly resourced*”. We are about to approve one of the most significant programmes of new infrastructure that the country has seen for 40 years without any proper consultation. The level of public protest we can expect is extremely high.

The [Sustainable Development Commission](#) (SDC) said the very traditional approach to community engagement was a disappointment. James Greenleaf of the SDC told MPs that after Greenpeace brought forward its judicial review on the energy review, the DTI approached the SDC about an engagement process which would meet the Aarhus Convention requirements, but that was not taken forward.

Greenleaf also said SDC are very sceptical about the Government’s statement that it is satisfied effective arrangements will exist for nuclear waste. The *Managing Radioactive Waste Safely* White Paper does not represent sufficient tangible progress. We need to be sure we are starting practically on a process that means a repository will be in place: “*we do not seem to be far enough down the road in terms of tangible progress to make the assumption that the waste repositories will be in place*”.

[Greenpeace](#) complained that there are gaping holes around very significant issues such as spent nuclear fuel from new build. The IPC will be forced to accept effectively the promises of the nuclear industry that they will at some point find a way of safely dealing with spent nuclear fuel on site. “*That is an extraordinary assumption for the IPC to have to make*”.

3.0 Infrastructure Planning Commission

A [revised schedule](#) of dates by when the IPC expects to receive planning applications to construct new nuclear power plants and other infrastructure projects has been published. The first application is expected to be received from EDF Energy in early August to build a plant at Hinkley Point in Somerset. The second, also from EDF Energy would be for Sizewell in Suffolk in June 2011. Horizon Energy, which is Eon and RWE are expected to apply for permission to build at Wylfa on Anglesey and Oldbury in Gloucestershire in November 2011.

If EDF Energy submits the application for the two-unit Hinkley Point C plant on 2nd August 2010 as planned, this would mean approval could come around mid-2011. EDF plans to begin preparing the site before the end of 2010, and start construction in early 2012. The first reactor should be operating before the end of 2017, and the second 18 months later.

4.0 Generic Design Assessment

The nuclear regulators – the Health and Safety Executive (HSE) and Environment Agency – have been carrying out a new process called 'Generic Design Assessment' (GDA), which looks at the safety, security and environmental implications of new reactor designs before an application is made to build that design at a particular site. The GDA should be completed around spring 2011, when the regulators would issue statements about the acceptability of the designs. But progress has been [slow](#), partly due to [staff shortages](#), and partly due to “[significant delays](#)” in obtaining responses to technical queries from the so-called Requesting Parties (RPs). Further information on the GDA process is available [here](#).
UK Nuclear Regulators Nuclear Reactor Assessment [web-pages](#).

February Update: Nuclear safety regulators from the UK, France, and Finland have sent a joint letter to Areva asking them to make improvements to the EPR design. The [regulators' Joint Statement](#) highlights problems regarding the EPR Control and Instrumentation (C&I) systems. The issue concerns the adequacy of the safety systems that maintain control if the EPR nuclear reactor goes outside normal conditions and their independence from the control systems used to operate the plant under normal conditions.

[Interim assessment reports](#) for the two reactor designs being considered for construction in the UK have been published by the Health and Safety Executive (HSE). The HSE said both designs – the EPR and AP1000 - could be suitable for construction but “...*insufficient information from the design companies ... has limited the extent of assessment sampling that we have been able to do. There is still a significant amount of detailed assessment work for us to do.*” And it [refused to rule out](#) the possibility that one or both of the designs might be rejected.

The [HSE has also raised a number of issues](#) with EDF and Areva relating to the structural integrity of the EPR and it concludes: “*It is too early to say whether they can be resolved solely with additional safety case changes or whether they may result in design modifications being necessary.*” [Westinghouse is also criticised](#), with the HSE saying the safety case on internal hazards has “*significant shortfalls*”. It questioned aspects of the civil and mechanical engineering plans as well as the structural integrity. [The US Nuclear Regulatory Commission](#) had sent a key component of the Westinghouse AP1000 back to the drawing board. The Safety Shield Building – the outer structure surrounding the AP1000 containment - does not meet “fundamental engineering standards” with respect to design basis loads. It has several functions, including holding a large tank of water so that in the event of an accident it can be dribbled over the surface of the steel containment dome. It is intended to protect the reactor from severe weather including tornado-hurled projectiles, hurricanes, earthquakes and air crashes. It also adds shielding in the event of a severe accident. But the NRC [was not convinced](#) the Safety Shield Building would protect the reactor from “external” events like earthquakes, tornadoes and high winds.

In the most recent [quarterly report](#), covering the last quarter of 2009, the Health and Safety Executive says it expects the pace of assessments to accelerate over the next few months. But “*improvements are required from both Requesting Parties [vendors]*” in responding to HSE requests for information. The regulators are still experiencing “long delays” and “poor quality” responses from Westinghouse and Areva to technical queries.

5.0 The Justification Process

A [Justification exercise](#) is required under EU law to ensure that nuclear power developments have an overall benefit which outweighs any health detriment caused by radiation. The Government held a [consultation](#) on the Nuclear Industry Association's application to justify new nuclear power stations which closed on 25th March 2009. (See [New Nuclear Monitor No.15](#)). Several respondents questioned whether the Secretary of State should be acting as the Justifying Authority given that he has already expressed support for new reactors. A number of respondents also called for a public inquiry, provision for which is allowed in the legislation. The Government says it is keeping this under review.

The Government launched a consultation on its [Proposed Regulatory Justification](#) decisions on two types of new nuclear reactors in November 2009. The consultation closed on 22nd February 2010. [New Nuclear Monitor No.18](#) provided some suggestions for responding to the consultation.

February Update: At a seminar held in Glasgow in October, the Nuclear Free Local Authorities (NFLA) heard from radiation consultant, Dr Ian Fairlie, about the findings of a report by the German government on cancer rates around nuclear sites in Germany. The German KiKK study reported a 1.6-fold increase in solid cancer risks and a 2.2-fold increase in leukaemia risks, among infants under 5 years old living within 5 km of all German nuclear power stations. These increased cancer rates were unequivocally linked to proximity to nuclear reactors. The study's findings support over 60 other studies worldwide on increased childhood cancer near nuclear power stations. [A briefing by Dr Fairlie for CND](#) is available.

The Justification decision documents point out that the Government's Committee on the Medical Aspects of Radiation in the Environment (COMARE) is currently undertaking a further review of the incidence of childhood cancer around nuclear power stations, with particular reference to the KiKK study. But the outcome of this review will not be published until March 2010. It is important that consultees are given the opportunity to be fully uninformed about the findings of the COMARE review before submitting comments on the Justification consultation. The NFLA chair, George Regan, has therefore written to the Secretary of State to request the deadline for comments on the Justification Consultation is postponed until after the publication of the COMARE review of KiKK. His request was refused.

The Department of Energy and Climate Change (DECC) held a Regulatory Justification [Consultation Event](#) on January 19th 2010. It was emphasised at this event that Justification looks at the practice from end to end, i.e. from the manufacture of fuel through to the disposal of waste. The Regulations only require practices that occur in the UK to be examined, but, to the extent that information was available, DECC claims to have looked at the mining of uranium.

Government officials said, on the issue of whether or not to hold an inquiry on Justification, that people should consider, if there were to be an inquiry or other hearing, what would that contribute to the quality of decision-making. In response it was pointed out that the evidence used to produce the draft Justification decision documents has not been tested in an open forum and fully scrutinised.

DECC officials said there is extensive global evidence on how radioactive waste can be managed on an interim basis and kept safe and secure until such time as it goes into a repository. It is Government policy that there will be a route for disposal of radioactive waste from new nuclear power stations – it expects that will be geological disposal. The process for

identifying a site for a geological disposal facility is advanced. We are at the point where we have a number of communities that are interested in participating in hosting such a facility. Some of those present thought this meant DECC was pre-empting the Environment Agency's duty to assess and authorise a radioactive waste repository and shows that DECC is biased and cannot be trusted to determine the justification question. It should go to an inquiry.

6.0 Nuclear Costs and Finance

The Blair Government's first Energy White Paper in February 2003 concluded that "...*the current economics of nuclear power make it an unattractive option*". By January 2008, the White Paper on nuclear power said "...*on the basis of our cost-benefit analysis, we believe that nuclear power is likely to be an attractive economic proposition...*" What has changed?

An [October 2008 briefing](#) on nuclear costs and finances discusses this. In the US, nuclear costs are out of control as reported in this [February 2009 update](#) on costs and finances.

February Update: President Obama is seeking a total of \$54 billion in loan guarantees for new reactors in his proposed budget for 2011/11. Yet none of the four contenders for a loan guarantee inspire confidence: all have "rising cost estimates, delays related to reactor designs, and credit downgrades," according to Taxpayers [for Common Sense](#). One of the four has suffered enormous estimated cost increases from \$5.4 billion to at least \$17 billion.

All of this puts a question mark over the UK Government's persistent claims that it will not subsidise new reactors. Lord Hunt reiterated on January 21st in a [Guardian web discussion](#) that "*Taxpayers' money is not going into nuclear power stations.*" But the Government is still leaving the door open for intervention in the carbon market.

EDF says it does not need subsidies to build new reactors. But a report by the influential investment company – Citigroup – entitled "[New Nuclear - the Economics Say No](#)" says new nuclear can only be built with huge public subsidy, financing guarantees and minimum power prices. And the [National Audit Office](#) (NAO) has cast doubt over whether new reactors can be built without public subsidies. The NAO points out that if EDF cannot pay clean up costs, the Government is still liable.

Professor of Energy Policy at Greenwich University, [Stephen Thomas](#), says "*what the government and EDF believe constitutes a subsidy is very different to the usual definition*".

The UK government confirmed in 2009 that it is sticking to the cost estimates on which it based its forecast that nuclear was cost-effective with an average carbon price of €36. It assumes that plants could be built for about \$2,000/kW, compared with the expected costs in the US and the cost of Olkiluoto of around \$5,000/kW.

Nuclear finance will only make sense with subsidies, says Thomas. One suggestion is setting a floor price for carbon of €40, adding about 10% to average electricity bills. That might provide a profitable price for nuclear generated electricity, but it would represent a substantial distortion of the market and is not in line with the Government and European Commission view that there are significant risks in attempting to manage the carbon price.

[The Guardian](#) revealed secret plans to tax electricity consumers to subsidise new reactors. The planned levy on household bills would add £44 to an annual electricity bill of £500. Only by artificially increasing the cost of electricity generated by coal and gas stations through an additional carbon levy on household bills can nuclear become more competitive. The Office of Nuclear Development (OND) has promised nuclear companies the price of carbon under the EU Emissions Trading Scheme (EU ETS) – now about €13 per tonne – will not be allowed to fall below €30 per tonne, and ideally €40. Officials from the OND have been

privately assuring companies that if Copenhagen fails to secure a deal which significantly boosts the market price of carbon, the government will act.

The price of carbon plummeted by almost 10% after the Copenhagen Summit. [E.ON and Centrica](#) warned they would not invest the tens of billions of pounds to build expensive new nuclear reactors and clean coal plants at today's carbon price. [The Times](#) said the weak deal has left the Government facing a choice of either acting unilaterally to underpin investment in new reactors or running the risk that companies will opt to channel funds into the cheaper, but polluting, gas-fired power stations.

Of course some people might be willing to pay higher electricity bills if they thought it was the best way to tackle climate change, but [David Elliott](#), Emeritus Professor of Technology Policy, from the Open University, warns "*EDF tell us that a large nuclear programme will be operationally and economically incompatible with the UK renewables programme. Something will be curtailed – either renewables or nuclear. Do we want a renewable or a nuclear future?*"

7.0 Nuclear Diverting Attention from a Local Energy Revolution

A wide range of energy and carbon emissions scenarios for the UK and Scotland suggest that with the right combination of energy efficiency measures, renewable energy, transport measures, and possibly carbon capture from fossil-fuelled power stations, emissions reductions of over 80% by 2050 are feasible. Nuclear power is not a prerequisite of the UK meeting its climate change objectives. [Briefing on Alternatives to New Reactors in Scotland](#).

The danger of nuclear investment is that it will [crowd out investment in renewables](#) and undermine energy efficiency. If we divert attention political effort and resources from the urgent programmes needed to effectively tackle climate change not only will we miss our targets, but as past experience suggests we could end up with carbon emissions still rising in 2025 because the nuclear programme has been hit by the problems and delays we have seen in the past and by then it will be too late to start implementing alternative strategies.

February Update: Unveiling the new so-called feed-in tariffs (FITs) paid to people, communities or businesses who generate electricity from solar panels, wind turbines or other renewable sources, energy secretary Ed Miliband said the [government still only intended that the sector would supply 2% of the country's electricity](#) by 2020 – the same figure he proposed last summer. This compares to the 12% which the European Photovoltaic Industry Association expects to be able to provide with just solar PV across Europe, and the 15% of the country's electricity production which could come from so called "embedded generation" according to the National Grid. Unlike nuclear, energy efficiency and renewables are not encouraged to aim high in the National Policy Statements. The [Draft Overarching NPS for Energy \(EN-1\)](#) claims that energy efficiency savings are likely to be limited and offset by increases in the use of electricity for heating and transport. It also claims that decentralised and community energy systems are '*unlikely to lead to significant replacement of larger-scale infrastructure*'.

The Nuclear Free Local Authorities told the [North West Parliamentary Committee](#) that, because replacing nuclear reactors will save only around 4% of the UK's carbon emissions, we need to be absolutely sure they won't negatively impact on dealing with the other 96%. Local Authorities are still waiting for the "step change" in policies and programmes to deliver energy efficiency promised in the 2003 Energy White. It is very difficult to avoid the conclusion that re-launching the UK nuclear programme has shifted and undermined efforts to

pursue a strategy based on energy efficiency, renewables and Combined Heat and Power (CHP).

Mark Z Jacobson and Mark A Delucchi, writing in the [November edition of Scientific American](#), describe how, by 2030, the world could shift to a virtually zero carbon energy system. Their model is based only on existing technology that can already be applied on a large scale, and excludes nuclear power and fossil fuels. It calls for, globally, the building of 3.8m large wind turbines (wind being 25 times more carbon efficient than nuclear power), 90,000 solar plants and a combination of geothermal, tidal and rooftop solar-PV installations globally. Andrew Simms of the New Economic Foundation writing in [The Guardian](#) says if the world can make 73 million cars and trucks every year surely a few million wind turbines and solar plants won't be a problem. People forget, he says, the effort it took to get us hooked on oil in the first place.

The Association for the Conservation of Energy (ACE) published a report which shows that cutting carbon emissions from Scottish homes could create 10,000 new jobs. "[Warm Homes, Green Jobs](#)", also found that achieving a 42% cut in pollution levels from Scots dwellings by 2020 would provide a £4bn boost to the economy. The study concluded that meeting the targets in the Climate Change (Scotland) Act 2009 would need the installation of over 1.5 million efficient boilers, 1.8 million solar panels, 2.2 million draft-proofing strips and 1.5 million loft insulation packages, as well as smaller numbers of wood fuel boilers and insulation for solid walls.

8.0 Scottish Alternatives to Nuclear

It has been clear for a while that Scotland is well placed to meet [100% of its electricity](#) requirement from renewables in the not too distant future. Now a report published by [Scottish Natural Heritage](#) (SNH) suggests this might be relatively easy.

The Scottish Government's target is to produce 50% of Scotland's electricity from renewables by 2020 - around 8,000MW (8GW). There is already an installed renewable capacity of around 2834MW, plus 3739MW with planning permission but not yet built, bringing the total to 6573MW. A further 9,000MW is awaiting planning consent, with an additional 8,500MW of offshore wind and between 500MW and 2,000MW of marine renewables under development and scheduled for completion by 2020.

The world's [largest wave power device was switched on](#) to the national grid in Orkney in November. The Oyster machine marked a "key milestone" in renewable energy and Alex Salmond announced almost £1 million to fund a second generation - Oyster 2, with three linked devices contributing up to 2MW of power by 2011. The Oyster was developed by Edinburgh-based Aquamarine Power's researchers at Queen's University, Belfast.

Mr Salmond has never hidden his belief that [renewable energy can transform Scotland's economy](#), producing 10 times the country's own energy needs. Scotland's potential renewables capacity is estimated to be around 60GW. Around 10% of Europe's wave-power potential and as much as a quarter of its tidal power potential is located in Scotland. The European Marine Energy Centre (EMEC) on Orkney provides world-leading test facilities for companies to develop the technology needed to harness this huge untapped potential.

In January the [Crown Estates announced](#) it was granting rights for the biggest expansion in offshore wind seen so far. The so-called Round 3 granted rights to energy companies for nine offshore areas, including the Firth of Forth and the Moray Firth, with around [850 turbines being built across the two Scottish areas](#) with a combined capacity of 4.8 gigawatts (GW). When combined with existing plans for 6.4GW of offshore wind farms at ten other sites around Scotland, announced last year, there would be more than 11GW capacity.

Barely a year ago there was hardly any mention of offshore wind in Scotland. Apart from the Solway Firth, waters around the Scottish coasts were thought to be too deep. Now Scotland is recognised as having a huge potential for offshore wind in depths greater than 50 metres. Scotland was ignored in Round 2, but then received a whopping 6.4GW of potential capacity in February 2009 through the [Scottish Territorial Waters Round](#), which covers waters out to 12 nautical miles. Offshore wind projects off Scotland's shores are now expected to [dwarf onshore capacity](#) if the bulk of the proposed sites within Scottish Territorial Waters and Scotland's Round 3 bids come to fruition.

9.0 Scottish Waste Consultation

The Scottish Government has launched a consultation into proposals for managing higher activity waste in Scotland with the publication of three documents: (1) [a Consultation Document](#) (2) [An Environmental Report](#) and (3) [Supplementary Information](#). Scottish Government policy since June 2007, in contrast to England and Wales, has been to support the long-term management of higher activity in long-term near surface, near site storage facilities so that waste is monitorable and retrievable and the need for transporting it over long distances is minimal. But new proposals, although not returning to deep geological disposal, abandon the storage only commitment and appear to prioritise near surface, near site disposal over storage. **The consultation is open until 9th April 2010.**

The policy does not cover spent fuel from nuclear reactors operating in Scotland, because this is not officially classified as waste, and there is no high level waste (HLW). Waste at Dounreay, which was until recently classified as HLW, has now cooled down sufficiently to allow it to be reclassified as Intermediate Level Waste (ILW).

Around 25% of the waste in question could not be disposed of in near-surface disposal facilities, and would need to be stored until there are further technological developments. The other 75% which might be eligible for disposal includes contaminated metals (14%), activated metals (15%) and graphite (45%).

A document called [The Near Surface Disposal Facilities on Land for Solid Radioactive Waste – Guidance on Requirements for Authorisation](#) (Near Surface GRA) produced by the Environment Agencies provides guidance on the approach the regulators will take to applications for an authorisation to dispose of waste. This says *shorter-lived or less radiotoxic intermediate level waste (ILW)* might be suitable for disposal. (Short-lived means radionuclides with a half life up to around 30 years, and probably includes caesium-137 with a half-life of 30.1 years). This means the regulators might allow disposal of 'less radiotoxic' long-lived ILW as well as the shorter-lived. 80% of the graphite is long-lived, for example, and although the NDA is looking at treating this graphite to see if it is possible to remove some of the main contaminants (Chlorine 36 and Carbon 14) this work is at an early stage.

Interestingly, the Near Surface GRA consultation document published in May 2008 only allowed for the disposal of the short-lived ILW. But after representations by BAe Systems and Energy Solutions, the phrase "less radiotoxic" was added. ([See page 15 of the Response to the Consultation Document](#)).

The ability to retrieve the waste would be a requirement of any proposal for a near surface disposal site. The important distinction between 'disposal' and storage in this context is that there is 'no intention to retrieve' the waste.

The proposals are also very keen on the 'waste hierarchy' which means contaminated metal 'recycling' will be encouraged despite the conflict with the ALARA (As Low As Reasonably

Achievable) principle because of the radioactive discharges to the environment inherent in the decontamination process.

Low level waste is not included in this consultation, but [Scotland's National Planning Framework](#) (Para 172) states that a low level waste disposal facility, in addition to the one at Dounreay, will be needed in the South of Scotland for radioactive waste.

10.0 Managing Radioactive Waste Safely Process

The UK Government began the 'Managing Radioactive Waste Safely' process in September 2001 to decide how to develop radioactive waste policy following the 1997 decision to reject plans for a so-called Rock Characterisation Facility at Sellafield. This culminated in the publication of a [White Paper](#): Managing Radioactive Waste Safely: A Framework for Implementing Geological Disposal, in June 2008. A briefing on the "Managing Radioactive Waste Safely" process is available [here](#).

[History of Radioactive Waste Dumping Proposals](#).

February Update: The Scottish Government does not accept it is right to bury nuclear waste, which will remain radioactive for thousands of years, in an underground site: "*This out of sight, out of mind policy should not extend to Scotland*". See [Scottish Consultation Document](#), Appendix A.

The West Cumbria Managing Radioactive Waste Safely (WCMRWS) Partnership has been set up as an advisory body aiming to "*make recommendations to Allerdale Borough Council, Copeland Borough Council and Cumbria County Council on whether they should participate or not in the geological disposal facility siting process, without commitment to eventually host a facility*". 80,000 [leaflets](#) have been delivered to all homes in Allerdale and Copeland and a series of [public meetings](#) have been held throughout West Cumbria. This is the first step in the process of deciding whether the councils should put themselves forward as a potential host for a nuclear waste dump.

10.1 Deep Geological 'Disposal'

The Committee on Radioactive Waste Management (CoRWM) describes 'disposal' as emplacing waste in a facility without the intention of retrieving it. The dictionary definition of disposal is "*the act or means of getting rid of something*". So-called radioactive waste 'disposal' involves the eventual dilution and dispersion of radionuclides throughout the environment, so this is a misnomer. It does not 'get rid' of waste. This goes to the heart of the fundamental difference between an environmental and nuclear industry approach. Supporters of deep 'disposal' argue it is this generation's responsibility to 'get rid' of waste we have created. An environmental approach argues we have a responsibility to give future generations a choice about how to deal with it, rather than leaving a radioactive waste dump which will contaminate the environment at a poorly predictable rate.

February Update: The Nuclear Decommissioning Authority (NDA) says it plans to publish a Generic Disposal System Safety Case in **September 2010** to support the Geological Disposal Facility site selection and assessment process. (See top of page 8 [Generic Design Assessment: Summary of Disposability Assessment for Wastes and Spent Fuel arising from Operation of the UK EPR](#))

Meanwhile, the Nuclear Waste Advisory Associates – an independent group of consultants which includes two former CoRWM members and several people that worked for NGOs during the Nirex inquiry – has submitted an extensive [memorandum](#) to the House of

Commons Energy and Climate Change Committee. The group challenges the Government's assertion that radioactive waste management arrangements for new nuclear waste will exist. In a hard hitting document, NWAA argues that: (a) The generic scientific grounds upon which the last attempt to dispose of radioactive waste in 1997 failed have not been resolved; (b) Technical problems associated with a disposal facility are legion and most are recognised by the Environment Agency, thereby making any assertion of confidence in the disposability of radioactive waste premature. In short, the Government's conclusion "...that effective arrangements will exist to manage and dispose of the waste that will be produced from new nuclear power stations" is not supported by the evidence. The Nuclear National Policy Statement is, therefore, not "fit for purpose".

11.0 Low level waste

The UK's main low-level waste dump, operated by [The Low Level Waste Repository \(LLWR\) Ltd](#), is located 7km south east of Sellafield. The site is owned by the NDA. UK Nuclear Waste Management Ltd - a consortium led by Washington Group International with Studsvik UK, Serco and Areva - was awarded the Parent Body Organisation contract for the LLW Repository in March 2008. Vault 9 is currently being constructed at Drigg.

LLW Repository Ltd set up, in partnership with the NDA, the [National Low Level Waste Strategy Group](#) in April 2008. The Strategy Group provides information on the development and implementation of a National Low Level Waste (LLW) Strategy. SCCORS and NuLeaf are both [listed](#) as members of the Strategy Group. A presentation from April 2009 on the emerging strategy is available [here](#).

The NDA has been [consulting](#) on how to manage low-level radioactive waste (LLW). It sets out a framework for the flexible management of LLW, which is likely to lead to a proliferation of smaller dumps for LLW around the UK.

February Update: [Scotland's National Planning Framework](#) (Para 172) states that a low level waste disposal facility, in addition to the one at Dounreay, will be needed in the South of Scotland for radioactive waste.

12.0 Radioactive Discharges

The UK Government published a [Strategy for Radioactive Discharges 2001-2020](#) in July 2002, as a response to its commitments, agreed at the 1998 Ministerial meeting of the Oslo and Paris (OSPAR) Commission - the treaty for the protection of the marine environment of the North-east Atlantic - to achieve "*substantial reductions or elimination of discharges*" by the year 2020, "*to levels ...close to zero*".

In July 2009 the UK Government (including the devolved administrations) published a [revised strategy](#). The 2002 strategy was written in the context of a declining UK nuclear industry, but this new strategy allows for expansion, and accepts the UK's failure to close some of the most polluting facilities in the world. The revised strategy will not deliver the UK's commitments to OSPAR. The NFLA (Scotland) response to the consultation on the draft of this document (September 2008) is available [here](#).

The next [OSPAR](#) Ministerial Meeting will take place in Bergen 20th – 24th September 2010.

February Update: New [monitoring results from Norway](#) show some high figures for radioactive contamination in the North Sea around Orkney and Shetland.

The Norwegian Radiation Protection Authority (NRPA) monitoring results for 2007 show the highest level of plutonium 239 and 240 was found in a sample taken off Orkney with 46.7mBq m⁻³ with the next two highest samples being taken off Aberdeen (34mBq m⁻³) and the central North Sea (19.4mBq m⁻³). The sample taken off Shetland was 9.2mBq m⁻³. Two other samples from the North Sea east of Shetland had slightly higher levels. The level of samples ranged from 2.9 to 46.9mBq m⁻³. The main sources of the plutonium is fallout from weapons testing in the 1950s and 1960s and remobilised Sellafield plutonium from Irish Sea sediments. NRPA comments that comparison with results since 2001 suggest that the input from the Irish Sea has been relatively constant. Concentrations of plutonium in seaweed show a slowly decreasing trend.

Levels of technetium-99 have generally fallen in line with reduced discharges from Sellafield in recent years. Samples ranged from 1.5 Bq m⁻³ off Orkney to 0.17 Bq m⁻³ off Shetland.

Both the Magnox Reprocessing Plant and THORP have been operating at a fairly low level for a few years now because of problems with evaporators which are needed to reduce the volume of high level liquid waste. THORP is currently operating after being shut down for seven months last year, but only at a low throughput. This financial year it is expected to reprocess around 200 tonnes of spent fuel and around 300 in 2010/11 compared with the design throughput of 700 tonnes per year. It will not be able to raise throughput until a new evaporator opens around 2013/14. The plant will probably not complete its contracts until 2020. The Magnox reprocessing plant will probably remain open until around 2016/17. As a consequence, although discharges are low at the moment, they are likely to peak again between 2013 and 2016. Remembering there is likely to be a lag of around 5 years after reprocessing ends before discharges are reduced, the UK cannot possibly meet its commitments to achieve close to zero concentrations by 2020.

13.0 Plutonium Options

The future of the UK's stockpile of over 100 tonnes of plutonium was supposed to have been decided by the Government during 2009. The Scottish Waste consultation does not consider plutonium, even though a small part of the stockpile is located at Dounreay. The NDA began consultations on this in August 2008, with the publication of a [plutonium options study](#). This was followed by its [Plutonium – Credible Options Technical Summary](#) in January 2009. The Nuclear Free Local Authorities briefing on options for dealing with plutonium stockpiles available [here](#).

In July 2009 the Department of Energy and Climate Change DECC published the first of two informal discussion documents on plutonium. The first [pre-consultation discussion paper](#) looked at the key factors that could be used to compare long term plutonium management options. In [response to the paper the NFLA](#) said its preferred option would be to treat the plutonium as a waste. A [second discussion paper](#) considered the decision methodology and timetable for decision making. The NFLA response to this is available [here](#). Comments on both papers should be taken into account when the Government runs a formal consultation soon.

14.0 Waste from new reactors

The Government says a repository dealing with legacy wastes could readily accommodate the smaller volumes of waste from new reactors. But the reactors most likely to be built in the UK will be more powerful, use about 15% less uranium and produce 30% less waste. However, this waste will be more radioactive by a factor of seven because more uranium is burned up. It will need to be stored for around 100 years to cool down, which means new reactor sites will probably also be waste storage sites for the next 160 years. Neither government nor its regulators have assessed the "disposability" of spent nuclear fuel from new reactors, and there are some serious doubts about its suitability for placing, along with existing waste, in a deep geological dump.

The UK Government is relying mainly on the NDA's so-called "disposability assessments" of the [EPR](#) and the [AP1000](#) to reach its conclusion that it is "*satisfied that effective arrangements will exist to manage and dispose of the waste that will be produced from new nuclear power stations.*" These disposability assessments will be submitted to the Generic Design Assessment process for review by the EA. The EA review will not be available for public comment until the Agency carries out its Part 3 consultation exercise which is expected in Spring 2010, long after the National Policy Statement and Justification Consultations have closed on 22nd February.

15.0 High Level Waste (HLW)

The HLW facility at Sellafield has the potential to wipe out much of northern England and southern Scotland. Extremely dangerous liquid high level waste is stored in 21 stainless steel tanks, which contain around 2,100 kilograms (kg) of Caesium-137 in 1998, according to an [NFLA briefing](#) by the Institute for Resource and Security Studies, compared with the 30 kg released during the Chernobyl accident. The waste must be constantly cooled and ventilated, because it is so radioactive it generates its own heat, otherwise the liquid could boil and start escaping, contaminating the surroundings. The Institute for Resource and Security Studies submitted [evidence](#) to the House of Commons Defence Select Committee in January 2002, following 9/11, about the terrorist threat represented by the tanks. Estimates vary – but [some commentators have reported](#) that such an attack may require the evacuation of an area between Glasgow and Liverpool, and cause [around 2 million fatalities](#).

February Update: An investigation has been launched by Sellafield Ltd into a [second incident within a year](#) involving the loss of coolant water to the site's High Level Waste tanks. The incident occurred on Friday 22nd January – and follows a similar loss in April 2009. [The Whitehaven News](#) said that 4 of the site's 21 storage tanks were affected and that the loss of cooling water lasted for 30 minutes. The loss of coolant in the April '09 accident lasted several hours

16.0 Dounreay

Dounreay in Caithness was the UK's centre of Fast Reactor research between 1955 and 1994 but is now [described](#) as Scotland's largest nuclear clean-up project. Fast reactors, generally fuelled by plutonium, can, at the same time as generating electricity, convert a useless form of uranium into more plutonium. In 1988 the programme was cancelled, officially because of costs, but Fast Reactors have been a disaster world-wide with serious technical problems.

An underground, 65-metre deep, shaft was used to dump intermediate level waste (ILW) between 1959 until 1977, when a chemical explosion brought the practice to an end. A second facility, the ILW silo - a concrete-lined box built just beneath the surface - was used to dispose of waste between 1971 and 1998. Both of these need to be emptied and the contents made safe. [Contractors started to prepare the ground](#) for a major new plant to be built to retrieve waste from the shaft and silo in March 2009.

Another major problem is the appearance of [radioactive particles](#) in the environment. These small fragments of irradiated nuclear fuel have been mostly found on the seabed, on the Dounreay foreshore and on Sandside Beach west of Dounreay, which is open to the public. All but [four of the particles](#) found off site have been on the Sandside beach. Two have been found at Murkle Beach and another two at Dunnet Beach - both east of Dounreay. 142 particles have been found on Sandside Beach up to November 2009. It will be around 200 years, before the activities of the larger particles have decayed sufficiently for them to no longer be considered a potential hazard. [Radioactive particles will keep polluting public beaches for decades to come](#). Improved monitoring of the beaches and the seabed and recovery of particles are really the only viable options. [Restrictions on seafood](#) from a two kilometer zone around Dounreay remain in place.

February Update: The UKAEA has now [sold off its subsidiary](#) UKAEA Limited, the company that ran Dounreay Site Restoration Limited, the company charged with the decommissioning of Dounreay. The new owner, Babcock International, has now also taken over DSRL. The deal means the management of Dounreay has moved from the public sector to the commercial sector for the first time in its history.

Dounreay has submitted an application to revise all its liquid, atmospheric and solid waste authorisations. Current authorisations are based on an application submitted in 1993 and approved in 1999 and do not reflect the current work at the complex. The new application will generally look for reduced authorisation and is likely to go for public consultation soon.

The Nuclear Decommissioning Authority has listed a number of major tasks as part of its 2011-2013 work programme for Dounreay. The tasks include starting to remove the damaged breeder fuel from the Dounreay Fast Reactor; sealing off the former waste discharge chamber on the seabed off Dounreay; demolishing the Materials Test Reactor reprocessing plant; and continuing the treatment of radioactive sodium from the DFR. It has also [fixed the total it will spend](#) on decommissioning Dounreay at £2,250 million - or £150m a year until the target completion date of 2025. This will be a reduction from the annual spend of £200m which was expected over the next five years when decommissioning work, and the building of new facilities, reached a peak. Government spending restrictions, however, have forced the NDA to scale back spending plans. Companies bidding to take over the management and decommissioning of Dounreay will have to present business plans that will see work completed within this budget limit.

17.0 Submarine Decommissioning

Up to five sites in Scotland have been considered by the Ministry of Defence for storing radioactive waste from decommissioned nuclear submarines according to documents obtained by the [*Sunday Herald*](#). In total 12 possible storage sites in the UK have been considered by the MoD. There are already 15 decommissioning submarines lying at Rosyth or Devonport and a further 12 are due to leave active service by 2040. Rosyth and Devonport will be used to cut up and dismantle the submarines, but the MoD's problem is what to do with the waste, especially the large reactor compartments which are the most heavily contaminated. In Scotland the MoD is apparently considering Dounreay, Faslane, Coulport, Rosyth and Hunterston. Among possible sites in the England are Devonport, Aldermaston and Burghfield.