



## **NFLA Radioactive Waste Policy Briefing Number 83: Response to the NDA consultation on their 4<sup>th</sup> Draft Strategy from 2020 - 2025**

**Prepared for NFLA member authorities, October 2020**

### **NFLA model response to the NDA's 4<sup>th</sup> Draft Strategy, 2020-25**

#### **i. Overview of Policy Briefing**

This edition of the NFLA Radioactive Waste Policy has been developed by the NFLA Secretariat to respond to a consultation by the Nuclear Decommissioning Authority (NDA) on its Draft Strategy for its planned work in the period 2020-25. It has begun a 12-week public consultation, which will run until 8th November. This Policy Briefing provides an overview to the core elements of the consultation and the NFLA's view on them. NFLA officers interact directly on a regular basis with the NDA through correspondence and a number of fora, including the Nuclear Legacy Advisory Forum (NuLEAF), the Scottish Councils Committee on Radioactive Substances (SCCORS) and the NDA RWM NGO Forum. The NFLA Secretary was recently invited to speak by the NDA at an international workshop on stakeholder dialogue, held in conjunction with the OECD Nuclear Energy Agency.

The Draft Strategy for Consultation was launched on the 17<sup>th</sup> August 2020 and can be found here: <https://www.gov.uk/government/consultations/nuclear-decommissioning-authority-nda-draft-strategy-for-consultation>

Submissions to the consultation can be emailed or sent to Strategy Consultation, Nuclear Decommissioning Authority, Herdus House, Westlakes Science and Technology Park, Moor Row, Cumbria, CA24 3HU – [strategy@nda.gov.uk](mailto:strategy@nda.gov.uk)

#### **1. Overview of NDA activity and future developments**

The NDA is currently responsible for the decommissioning and cleaning up of 17 nuclear sites – Sellafield (including Calder Hall), Dounreay, 10 Magnox sites, and the experimental reactor sites at Winfrith and Harwell, Springfields, Capenhurst and the Low-Level Waste Repository.

Due to the current Government guidance around social distancing, the NDA has been holding a series of virtual meetings and briefings, and a bespoke virtual stakeholder event mid-way through the consultation period – where stakeholders will have the opportunity to discuss the details with authors of the draft strategy. These responses will be considered in developing the final Strategy – which will be submitted for approval to UK and Scottish Government, ahead of publication by April 2021.

NFLA notes that the NDA's mission will take over 100 years to complete and it is estimated to cost in excess of £120 billion to deliver. Facilities more than 60 years old were neither designed nor operated with decommissioning in mind. The NDA's aspiration is that at least one of its sites will be fully decommissioned and released for its next planned use by 2040.

The Magnox sites have already achieved significant risk and hazard reduction through defueling and transporting the remaining spent fuel to Sellafield. All plutonium stored at Dounreay has been moved to Sellafield.

The NDA says it is now working closely with UK government on options relating to decommissioning the Advanced Gas-Cooled Reactors (AGRs), and waste and decommissioning activities associated with the Ministry of Defence (MOD) owned liabilities. (These are collectively termed non-NDA

liabilities). If the NDA is best placed to take on the management of new liabilities, and can make savings for the taxpayer, without adversely impacting its core mission, it will do that.

The NDA is already contracted to manage a number of non-NDA liabilities which include domestic (e.g. EDFE and MOD) and overseas customers. The range of contracted services includes spent fuel and radioactive waste management e.g. the management of a quantity of Atomic Weapons Establishment (AWE) Higher Activity Waste (HAW).

## **2. Executive Summary**

There are five main points which NFLA would like to make about the NDA's Strategy for the next five-year period:

- In the absence of agreement between the NFLA and the NDA on nuclear waste management in general and the waste hierarchy in particular, we think it is incumbent on the NDA to provide stakeholders at each of its sites with an inventory of waste already present and which will be produced during the decommissioning process along with its likely proposed destination. This allows for easy understanding and comparison to the NFLA demand that if any part of a nuclear site is proposing to allow unrestricted use, it must be able to show that doses to members of the public will be of the order of 0.01mSv or less per year. This process should allow local authorities which are expected to host waste management facilities off-site – such as landfill sites, and local authorities on transport routes - to be part of the active policy conversation.
- Any proposals for the management of Higher Activity Waste (HAW) in near-surface facilities needs to follow the Scottish policy of requiring that facilities are monitored and have a capability to retrieve waste packages if necessary.
- It is noted that Sellafield Ltd could be allowed to increase certain discharges for a certain length of time, in order to carry out a particular decommissioning task, provided it has submitted an acceptable Best Available Technique (BAT) case. Unfortunately, it is not clear from the document whether any superior abatement techniques have been rejected on, for example, cost benefit grounds, or what research is going on so that discharges to the sea can be further reduced. This flexible approach should require the NDA to regularly consult stakeholders and members of the public on the use of BAT.
- We hope the NDA, in conjunction with EDF Energy, will seriously consider an early AGR decommissioning project for Hunterston B.
- The NDA should recommend to Government that it drops the idea of re-using plutonium as MoX fuel.

## **3. Nuclear Waste Management Principles**

The NFLA promotes the concept of nuclear waste management driven by a clear set of principles. The NDA is now also talking about principles – the only trouble is they may not be quite the same principles, or the interpretation may be different. For example, at the heart of the Site Decommissioning and Remediation theme are the principles of optimisation and proportionality, which the NDA says allows them to make best use of resources in delivering its mission. The NDA talks about safely reducing risk to people and the environment both now and in the future, but in a way that is “proportionate to the risk.”

On the other hand, the NFLA might be more likely to highlight the “precautionary principle” and the idea that the so-called ‘linear no threshold model’ of radiation protection means there can be no safe level of radiation dose. To put it crudely the NDA's emphasis on proportionality has led to an increase in the “dilution and dispersal” of radioactivity throughout the environment – for example by sending more low-level waste to landfill, incineration or recycling - rather than an emphasis on ‘concentration and containment, although the NDA claims to prefer concentrate and contain to dilute and disperse.

The principles of optimisation and proportionality are also at the heart of the UK government's proposals for amending legislation which would allow the Office for Nuclear Regulation (ONR) to relinquish regulation of a site once it is content that all nuclear safety and security concerns have been resolved. The NDA says these amendments would allow a more proportionate approach to

regulation. Secondly, the proposed amendment would give site operators greater flexibility to optimise end states on a site by site basis, in consultation with local stakeholders.

In response to a 2018 UK Government consultation on the future regulation of nuclear sites as they reach their final stages of decommissioning and clean-up -

<https://www.gov.uk/government/consultations/the-regulation-of-nuclear-sites-in-the-final-stages-of-decommissioning-and-clean-up> - the NFLA noted:

- There is a danger that what is being proposed will simply be seen as turning nuclear sites into nuclear dumps as a way of saving money.
- The concept of “optimisation” which is decided by the operator and regulators making value judgements needs to be replaced with the concept of the Best Practicable Environmental Option which uses a systematic consultative and decision-making procedure.
- Any part of a nuclear site upon which it is proposed to allow unrestricted use must be able to show that doses to members of the public will be of the order of 0.01mSv or less per year.
- Using a risk factor in conjunction with probability of receiving a dose is too flexible and unacceptable.
- Any waste left on-site must be concentrated and contained in a monitorable, retrievable store.
- Former nuclear operators should remain liable for any future unexpected events and should also be liable to pay for any regulatory effort in perpetuity.

(See [https://www.nuclearpolicy.info/wp/wp-content/uploads/2018/07/Rad\\_Waste\\_Brfg\\_72\\_End\\_state\\_decommissioning\\_regulation.pdf](https://www.nuclearpolicy.info/wp/wp-content/uploads/2018/07/Rad_Waste_Brfg_72_End_state_decommissioning_regulation.pdf))

#### **4. Waste Hierarchy**

The NDA’s waste hierarchy sets out the priority order for managing waste materials. In simple terms, the NDA claims its preference is always to avoid producing waste in the first place. Opportunities to safely reuse or recycle materials are preferable to disposal.

The NFLA’s approach would be to stop producing more nuclear waste, and manage existing waste in a way which minimises any potential risk of environmental contamination by concentrating and containing existing waste.

#### **5. NFLA’s Environmental Principles and NDA plans**

The NFLA Steering Committee agreed a set of clear environmental principles which should be used for the management of nuclear waste in October 2004 at its Annual General Meeting in Hull. These remain highly relevant to this consultation and they are:

- The idea that radioactive waste can be "disposed" of be rejected in favour of radioactive waste management;
- Any process or activity that involves new or additional radioactive discharges into the environment be opposed, as this is potentially harmful to the human and natural environment;
- The policy of 'dilute and disperse' as a form of radioactive waste management (i.e. discharges into the sea or atmosphere) be rejected in favour of a policy of 'concentrate and contain' (i.e. store safely on-site);
- The principle of waste minimisation be supported;
- The unnecessary transport of radioactive and other hazardous wastes be opposed;
- Wastes should ideally be managed on-site where produced (or as near as possible to the site) in a facility that allows monitoring and retrieval of the wastes.

Although the Waste Hierarchy, used by the NDA puts disposal as the least preferred option, the Authority says a broad range of disposal capabilities are still required to manage the variety of

radioactive wastes; this includes in situ management, licensed landfills, near-surface disposal and geological disposal.

The NDA says its “vision is to have a range of disposal options available to the waste producer, who can then select the most appropriate route in order to follow a risk-informed approach and ensure that waste packages are compliant for transport and waste acceptance. Optimising the use of our available disposal capability will ensure successful completion of our mission.”

In the view of the NFLA these are all methods of further diluting and dispersing radioactive contamination throughout the environment.

The NDA says it wants to be able to determine the best approach to decommissioning by developing a sound understanding of the waste that will be generated and how it will be managed before it is created. It wants to improve predictions of waste arising from decommissioning to inform the development of waste management infrastructure.

With the NDA emphasising relinquishing regulation of a site, a proportionate approach and the waste hierarchy, it is highly likely that more waste left in situ. The NDA says over 50% of low-level waste produced has been diverted for ‘treatment’ instead of disposal, which is likely to mean more discharges from recycling plants and incinerators and more waste diverted to licensed landfill sites,

## **6. Consulting the Community on Decommissioning**

In the absence of any agreement about the principles governing nuclear waste management, there should be a systematic consultative decision-making procedure, for decommissioning each site. The NDA should write this into its strategy along with consultation on site end states with Site Stakeholder Groups and Local Authorities. NFLA believes the NDA should be able to present stakeholders with a list of the different waste-types which will be generated during the decommissioning and site remediation processes at each site. This list would show how each waste-type is planned to be managed – which types will be disposed on site or left in situ, which will be transported off site to the Low-Level Waste repository, to landfill sites, for incineration etc and which will be stored on-site until further managements options are available.

This information should be presented in a way which allows for easy understanding and comparison to the NFLA demand that if any part of a nuclear site is proposing to allow unrestricted use, it must be able to show that doses to members of the public will be of the order of 0.01mSv or less per year. This process would also allow local authorities which are expected to host waste management facilities off-site – such as landfill sites, and local authorities on transport routes - to be part of the conversation.

## **7. Intermediate Level Waste Disposal**

The NDA believes that there is a proportion of Intermediate Level Waste (ILW) that could be more appropriately managed in near surface disposal (NSD) facilities and has initiated an investigation to explore the technical feasibility of this disposal capability. (The NDA released a separate document along with the Draft Strategy called Near-Surface Disposal Strategic Position Paper available here: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/910184/NSD\\_StrategicPositionPaper\\_August\\_2020\\_FINAL\\_V2.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/910184/NSD_StrategicPositionPaper_August_2020_FINAL_V2.pdf))

The NDA points out that Scottish Policy for the management of Higher Activity Waste (HAW) is long-term management in near-surface facilities. The NDA says it continues to support Scottish government and it plans to investigate earlier opportunities for the implementation of Near Surface Disposal (NSD) solutions in Scotland.

It is important to emphasise that, whilst the NFLA has been supportive of the Scottish policy, it is our view that the use of the term “disposal” in this way is likely to cause public perception problems in 2030 when the search for a site for new facilities begins. However, the crucial point is that: “The Policy requires that disposal facilities should be monitored and that there should be a capability to retrieve waste packages and waste if necessary.”

The Implementation Strategy points out that “Although there is no intention to retrieve the waste, any proposed disposal facilities in Scotland will have to demonstrate ‘retrievability’. Retrievability means that, if necessary, waste could be removed from the facility at a later time.” The Scottish Government says its ethos “is that radioactive waste should not be considered “out of sight, out of mind” and that there needs to be a continued oversight of the waste whether it is in storage or in a disposal facility.” (See the NFLA Radioactive Waste Briefing No. 67 - [https://www.nuclearpolicy.info/wp/wp-content/uploads/2017/01/Rad\\_Waste\\_Brfg\\_67\\_Scottish\\_Government\\_radwaste\\_policy.pdf](https://www.nuclearpolicy.info/wp/wp-content/uploads/2017/01/Rad_Waste_Brfg_67_Scottish_Government_radwaste_policy.pdf))

In the section on ‘Technical Near Surface Disposal Options’ in the Strategic Position Paper there is no mention of retrievability or monitoring. These options appear to be unlikely to be compatible with Scottish Government Policy.

In the 2016 UK Strategy for the Management of Solid Low-Level Radioactive Waste from the Nuclear Industry, it was recognised that some Higher Activity Waste (HAW), particularly short-lived isotopes or those wastes lying at the LLW-ILW boundary, may be more appropriately managed within the Low Level Waste Repository (LLWR) at Drigg - the NDA is now actively exploring the opportunity to dispose of some ILW in the LLWR. This first step is part of a wider near-surface disposal programme. The NDA wants to develop near-surface disposal capability which could provide an opportunity for a timely disposal solution to enable site decommissioning and, in particular, risk and hazard reduction programmes and will directly support Scottish Government’s HAW policy and implementation strategy.

The NDA Strategic Position Paper says a proportion of wastes from decommissioning programmes could be suitable for NSD. It has been exploring the benefits of developing facilities for disposing of some of the less hazardous proportion of ILW by assessing the technical, environmental and economic case for purpose built engineered facilities located either at the surface or up to tens of metres below ground. The document says all work is exploratory only at this stage, but if taken forward, a new NSD facility could be available within the next 10 years.

It is worth remembering that in 1983 the Nuclear Industry Radioactive Waste Executive (Nirex), proposed using a deep anhydrite mine under Billingham in Cleveland as a site for ILW, and Elstow in Bedfordshire was proposed as a site for the shallow burial of short-lived ILW and LLW. Opposition forced them to abandon Billingham in January 1985. Then in February 1986, three further sites joined Elstow on the short-list - Bradwell in Essex, Fulbeck in Lincolnshire and South Killingholme on Humberside. Although the short-lived ILW was later dropped from the proposals, by the time test drilling was due to start at three of the sites in August 1986, hundreds of people formed human barricades and successfully prevented contractors from gaining access for three weeks. History repeated itself at the fourth site in September. Contractors only gained access to the sites by use of court injunctions and a heavy police presence. On 1st May 1987, prior to a General Election, the Government abandoned the four proposed sites.

The benefits of NSD quoted by the NDA seem to be mainly about providing greater flexibility for waste producers; making it possible to ‘dispose’ of waste earlier, i.e. claim to have dealt with the problem; reduce the volume of waste going into a deep disposal facility, thus reducing costs. In the NFLA’s view the aim should be to minimise health risk and risks to the environment, and maximising the opportunity to make corrections should there be unexpected and unforeseen problems in future.

The NDA’s Strategic Position Paper on Near Surface Disposal says the authority has identified a potential gap in the UK’s disposal system - there is a proportion of Intermediate Level Waste (ILW) that could be “more appropriately managed in near-surface disposal (NSD) facilities”.

The NDA Draft Strategy highlights graphite as a ‘significant consideration’. A 2006 Nirex Technical Note pointed to the possibility of Carbon-14 combining with CO<sub>2</sub> and Methane and escaping in gaseous form from a deep repository relatively quickly. It is unclear whether this is one of the drivers for looking at near surface disposal. The Near Surface Disposal Strategic Position Paper discusses briefly disposal of graphite several tens of metres below ground because of the slow decay of radionuclides such as Carbon-14 (Its half-life is 5,730 years) (chlorine-36 is highlighted elsewhere by CoRWM). CoRWM pointed out in a 2009 report that French research suggests that disposal at

depths greater than 100 metres may be necessary because of the potential for Chlorine-36 migration.

It is also known that the UK Environment Agencies consultation document on Guidance for Near Surface Disposal published in 2008 suggested that only short-lived ILW was suitable for near surface disposal (thus excluding graphite). However, after representations from the industry this was changed to allow for certain types of long-lived intermediate level waste (ILW) – in particular graphite - to be disposed of in a near-surface facility.

It was also reported at the time that the NDA was researching ways of treating graphite to remove some of the contamination (Carbon-14 and Chlorine-36).

There should be far more discussion about this before any decisions are made.

## **8. Gaseous and Liquid Radioactive Discharges**

The completion of reprocessing will be a significant step towards the reduction of radioactive discharges in the UK.

We would like to draw the NDA's attention to the NFLA's submission on the EA's Draft Decision Document on Proposed Changes to Sellafield's Environmental Permits (November 2019), available here –

[https://www.nuclearpolicy.info/wp/wp-content/uploads/2019/11/Rad\\_Waste\\_Brfg\\_80\\_Sellafield\\_Discharges\\_response.pdf](https://www.nuclearpolicy.info/wp/wp-content/uploads/2019/11/Rad_Waste_Brfg_80_Sellafield_Discharges_response.pdf)

This welcomed reductions in site discharge limits in the decision document compared with existing limits and the limits proposed in the earlier proposals. However, it also noted that Sellafield Ltd could be allowed to increase certain discharges for a certain length of time, in order to carry out a particular decommissioning task, provided it has submitted an acceptable Best Available Technique (BAT) case. Unfortunately, it is not clear from the document whether any superior abatement techniques have been rejected on, for example, cost benefit grounds, or what research is going on so that discharges to the sea can be further reduced.

If we are being asked to balance hazard risk reduction against the use of BAT for reducing radioactive emissions to the environment, then the public should be regularly consulted as the programme of work at Sellafield is developed. BAT for any one particular waste management process could be improving all the time through research and development.

OSPAR

Under the OSPAR treaty the UK Government is committed to:

“...progressive and substantial reductions of discharges, emissions and losses of radioactive substances, with the ultimate aim of [achieving] concentrations in the environment near background values for naturally occurring radioactive substances and close to zero for artificial radioactive substances.” [by 2020].

The application of “best available techniques and best environmental practice, including, where appropriate, clean technology” is one of the Guiding Principles of the OSPAR Strategy with regard to radioactive substances.

“Clean Technology” should not, in the view of many environmental commentators, involve end-of pipe filters to remove pollution from discharges to the environment – it should be a technique which produces no pollution to begin with. The requirement for ‘Best Available Techniques’ (and clean technology) means discharging radioactive wastes into the environment when alternative management techniques are available is not permitted.

It is difficult to see how continuing to operate the Magnox reprocessing plant until 2021 is compatible with the UK's OSPAR Treaty commitments. It is also difficult to see how Sellafield Ltd can be allowed

to increase certain discharges for a certain length of time, in order to carry out a particular decommissioning task, even with a Best Available Technique (BAT) case having been submitted.

The Sellafield Annual Research and Development Review published on 28th September 2020 gives some fascinating examples of how the NDA's research and development professionals are able to solve problems. The UK's OSPAR commitments should be seen as a driver for innovation, not something to be got round.

## **9. Deferred Decommissioning**

We note that a review of the decommissioning strategy for Magnox reactors has concluded that deferred decommissioning is not appropriate as a blanket strategy for all reactors so a site-specific approach involving a mix of decommissioning strategies will be taken in future. For some sites this will result in decommissioning being brought forward whilst for others a deferral strategy with varying care and maintenance periods will be the chosen approach. Magnox Limited will now prepare a business case (or cases), informed by local and national stakeholder views, for implementing this strategic change. Trawsfynydd has been chosen as a lead site for final decommissioning. This is primarily because the external structure has degraded extensively since it was shut down in 1991 such that substantial amounts of work would be required to make it safe for a long period of deferral; work that would then need to be undone to complete reactor dismantling. The intention is that the strategy will result in a rolling programme of Magnox decommissioning.

We also note that the NDA is working closely with UK government on options relating to the future management of Advanced Gas-Cooled Reactors (AGRs) at the end of electricity generation. The NDA says (page 120) in its previous strategy it said it would consider local engagement at sites entering into care and maintenance. Now it says consideration needs to be given to new approaches to the strategic development of "site specific decommissioning strategies and the potential approach to decommissioning Advanced Gas-Cooled Reactors (AGRs) might mean for local and regionalised engagement."

Deferred reactor dismantling means workers can benefit from radioactive decay enabling dismantling to be undertaken with significant worker access, and reduced dose rates. On the other hand, the lengthy deferral period means there is likely to be a loss of skills, knowledge and capability to carry out final site clearance. With advances in robotics that have been made in recent years perhaps the lengthy deferral period is no longer necessary.

Financially speaking it will be in EDF's interests to delay final dismantling as long as possible so that the money they have set aside for decommissioning can accrue in the bank for half a century. But this might not be the best thing for the Ayrshire economy. Given the likely economic consequences of the closure of Hunterston B on the North Ayrshire economy, it would seem sensible to seriously consider early decommissioning for Hunterston B. EDF Energy should be asked to contribute extra to the decommissioning fund to help pay for an early AGR decommissioning project at Hunterston.

## **10. Plutonium**

The NDA says it is actively working on developing credible options to put the plutonium inventory beyond reach to reduce the burden of long-term security risks and proliferation sensitivities for future generations to manage. At the end of reprocessing there will be around 140 tonnes of separated civil plutonium stored in the UK. There will also be around 23 tonnes of foreign, (mainly Japanese) owned plutonium. (See 2018 annual figures for holdings of civil unirradiated plutonium, ONR 16th September 2019 <http://www.onr.org.uk/safeguards/civilplut18.htm>)

The NDA says it aims to identify a solution that puts the UK's civil plutonium beyond reach. This could be reuse as Mixed Oxide Fuel (MOX) in nuclear reactors or as an immobilised product.

Now that the plutonium inventory has been consolidated at Sellafield, the NDA needs to ensure all the plutonium is safely and securely stored. This involves repacking the material and moving it into a suite of modern stores. Some of the older plutonium packages and facilities used in early production are now considered by the NDA to be amongst the highest hazards on the Sellafield site.

It is shocking to learn that the cost of the programme to manage the indefinite storage of UK held plutonium is expected to increase by between £0.5 - £1bn from the current estimate of £3.5bn (undiscounted), and that it will take until around 2060 before all the plutonium is repackaged.

In June 2018 the National Audit Office reported that some of the existing plutonium canisters are unsuitable for storage in Sellafield Product and Residue Store (SPRS), which only opened in 2012, and need to be repackaged. The NDA expects to do this through a new project, the Sellafield product and residue store retreatment plant (SRP). In future, some canisters that have already been transferred into modern storage will have to be repackaged through the SRP facility to ensure they do not degrade. SRP is currently in the design phase, with the NDA originally estimating that it would cost £470 million and that it would be ready by 2023. The NDA told the NAO that, as of June 2018, it is continuing to develop the design specifications, and that it expects that the likely project cost estimate is now between £1 billion and £1.5 billion. NAO reported that the NDA was expecting a two-year delay (taking us to 2025) and that further delays are likely. The Draft Strategy only says that the SRP is expected to be operational in the next “several years”.

The NDA’s March 2019 document ‘Progress on Plutonium, Consolidation, Storage and Disposition’ outlined a series of possibilities for using the plutonium, including the already failed alternative of making MOX fuel. There is also the CANMOX solution offered by a consortium led by SNC Lavalin. This approach would involve the building of a CANMOX fuel plant and at least two CANDU EC-6 reactors in the UK to irradiate the fuel. The NDA says no discernible evidence was offered that this approach would be significantly simpler or more cost effective than reuse as MOX in LWRs.

Another option would be re-use in GE Hitachi PRISM fast reactors. However, the studies undertaken by NDA with GEH over the past few years have shown that a major research and development programme would be required, indicating a low level of technical maturity for the option with no guarantee of success. No further work with GEH has been funded by NDA

That leaves immobilisation. Regardless of the overall solution, a proportion of the plutonium would be unsuitable for use as a fuel and will have to be disposed of. The NDA is working to better understand the proportion that will need to be immobilised, and also continues to develop approaches that could immobilise and dispose of the entire inventory.

The NFLA last commented on options for plutonium management in July 2012 here: [https://www.nuclearpolicy.info/docs/radwaste/NFLA\\_RWB\\_34\\_Plutonium\\_reuse.pdf](https://www.nuclearpolicy.info/docs/radwaste/NFLA_RWB_34_Plutonium_reuse.pdf)

This submission argued against the use of MoX as a plutonium disposition method. It argued that the Government should be prepared to pioneer new immobilisation technology for the benefit of global non-proliferation efforts. It highlights an article in ‘Nature’ by Prof. Allison Macfarlane, (chair of the US Nuclear Regulatory Commission (NRC) from July 9, 2012, to December 31, 2014) and others including Professor Frank Von Hippel, which argues that the UK’s proposals to covert plutonium stockpiles into MoX fuel are likely to run into technical and political difficulties, as well as escalating costs:

“Britain should seriously evaluate the less costly and less risky method of direct plutonium disposal, and take the opportunity to lead the world towards a better solution for reducing stockpiles.”

## **11. NFLA response to the NDA Strategy 4 Consultation Questions**

1. We are currently developing our sustainability strategy. How ambitious should we be in supporting UK government and the devolved administrations’ sustainability targets, including their commitment on carbon reduction?

The NDA should develop its own net zero carbon strategy. Given that the production of nuclear waste cannot be “sustainable” this should mean aiming to produce 100% of the NDA’s energy requirements from renewable energy. Scottish Water could provide a useful model. The NDA is a large land-owner. It should stop selling land for the construction of new nuclear power stations and instead use that land, as appropriate, to provide its own energy requirements.

2. Our approach to the development of this Strategy has been to engage collaboratively with key stakeholders. In your opinion, is there anything we should have done differently during this development phase?

As detailed above, stakeholders and local communities around decommissioning sites and those affected elsewhere should be provided with details of the waste inventory and its intended management strategy.

3. We are planning to update the document that describes the NDA Value Framework, which was originally developed with stakeholders over 10 years ago. In your opinion, does the Value Framework still capture the factors that should be considered in our decision making?

No comment.

4. This section (Our Evolving Strategy) summarises our current strategic position. In your opinion, what are the key issues the NDA should address and are they adequately covered by this Strategy?

Covered in the comments above.

5. The NDA is committed to reviewing the way in which we express the level of concern presented by a facility to help us prioritise our work and to track our progress in reducing the level of concern. What other aspects of progress would you like us to track? How would you like to be engaged in the development of this work?

Our comments on question 2 and in the text above are relevant here. We would welcome further engagement on this.

6. Do you agree with our aspiration to re-use waste for a purpose on site (e.g. void filling and landscaping) where it represents a net benefit and allows the site end state to be achieved? What factors should we consider?

Decisions on this would need to be taken on a case by case basis and would be conditional on meeting the environmental principles above. As outlined by NuLeaf our view on material being left in-situ would need to be protected by land use restrictions or other controls, and only if the approach can demonstrate clear net benefit, is consistent with local waste and development plans, and has community acceptance.

7. As well as ensuring that remediation of our sites is safe, sustainable and publicly acceptable, we also aspire to enabling their beneficial reuse as early as possible. What are your views on using controls (e.g. land use restrictions) to protect people and the environment from residual hazards so that the site can be used in a restricted way until it is suitable for unrestricted use?

See Question 6. Any part of a nuclear site where it is proposed to allow unrestricted use, should be able to demonstrate that doses to members of the public will be of the order of 0.01mSv or less per year. For restricted use there would need to be a clear description of likely pathways and doses.

8. Do you think it is appropriate for us to seek interim uses of our land and in your opinion, what should these include?

See answer to question 6.

9. To support the development of a suitable range of treatment technologies we need to invest now in creative thinking and innovation to secure significant benefits in the long term. Do you believe the NDA should continue to adopt this approach recognising that there could be a short-term cost burden, as delivery of the next generation of treatment facilities will take time to implement?

If treatment means further radioactive discharges into the environment, we would oppose that. If it means stabilising waste for long-term storage then it could be acceptable.

10. We implement the Waste Hierarchy and minimise the amount of waste we have to dispose of. However, to complete our mission we do need a range of disposal facilities to accommodate our diverse radiological and non-radiological waste inventory. Do you think our overall disposal vision is clearly articulated and do you support our key messages?

No. See our comments in the body of the NFLA response above.

No further comments.