ITEM 7: UPDATE ON NATIONAL DEVELOPMENTS IN RADIOACTIVE WASTE MANAGEMENT

Report to RWPG, 27th April 2023

This report provides an update on recent developments in radioactive waste management. It covers:

- NDA Group update;
- UK Government update;
- Small Modular Reactors (SMRs) and Advanced Modular Reactors (AMRs);
- Fusion Power;
- Regulatory update; and
- AGR Update.

1. NDA Group update

1.1 On the 1st April **Dounreay** formally joined with Magnox Ltd. This marks the final major step in the creation of 'One NDA' based around four operating companies[1].

Looking forward, Magnox will expand further as it takes on responsibility for AGR station decommissioning following defueling by EDF. The option of the NDA assuming responsibility for the Vulcan site in Caithness and Ministry of Defence liabilities is also under consideration.

1.2. Divers have successfully entered the **Pile Fuel Storage Pond (PFSP)** on the Sellafield site and completed 14 dives[2]. This is the first time the pond has been entered since 1958[3].

The PFSP was commissioned in the 1950s for the receipt and storage of fuel and isotopes from the Windscale Piles. It is one of oldest and most hazardous facilities on the Sellafield site containing spent fuel, sludge, radioactive and contaminated solids, intermediate level waste and low-level waste, pond water and contaminated concrete.

[1] Dounreay has successfully joined with Magnox Limited - GOV.UK (www.gov.uk)
[2] Divers enter legacy pond at Sellafield - Office for Nuclear Regulation - News (onr.org.uk)
[3] Divers enter Sellafield nuclear pool for first time in 65 years - BBC News

While significant progress has already been made, with more than 75% of the waste safely taken out of the pond, divers are needed to help extract the remaining inventory. Removing the material from the pond and placing it into safe storage is a strategic priority for Sellafield and a regulatory priority for ONR.

1.3 A Freedom of Information (FoI) request has highlighted that some workers at two Sellafield work sites were leaving work hours early over a period of several years[4]. The document released also states *'This behaviour was discovered by chance when a building alarm exposed the fact that nobody was present when the plant should have been manned and running.'* The two plants in question were the PSFP and the Waste Monitoring and Compaction Plant. The workers involved were given informal warnings with no formal disciplinary action taken.

1.4 Sellafield has also published its first **Artificial Intelligence (AI) strategy[5]**. The Strategy suggests that Sellafield could become a world leader in the use of AI. Examples of potential uses at Sellafield include automating retrieved waste analysis, removing people from high-risk manual sampling process.

1.5 The NDA has published its **mid-year performance report 2022-23**[6]. Of the 21 Group Key Targets reported on, three are deemed to be 'At Risk'; nine are classified as 'Stretch' i.e. behind schedule; and the remained are On Target. The document also contains an update on progress against the key activities and milestones in the NDA Business Plan 2022-25. These cover NDA corporate centre and the four operating companies.

1.6 Gwen Parry-Jones has been appointed as the interim CEO of **Great British Nuclear (GBN)**, taking up the role on the 1st May. Gwen's place as CEO of Magnox Ltd. will be filled on an interim basis by Rob Fletcher[7]. Rob was previously Managing Director of the Atomic Weapons Establishment and President of Rolls-Royce's Civil Nuclear business. He was also a board member of Rolls-Royce Power Engineering plc, the company that oversees production of reactors for the UK's nuclear submarine fleet.

1.7 In response to a query from a member of the RWPG, EDF has provided information on work they are undertaking to assess the potential to use permitted landfill sites to dispose of waste arising from works related to the preparation for defueling.

[4] Sellafield 'reckless' with taxpayers' cash in early home-time row | News and Star
[5] Sellafield AI strategy 'to boost safety and speed up site remediation' : Waste & Recycling - World Nuclear News (world-nuclear-news.org)
[6] NDA Mid-year performance report 2022 to 2023 - GOV.UK (www.gov.uk)
[7] Nuclear Decommissioning Authority (NDA) announces leadership changes at Magnox Ltd - GOV.UK (www.gov.uk)

Specifically, they are looking to develop processes and procedures so that, if VLLW disposal to landfill was deemed to be the Best Available Technique, they could do so. The route would be an extension to an existing contract with a permitted operator and is already used by Magnox and others in the nuclear industry.

At Hinkley Point B, the Environment Agency amended the Hinkley Point B Environmental Permit to allow VLLW disposals. However, to date, radiological measurements of the relevant deconstruction wastes at Hinkley Point B showed the wastes were actually 'out of scope' i.e. not legally classed as radioactive waste.

The company is currently considering the case for landfill disposal of waste resulting from flask corridor improvements at Heysham 1 and Hartlepool. They note that the characteristics of the same wastes may vary between individual sites due to a range of reasons.

2. UK Government update

2.1 On the 30th March the UK Government launched **Powering Up Britain**, its blueprint for the future of energy[8]. The main strategy was accompanied by an **Energy Security Plan** and a **Net Zero Growth Plan** and is intended to explain how the energy supply will be diversified, decarbonised and made less reliable on foreign sources.

It has a significant focus on new nuclear generation with a central commitment to establish **Great British Nuclear**, tasked with driving delivery of new projects. GBN will be based in the Greater Manchester area and, as noted elsewhere, will be headed up on an interim basis by Gwen Parry-Jones. Its first priority will be to launch a competitive process to select the best SMR technologies.

2.2 The long-awaited consultation on **UK policy on managing radioactive substances and nuclear decommissioning[9]** was launched on the 1st March and will run until the 25th May. Nuleaf has circulated a draft response to members for comment and hosted an event on the 30th March where a range of comments and issues were raised by members. These comments will be included in the final response.

[8] Powering up Britain - GOV.UK (www.gov.uk)
[9] https://www.gov.uk/government/consultations/managing-radioactive-substances-and-nuclear-decommissioning

2.3 On the 23rd of January Augean was granted permission by the Secretary of State for **Levelling Up, Housing and Communities**[10] to alter and extend facilities for the recovery, treatment and disposal of low-level radioactive waste at the ENREF facility at King's Cliffe in Northamptonshire. The overall amount of LLW disposed of will not increase beyond the previously agreed figure of 150,000 tonnes a year, with a requirement to complete landfilling and restoration by the end of 2046. Community benefits are payable on LLW disposed of at the site.

2.4 The Department for Levelling Up, Housing and Communities (DLUHC) has launched a consultation on **Environmental Outcomes Reports**. These form the basis of a new system of environmental assessment to replace Strategic Environmental Assessment (SEA) and Environmental Impact Assessment (EIA) following Brexit[11].

The consultation will run until the 9th June 2023 and sets out the government's vision for how powers in the **Levelling up and Regeneration Bill** could be used to transform EIAs from assessing 'likely significant effects' to an outcomes-based appraisal. Whilst the reforms to EIAs are driven by DLUHC, the powers in the Bill are available for the Department for Energy Security and Net Zero to use to reform the decommissioning regime assessment - EIADR.

This RWPG meeting will hear from DESNZ on this topic and there will be an opportunity to raise questions and clarify the implications of the proposed changes.

2.5 The UK Government has launched a consultation on revisions to the **National Policy Statements** for energy which will run until the 25th May. The revision does not include NPS-6 on nuclear[12].

2.6 Separately, the UK Government has asked the **National Infrastructure Commission** to undertake a study on the infrastructure planning system and the best future process for reviewing National Policy Statements (NPS)[13].

3. Small Modular Reactors (SMRs) and Advanced Modular Reactors (AMRs)

3.1 Rolls Royce's SMR design has successfully completed the first stage of the **Generic Design Assessment (GDA)** process and is beginning Stage 2 of the

[10] East Northants Resource Management Facility Western Extension development consent decision announced - GOV.UK (www.gov.uk)
[11] Environmental Outcomes Reports: a new approach to environmental assessment - GOV.UK (www.gov.uk)
[12] Planning for new energy infrastructure: revisions to National Policy Statements - GOV.UK (www.gov.uk)
[13] Infrastructure planning system - NIC

approval process[14]. In this second stage a more fundamental assessment is undertaken which considers whether any significant design modifications are required and whether all information has been provided.

During Stage 1 Rolls Royce provided a scope and submission plan for radioactive waste management arrangements and a disposability assessment. Non-radioactive waste impacts were also considered. The company has committed to share its waste plans with Nuclear Waste Services (NWS) and with stakeholders early in stage 2. NWS will provide disposal advice to Rolls Royce on Higher Activity Waste (HAW) from both operational and decommissioning wastes and for operational Low-Level Waste (LLW).

3.2 A pro-nuclear environmental group, **Re-planet**, has published a report[15] arguing that the UK's spent nuclear fuel, currently classified as waste, could be repurposed for a new generation of fast-neutron reactors that would provide low carbon energy while reducing waste volumes. It claims that there is sufficient energy in Europe's spent fuel to provide the continent's current electricity consumption for 600-1,000 years.

The assertions made in the report have been challenged, including by Prof. Claire Corkhill of Sheffield University. In a letter to The Times[16], she notes that the claims that such technologies do not generate waste are *'plainly false'* and that, *'in reality the reprocessing of spent nuclear fuel results in the generation of non-recyclable radioactive by-products…..fission products, some with radioactive half-lives of 100,000 years, are always generated. This truly is waste – it cannot be reused.'* She notes that a GDF will therefore still be required.

3.3 The Dalton Nuclear Institute held an online panel discussion on SMRs on the 15th March involving DESNZ and ONR among others. It can be viewed here[17].

3.4 X-Energy UK and Cavendish are proposing to develop a fourth generation SMR on land adjacent to the existing Hartlepool nuclear station, operated by EDF[18]. The company claim they could have a first unit operating by around 2030 if given the go-ahead. This would be around 4 years after the planned shutdown of the AGR station, following a newly agreed closure date of 2026.

[14] GDA Step 1 of the Rolls-Royce SMR: statement of findings - GOV.UK (www.gov.uk)
[15] What A Waste Report (replanet.ngo)
[16] https://twitter.com/clairecorkhill/status/1643900472732819457
[17] SMRs and Beyond: A Panel Discussion | Dalton Seminar Series - YouTube
[18] X-Energy and Cavendish Nuclear's SMR plan for Hartlepool : New Nuclear - World Nuclear News (world-nuclear-news.org)

3.5 At the request of members, Nuleaf hopes to run a session on AMRs at our June Steering Group meeting. This will involve speakers from DESNZ, ONR and potentially other organisations. More information will be circulated when confirmed.

4. Fusion Power

4.1 The UK Government has created a new delivery body for the STEP fusion plant at West Burton in Nottinghamshire. **UK Industrial Fusion Solutions Ltd.** will be a company tasked with taking forward the project until its planned opening in 2040[19].

Professor Sir Ian Chapman, UKAEA Chief Executive, commented *'The establishment of Industrial Fusion Solutions will enable STEP to accelerate its journey towards delivery of electricity from fusion energy to the grid…… Alongside the establishment of the new organisation, we are beginning to map out our future skills requirements and, as part of this, we are committing to the development of a STEP Skills Centre at West Burton. This will enable us to provide as many opportunities as possible to people across the area.'*

5. Regulatory update

5.1. ONR has published its annual **Safeguards Report** for 2022[20]. This covers the work that the organisation undertakes to fulfil international safeguard obligations.

5.2 Nuleaf's Executive Director joined an Environment Agency led **Decommissioning and Clean Up Participatory Systems Mapping Project** which ran in spring 2023. Also involving Mott Macdonald and a research consultancy, the aim was to work with stakeholders to develop a proper understanding of the interconnected dimensions to decommissioning and the role of different actors in delivering the sustainable clean-up of legacy sites. The final report will be shared when published.

6. AGR update

6.1 EDF Energy has confirmed that it plans to extend the operation of its AGR reactors at Heysham 1 and Hartlepool until 2026[21], two years later than previously expected. This is based on inspections of the graphite cores in 2022 which increased confidence that the stations can generate for longer while meeting all regulatory and safety requirements.

[19] UK takes major STEP towards near limitless, low-carbon energy - GOV.UK (www.gov.uk)
[20] ONR publishes Safeguards Annual Report for 2022 - Office for Nuclear Regulation - News
[21] EDF confirms plans to extend life of nuclear reactors (electricalreview.co.uk)