



**Nuclear Waste
Services**

Decommissioning and Waste Management in the UK

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The UK's nuclear legacy

- The UK's nuclear landscape began to take shape in the 1950s and has evolved over many decades.
- The UK's nuclear legacy includes the first fleet of nuclear power stations, research centres, fuel-related facilities and Sellafield, which has the largest radioactive inventory and the most complex facilities to decommission.



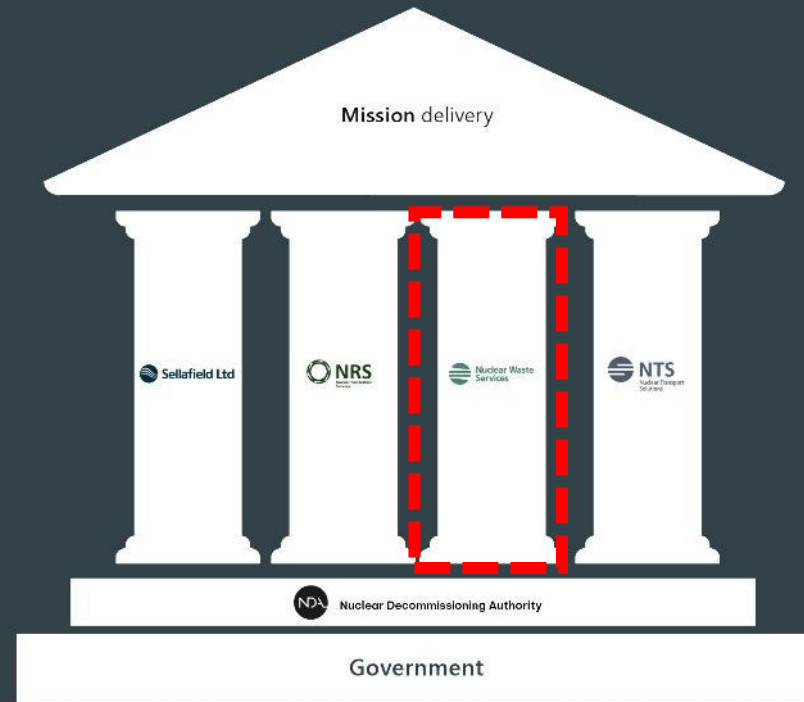
The Nuclear Decommissioning Authority

- The Nuclear Decommissioning Authority (NDA) is a non-departmental public body created through the Energy Act 2004.
- The NDAs mission, on behalf of UK Government, is to clean up the UK's earliest nuclear sites safely, securely and cost effectively.
- Doing this with care for our people, communities and the environment is at the heart of our work.



How the NDA group works

- The NDA has transformed itself in recent years moving to a group delivery model.
- The group model is firmly rooted in delivering work safely, more quickly and efficiently, and providing better opportunities for our people.
- We call this approach the One NDA way of working.



Nuclear Waste Services: Our mission, vision and objectives

We work in partnership with our workforce, our customers, regulators, supply chain and the communities where we work, to make sure our operations are safe, sustainable and secure.

Mission

We are the 'one-stop shop' for nuclear waste management and disposal for the UK

Vision

Nuclear waste, permanently safe, sooner

Strategic objectives

Right waste form in the right package in the right facility

Accelerate decommissioning by innovation

Drive value for the UK

Delivering our objectives

Nuclear Waste Services core mission is to lead radioactive waste disposal on behalf of the NDA Group and the wider UK nuclear industry.

Our delivery is focussed on three value streams:

- Delivering a Geological Disposal Facility (GDF)
- Operating the UKs National Low Level Waste Repository
- Providing Waste Services to UK waste generators



Illustration of UK GDF “inshore” setting



Low Level Waste Repository

Waste categories in the UK

The UK system for categorising waste is based on radioactivity concentration.

There are three main categories of waste. However, there are also subcategories of LLW Waste:

- Low Activity Low Level Waste (LA-LLW)
- Very Low Level Waste (VLLW)

ILW is waste that exceeds the LLW activity concentration.

HAW waste is heat generating, such as spent fuel.



Low Level Waste
(LLW)



Intermediate Level
Waste (ILW)

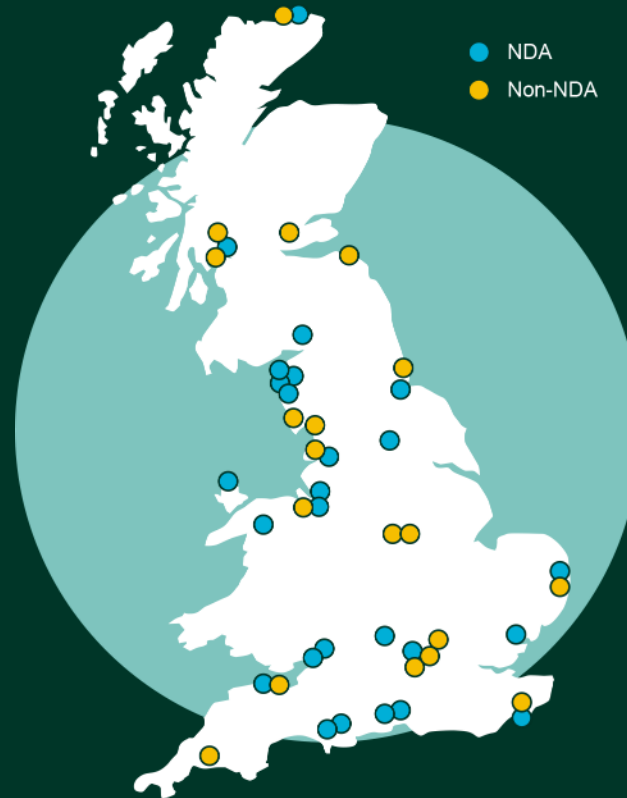


High Level Waste
(HLW)

Where is waste generated?

Activities generating low level waste:

- Nuclear power
- Reprocessing
- Fuel fabrication
- Defence
- Oil and gas extraction
- Hospitals
- Pharmaceutical production
- Factories
- Universities/schools



How much waste is there?

Nuclear Waste Services produces an inventory of the country's radioactive waste and nuclear materials.

There is an estimated 4.5million cubic metres of current and future waste arisings.



Low Level Waste Disposal



The capacity challenge

By 2007 we were faced with a capacity challenge at the repository.

We had limited space left in our operational vault, and construction of a new vault had not commenced.

Waste forecasts showed that we did not have enough capacity at the site to manage the UKs Low Level Waste Inventory.



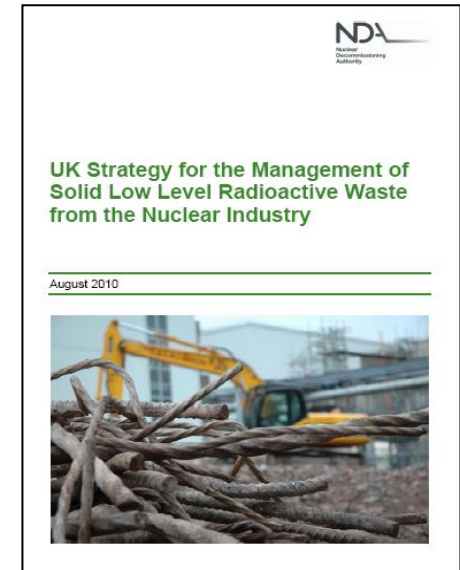
Low Level Waste Repository – Capacity Challenge

Change in waste management practices

2007 - First UK Government policy for Solid Low Level Waste Management

2010 – National Strategy for management of Solid Low Level Radioactive Waste Developed.

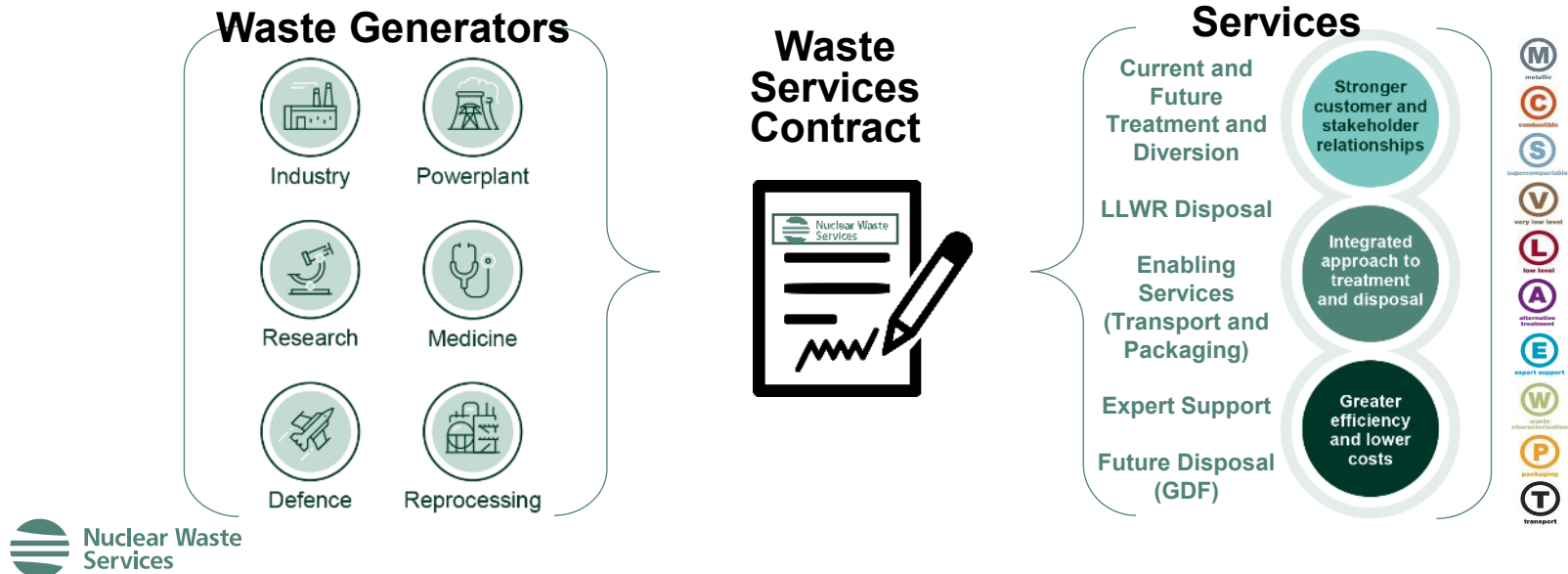
Nuclear Waste Services tasked with Strategy Implementation.



UK Policy and Strategy for Solid Low Level Waste

Waste Services

Waste Services team was established in 2010 to enable delivery of the National Strategy for the management of Low Level Waste.



Services Provided to Customers Across the UK



Enabling Services

- Expert Support (E)
- Waste Characterisation (W)
- Packaging (P)
- Transport (T)

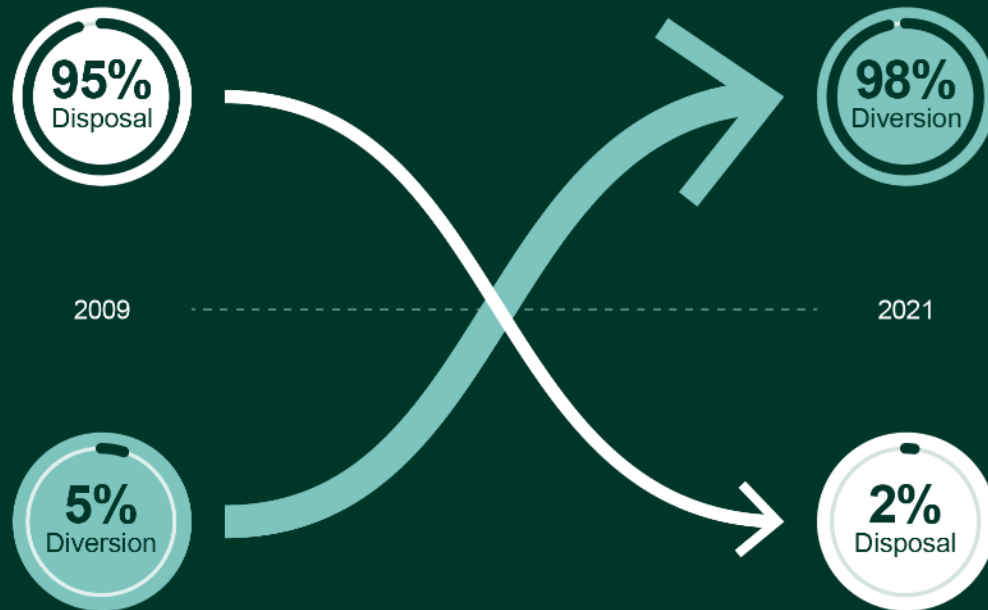
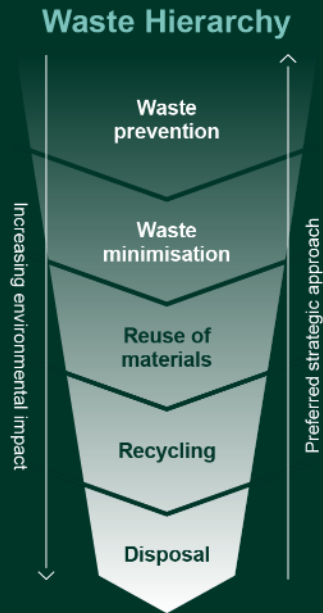
Treatment Services

- Metallic Waste Treatment (M)
- Combustible Waste Treatment (C)
- Alternative Treatment (A)
- Supercompaction (S)

Disposal Services

- Low Level Waste Disposal (L)
- Very Low Level Waste Disposal (V)

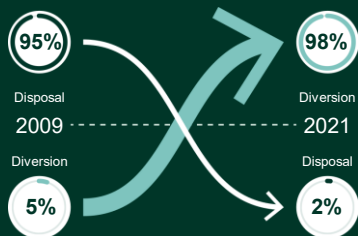
Implementation of the Waste Hierarchy



Delivery since 2010

340,000m³

Of waste diverted from the LLW Repository. Negating the need for new vaults and extending the life of the national asset.



42,000t

Of metallic waste treated and recycled, providing more sustainable outcomes.

40,000m³

Of waste incinerated reducing the final volume for disposal and destroying hazardous properties.

100,000m³

Of Very Low-Level Waste diverted to permitted landfill.

12,500

Safe and secure transports.

100,000

Quality assured packages manufactured and disposed.

41,000m³

Of waste assessed for disposal at the Geological Disposal Facility

Metal Recycling Case Study

A Case Study - Berkeley Heat Exchangers

Berkeley Power Station was a twin Magnox Reactor Site.

The site operated from 1962 – 1989 when electricity generation ceased.

Decommissioning activities commenced in the 1990's with the ducts connecting the reactors to the heat exchangers removed.

The reactor heat exchangers were lowered onto cradles around the reactor.



Berkeley Power Station prior to decommissioning

A Case Study - Berkeley Heat Exchangers

Transport Study undertaken to identify transport route.

Further characterisation of the heat exchangers undertaken.

Heat exchangers prepared for transport.

All external penetrations removed and sealed.

Notifications made to local authorities and regulators to notify them of the transport.



Heat Exchangers transported through Berkeley Village

A Case Study - Berkeley Heat Exchangers

Heat exchangers transport from port in UK to Cyclife Sweden.

The heat exchangers were size reduced using conventional cutting methods.

The size reduced metal was grit blasted before being melted to remove radioactive contamination.

Secondary waste, such as grit blast material was packaged and returned to the UK.

Recycled metal released for recycling.



Transport and receipt in Sweden

Benefits

Early removal of waste from site negating the need for ongoing storage.

95% reduction in volume of waste requiring disposal.

Metal released for recycling.



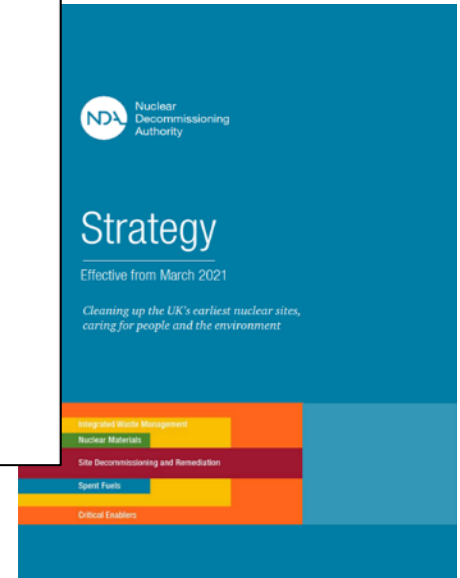
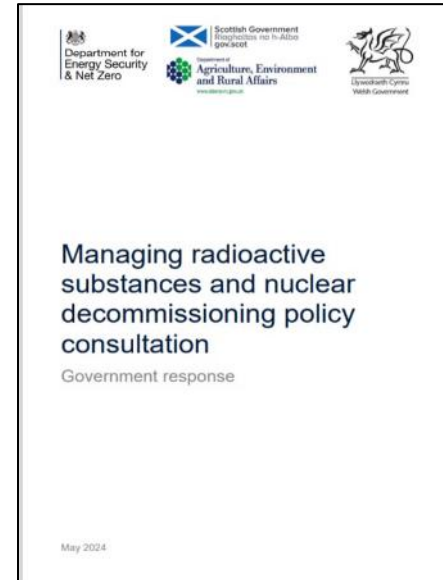
UK Waste Policy Development

In 2024 the UK government released a new policy framework for managing radioactive substances and nuclear decommissioning.

Updated policy framework is broad and applies across the whole of the nuclear sector and beyond.

It includes a range of key waste management amendments which should have significant benefits for our Mission.

NDA Strategy 5 reflects the overall strategic response to the new policy framework.



2024 Uk Policy Framework and NDA Strategy 5

And finally.....





Nuclear Waste Services

On the Level

News and views from the LLW Repository site

Local community site tour is a success

The LLW Repository site opened its gates for a community site tour in April. We welcomed 25 local residents, who read about the event in our previous edition of 'On The Level'.

The tour included a stop at the wall sidings and trench caps, where the group learned about the work to be installed herringbone drainage. Then it was on to the results followed by the magazines, which used to store plutonium-contaminated material, but have now been decommissioned ready for demolition.

Next, it was on to the grouting facility, where operations have recently started again after a three-year break (see page 6), and finally to the Site Emergency Control Centre (SECC), to hear about our recent £5million security enhancement programme.

Local resident, Laura Cummings, attended with her mother, Jenny Hewitson, who worked at the

Repository site for a number of years before retiring.

Laura said: "Thank you to the amazing team for our site tour. It was extremely informative and delivered with good humour."

"It was great that I was able to take my Mum to see all the changes over the years since she last worked there as a Health Physics Monitor some 30 years ago. She certainly enjoyed it and couldn't believe how much progress has been made over the years and how clean and well-managed the site was."

Martin Wokinghouse, Chief Operating Officer, led the tour and commented that it was "one of the highlights of my week."

Community site tour

Our next community site visit will take place on Tuesday 22 August 2023. To register your interest, email kata@nws.co.uk and we'll confirm joining instructions nearer the time.

NWS/2023/001

Thank you for listening