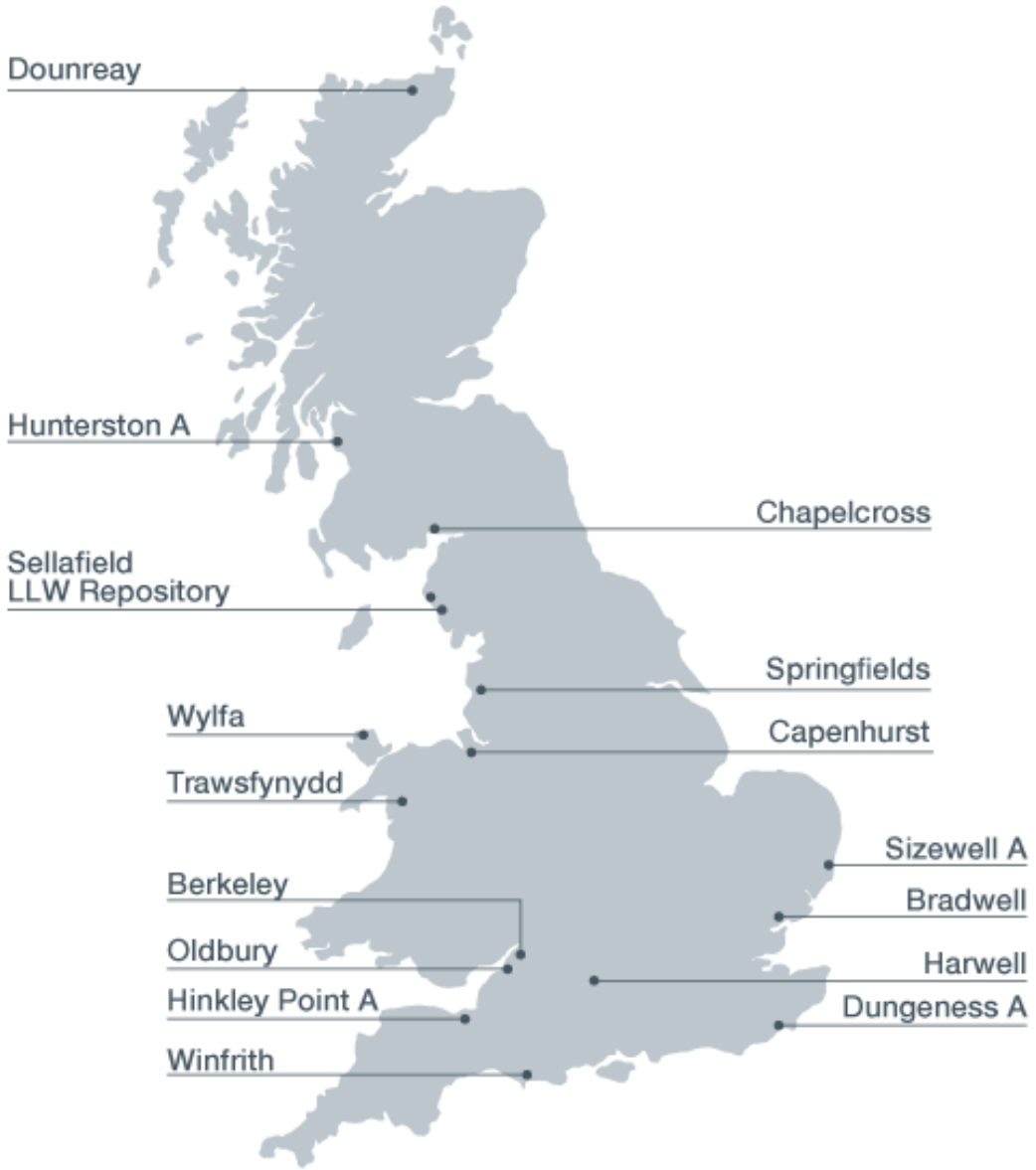
NDA Strategy – Integrated Waste Management

Nuclear Decommissioning Authority, United Kingdom

The legacy


Dounreay
Hunterston A
Chapelcross
Sellafield
LLW Repository
Springfields
Wylfa
Capenhurst
Trawsfynydd
Sizewell A
Berkeley
Bradwell
Oldbury
Harwell
Hinkley Point A
Dungeness A
Winfrith

Strategy development

- NDA Strategy document published on the 1st April 2016

- Driving themes
  - Site Decommissioning & Remediation
  - Spent Fuels
  - Nuclear Materials
  - Integrated Waste Management

- Critical Enablers

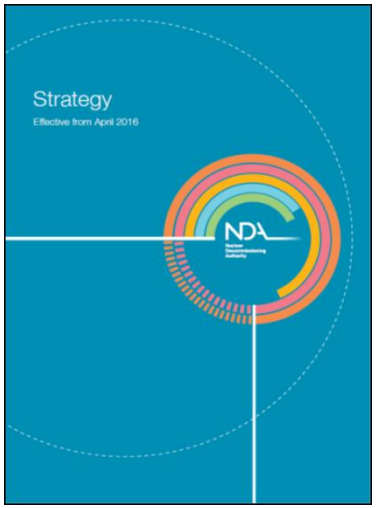
Integrated Waste Management

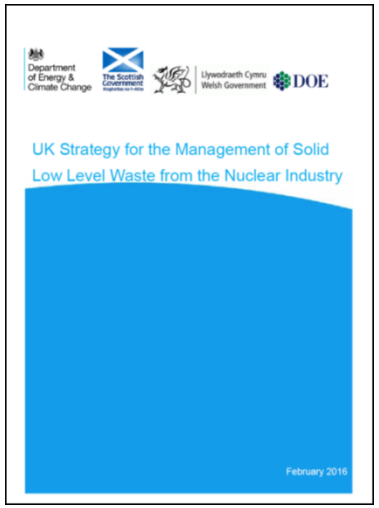
Objective:

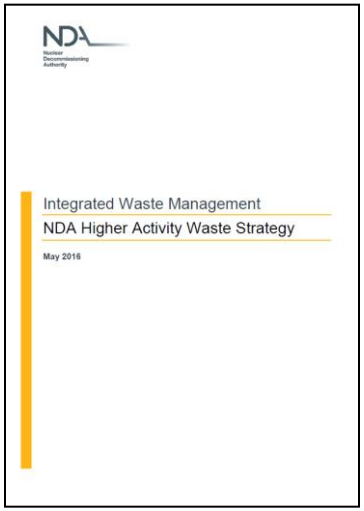
To ensure that wastes are managed in a manner that protects people and the environment, now and in the future, and in ways that comply with government policies and provides value for money.

Three Topics:

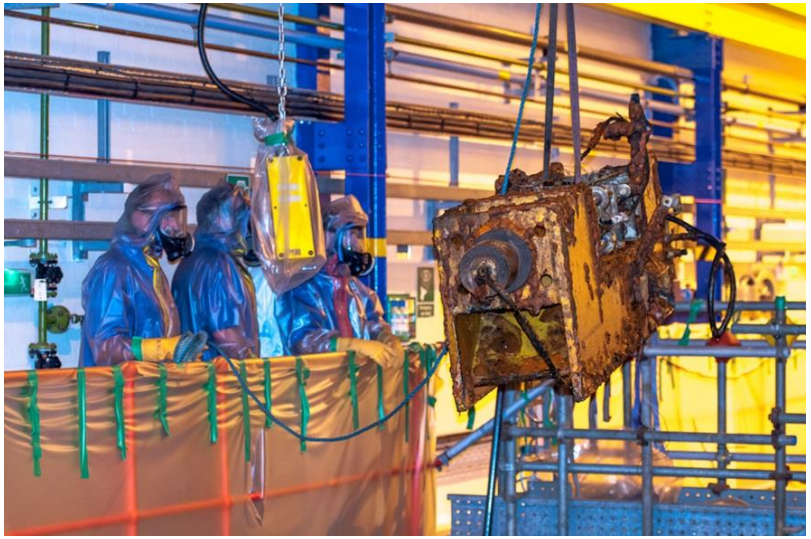
- Solid Radioactive Waste
- Liquid and Gaseous Discharges
- Non-radioactive Waste

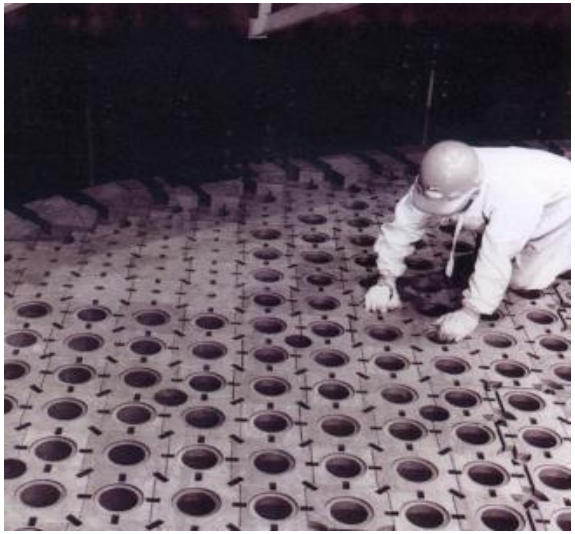






Dealing with the legacy





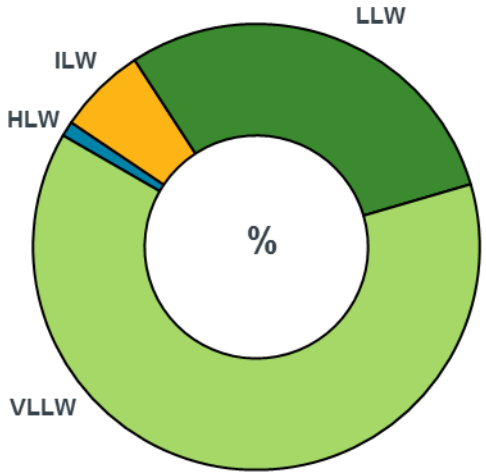
Classification of Radioactive Wastes

High Level Waste	• Heat generation has to be taken into account in design of storage and disposal facilities	HAW
Intermediate Level Waste	• Exceeds the radiological limits for LLW but do not require heat generation to be taken into account for storage and disposal	
Low Level Waste	• Wastes containing up to 4 GBq/Te α and 12 GBq/Te β/γ • Also contains a sub category of VLLW	LAW
Out of Scope Waste	• Waste which is non-radioactive	

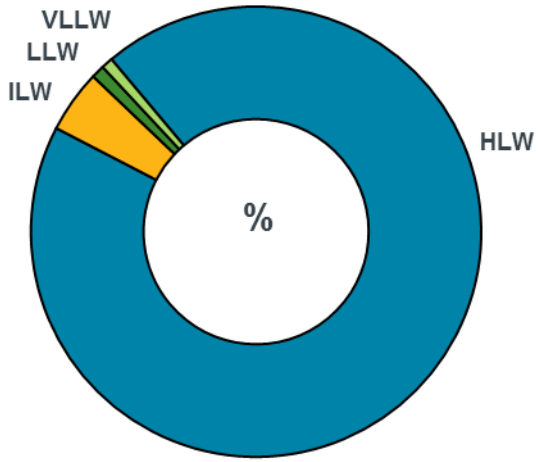
Radioactive Waste Inventory

Source: 2016 UKRWI

Waste Type	Volume (m^3)	% Volume	Total Activity (TBq)	% Activity
VLLW	2,860,000	63.6	0.002	0.00003
LLW	1,350,000	30	26	
ILW	290,000	6.4	3,800,000	4.6
HLW	1150	0.03	79,000,000	95.4

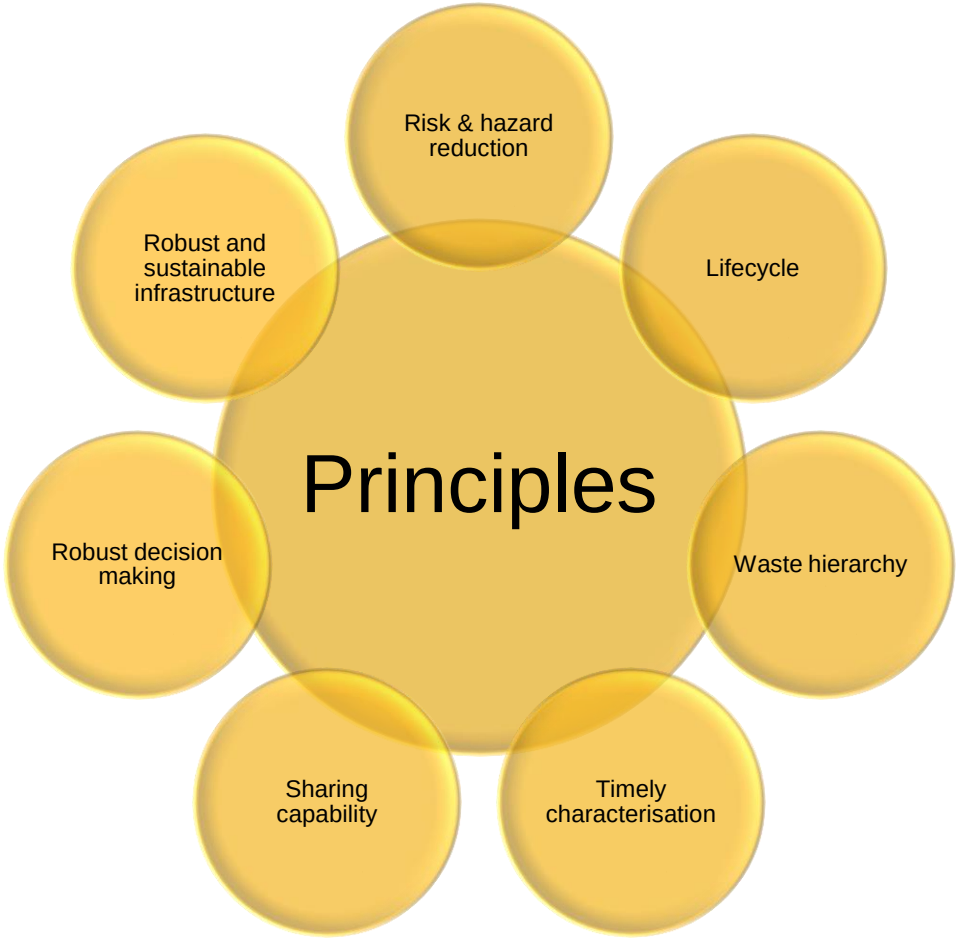


% volume



% activity

IWM Principles



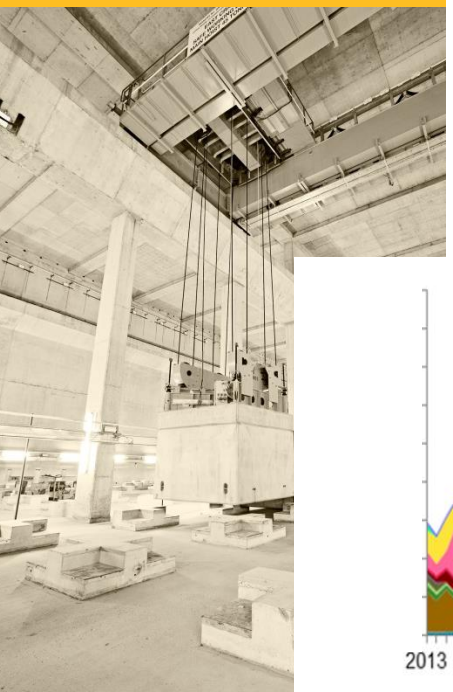
The waste management lifecycle

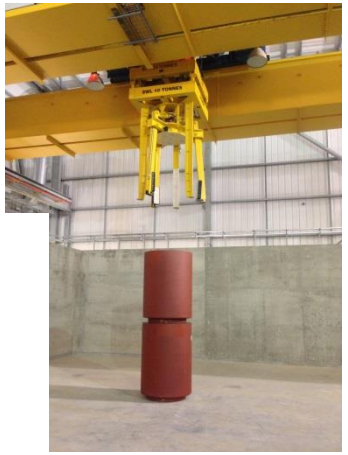
- There is a need to consider the entire lifecycle
- Supports the Waste Hierarchy and should:
    - avoid waste arisings in some circumstances
    - minimise waste volumes
    - help with improved waste sorting & segregation
    - help to secure waste reclassification opportunities

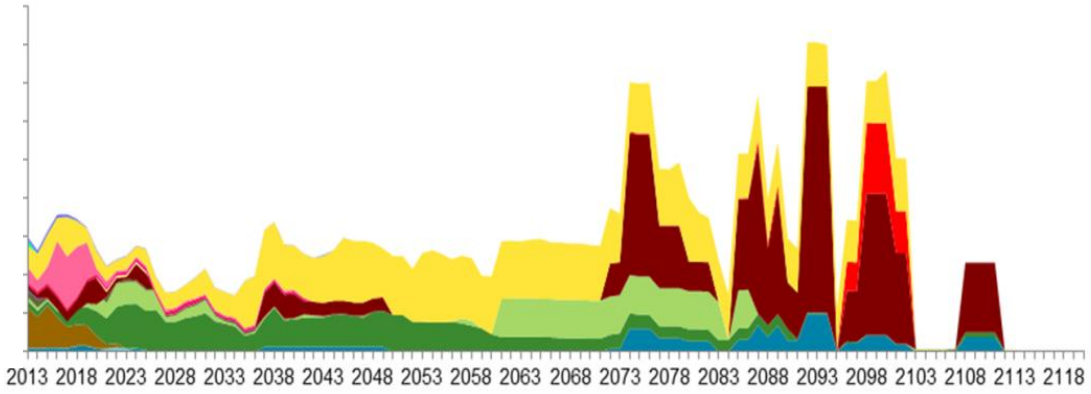
Planning & preparation → Treatment → Storage → Disposal

Radwaste strategy development

- Developed Integrated Waste Management principles
- UK LLW Strategy for the Nuclear Industry and NDA HAW Strategy are standalone documents with an aligned format and overall direction at a principle level
- We are moving towards a single radioactive waste strategy, moving a away from category (e.g. ILW, LLW) based waste management route planning to a risk based lifecycle approach to the management of wastes.
  - IWM Principles
  - Planning & preparation
  - Treatment & Packaging
  - Storage
  - Disposal

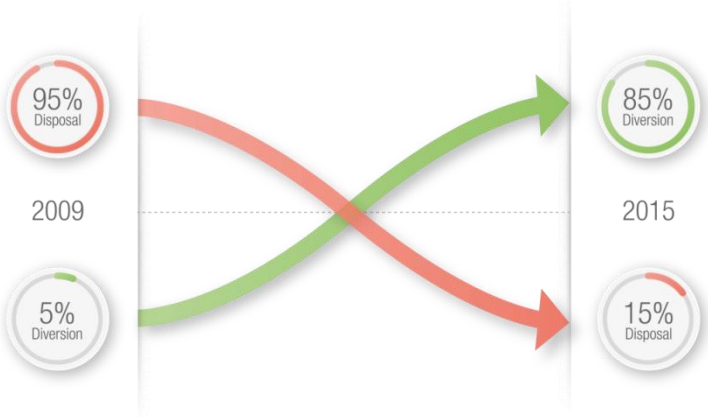






Effective waste management

Impact of UK LLW strategy and creation of waste management services on the UK's Low Level Waste Repository:



LLWR Ltd

Strategy development

- Waste treatment technologies
  - Reducing overall waste volumes
  - Thermal treatment
- Boundary wastes
  - Large volume of waste at the ILW/LLW boundary
  - Close working between LLWR Ltd & RWM
- Problematic wastes
  - Understanding the inventory
  - Management options
- Alternative disposal options
  - Near-surface disposal