

OPERATIONAL DECOMMISSIONING


UK Responsibilities & Arisings

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UK Liabilities Responsibility & Management

- HM Government:
Ultimate responsible authority for decommissioning.
 - Nuclear Decommissioning Authority (NDA)
and Radioactive Waste Management Limited
(RWM):
 - Parent Body Organisations:
 - Site Licensed Companies.
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NDA

The NDA is a non-departmental public body created through the UK Energy Act 2004. They are a strategic authority that owns 19 sites and the associated civil nuclear liabilities and assets.


It is responsible for:


- Decommissioning civil nuclear facilities.
 - Ensuring radioactive (and non-radioactive) wastes are managed safely.
 - Implementing Government policy with respects to nuclear waste management.
 - Developing UK nuclear Low Level Waste (LLW) strategy
 - Advising the relevant government department(s) on the quality of operator's decommissioning plans.
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RWM Ltd.


- RWM has responsibility for planning and implementing a geological disposal facility (GDF) for England & Wales.
 - RWM advises waste packaging organisations and nuclear site operators on:
 - Their plans for packaging higher-activity radioactive waste (ILW).
 - The interim storage of radioactive waste packages prior to dispatch to a geological disposal facility.
 - Provide packaging standards and guidance based on concepts and safety cases for transport and geological disposal of these wastes.
 - Verifying waste package compliance through the Letter of Compliance process.
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RWM is involved in:

- Providing guidance on a wide range of packaging issues
 - Reviewing the properties and performance of proposed packages, known as the Letter of Compliance (LoC) process.
 - Checking that wastes will be packaged in a passive and disposable form so that any wastes packaged today should be compliant with future transport and disposability requirements.
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- Where proposed packages are found to be compliant with packaging standards and associated safety and environmental assessments, a Letter of Compliance (LoC) is issued. This indicates that it would be possible to dispose of the packaged waste in a deep Geological Disposal Facility based on current knowledge.
 - Periodic reviews to ensure that waste packages produced remain disposable.
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(Letter of) Compliance

- Waste Streams need to comply with RWMD requirements under retrieval and packaging.
 - Each waste stream and package needs a Letter of Compliance (LoC) to be acceptable for storage and final disposal at a Geological Disposal Facility (GDF).
 - The LoC is based upon the GDF model and its Safety Case, such that packages can be accepted once the facility is operational.
 - Packages need to be supported by a Safety Case for their transport. Therefore need to be compliant with transportation regulations both current and predicted future ones.
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LoC submissions have three assessment stages:

- i. Conceptual
- ii. Interim
- iii. Final

At each stage, specific information is required by RWM to provide confidence that packages proposed will be:

- Capable of being stored during an interim period on site.
- Transportable in a licensed configuration to a national repository.
- Maintained in a retrievable condition during the operational period of the GDF.

At each sequential stage of the LoC process additional detail is required and hence the risk that a package will be non-compliant is reduced.

The structure of the LoC submission is in the form of 11 Component Documents, each covering a topic of interest to NDA/RWMD. All 11 components need to be endorsed prior to issue of an LoC:

1. Data summary sheets
(Nature & Quantity of Waste)
2. Waste Product Specification.
3. Data recording methodology statement.
4. Criticality Compliance Assurance Document.
5. Impact performance justification.
6. Fire performance justification.
7. Gas report.
8. Quality Management System (QMS) overview.
9. Data recording strategy.
10. Container manual.
11. Storage, monitoring and inspection report.

Parent Body Organisations (PBO)

Each of the five Site Licensed Companies are operated under the management of a PBO.

- The appointed PBO provides direction, leadership and management through ownership of the shares in the SLCs.
- The PBO second key personnel to form the senior leadership team in each SLC to deliver vision and drive to attain best value for money whilst maintaining mandatory standards of safety, security and environmental performance.

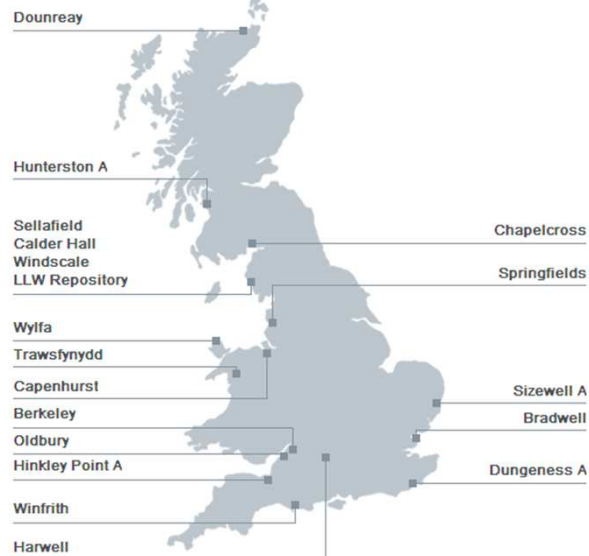


Site Licensed Companies


- Dounreay Site Restoration Ltd. (DSRL).
- Low Level Waste Repository Ltd. (LLWR).
- Magnox Ltd..
 - 10 former Magnox Reactor sites.
- Research Sites Restoration Ltd. (RSRL).
 - Harwell & Winfrith.
- Sellafield Ltd..
 - Calder Hall, Capenhurst, Sellafield & Windscale.
- Springfields Ltd..





Constituent Sites of the NDA's Site Licensed Companies.



Waste Types and Streams

- **Miscellaneous Activated Components (MAC).**
Consist of a variety of metallic materials and equipment that have be exposed to the neutron flux of a reactor and have a variety on activation nuclides present. These wastes have been removed during operation and stores in vaults prior to final disposal. Each waste stream will have a different fingerprint depending upon the materials present.
 - **Miscellaneous Contaminated Items (MCI).**
Consist of a variety of materials that have be used during nuclear plant operations in a variety of situations and are surface contaminated. Each waste stream will have a different fingerprint depending upon the items, materials and their applications.
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- **Cladding & Fuel Element Debris:(Magnox & Sellafield)**
This is a Magnox specific waste that arises during operations in the preparation of the fuel elements for transport off site to the re-processing plant.
 - **Ponds Waste:(Magnox, DRSL & Sellafield)**
Ponds were used to store fuel for a minimum of 90 days post irradiation prior to re-processing. Due to the nature of the fuel clad surface and fuel corrosion contamination of the inner pond walls occurred, and penetration of nuclides into the concrete substrate has occurred requiring remediation, and generating LLW for disposal in the form of concrete scabbling and/or paint sludges.
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- **Ion-exchange Materials: (DRSL, RSRL & Magnox)**
The fuel storage ponds' water quality has been maintained by ion-exchange; in particular to remove Cs-137. This has generated several ILW waste stream of different components and types of material; organic resins; inorganic zeolites, and IonSiv cartridges. These may be problematic materials to dispose of and their LoC submission reflects this.
 - **Sludges: (Magnox, Sellafield & DRSL)**
Sludges have arisen from several operational sources. Primarily from the operation of fuel cooling ponds where fuel cladding corrosion has occurred as a consequence of fuel being stored for periods greater than 90 days. In some situations this is exacerbated by failure in ponds chemistry control.
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- **Steam Generators:(DRSL, RSRL & Magnox)**
On power generating sites the large structures, steam generators, may be surface contaminated, and/or activated. These structures can be dealt with once characterised in parts by either free release for re-cycling, metal-melt process as LLW for reuse within the industry or disposal as LLW.
 - **Turbine Hall Materials: (DRSL, RSRL & Magnox)**
These streams arise from power generating site and consist of a variety of components and materials, both inactive and contaminated. With a large proportion being conventional hazards-chemically and physically.
 - **Other Structures: (all SLCs).**
This includes all conventional buildings such as administration offices and conventional work-shops.
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