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Scotland's Higher Activity Radioactive Waste Policy

Dounreay Site Stakeholder Group
10 March 2010

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The Scottish Government

Scotland's Higher Activity Radioactive Waste Policy

- Background to the Policy
- Development of the Detailed Statement of Policy
- Consultation Framework
- Aims & Principles of the Policy
- The radioactive waste – "the Waste"
- Definitions
- Strategic Environmental Assessment
- Next steps

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Background

- On 25 June 2007 in a statement to the Scottish Parliament, the Scottish Government announced that its Policy for the long term management of higher activity radioactive waste arising in Scotland would be to :

  "***support long-term near surface, near site storage facilities so that waste is monitorable and retrievable and the need for transporting it over long distances is minimal"***

- The Scottish Government did not endorse the Managing Radioactive Waste Safely (MRWS) consultation on deep geological disposal.

- The Scottish Government is committed to dealing responsibly with Higher Activity Waste arising in Scotland.

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Developing the Detailed Statement of Policy

- Engagement with a wide range of stakeholders identified a need to define the terms in the Policy
- Detailed identification of the radioactive waste arising in Scotland through the Technical Advisory Group and overseen by a Project Board
- **Critical issue has been identifying the Waste we have in Scotland and the options for dealing with it**
- Scottish Government decision to consult on Detailed Statement of Policy and undertake a Strategic Environmental Assessment
- Workshop in June 2009 to consider scope of a Detailed Statement of Policy to inform preparation of Consultation document and Environmental Report.
- Engagement led to the Policy covering both storage and disposal.

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Consultation Framework

- Publication of Scotland's Higher Activity Radioactive Waste Policy on 15 January 2010
  - Consultation
  - Environmental Report
  - Supplementary Information
  - Equality Impact Assessment
- Further Workshop on 29January 2010 to assist stakeholders in making their responses and enable discussion with other stakeholders and those involved in developing the consultation.
- Further engagement with Scottish Site Stakeholder Groups and others.
- Deadline for responses **9 April 2010**.

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Consultation Framework

- Consultation
  - identifies the aim and principles of the Policy
  - Identifies the wastes we have or will have in Scotland from existing nuclear sites
  - proposes definitions for ***long-term, near surface, near site, storage, disposal, monitorable, retrievable and the need for transporting over long distances is minimal***
  - Assesses in the Environmental Report the impact of the Policy
  - in the Supplementary Information document provides more detail on radioactivity and radioactive waste and the regulatory framework to assist those unfamiliar with the topic.

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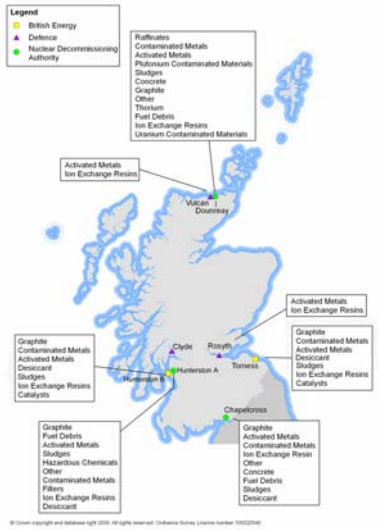
Location of nuclear industry sites in Scotland and the higher activity radioactive waste that they produce



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Aim and Principles of the Policy

The **aim** of the Policy is to:

- ensure that all activities for the treatment, storage and disposal of the Waste are made in a way that protects the health and interests of people and the integrity of the environment at the time treatment, storage or disposal is undertaken, and in the future and recognises the risk of foreclosing future options;
- ensure that activities to manage the Waste are undertaken in a way that inspires public and stakeholder confidence; and
- ensure that decisions on the management of the Waste take account of cost and affordability.

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Aim and Principles of the Policy

Underpinning this aim are the **principles** that:

- the level of protection provided to people and the environment against radiological and any other hazards of the Waste both at the time of storage or disposal and in the future is consistent with the standards in place at the time;

and

- developers and operators of facilities will engage with stakeholders throughout the process of managing the Waste.

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Detailed Statement of Policy

The Policy allows:

- The **storage and disposal** of the waste in facilities constructed:
  On the surface
  or
  Near to the surface down to depths of several tens of metres
- The **storage or disposal** of the waste in facilities located:
  On existing nuclear sites
  or
  Near existing nuclear sites; and
- The treatment of the waste, including sending it elsewhere for treatment, subject to any requirements by the relevant regulators in the UK and overseas for the return of the waste

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Detailed Statement of Policy

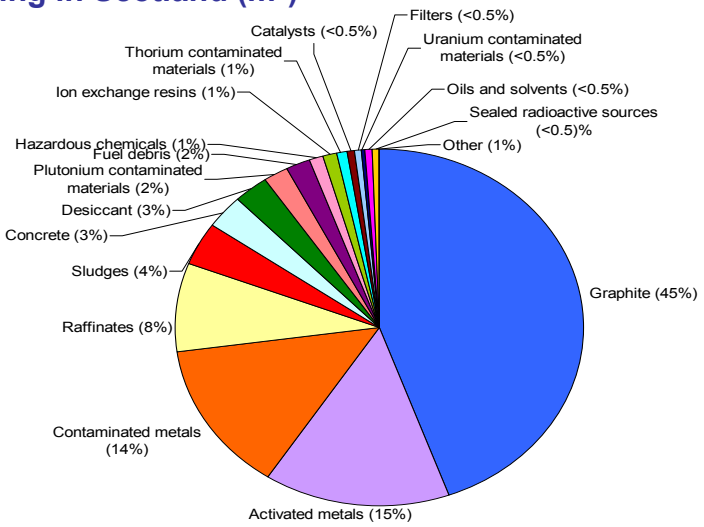
The Policy requires:

- arrangements, including replacement or refurbishment of storage facilities, for safe and secure storage for at least 100 years, with the capability of extension beyond 100 years if necessary;
- disposal facilities to meet the requirements set by the appropriate regulators, including consideration of a period of 300 years for institutional control;
- storage and disposal facilities to be subject to monitoring as required by regulators;
- the Waste to be retrievable based on regulatory requirements;
- the location of facilities to be determined by application of the Proximity Principle;
- the need to transport the Waste over long distances is minimal; and
- the development of a Strategy to implement the Policy.

The Waste

- This is primarily solid waste, such as graphite and metal, but also includes Waste such as sludges which may be solidified as part of a treatment and/or packaging process.
- The term **higher activity radioactive waste** (the Waste) as used in this Policy is:
  - what is defined in current UK categorisations as Intermediate Level Waste (ILW); and
  - certain wastes categorised as Low Level Waste (LLW), which by their nature are not currently suitable for disposal in existing LLW facilities as, for example, they may be longer-lived waste.

Estimated volume of higher activity radioactive waste arising in Scotland (m^3)



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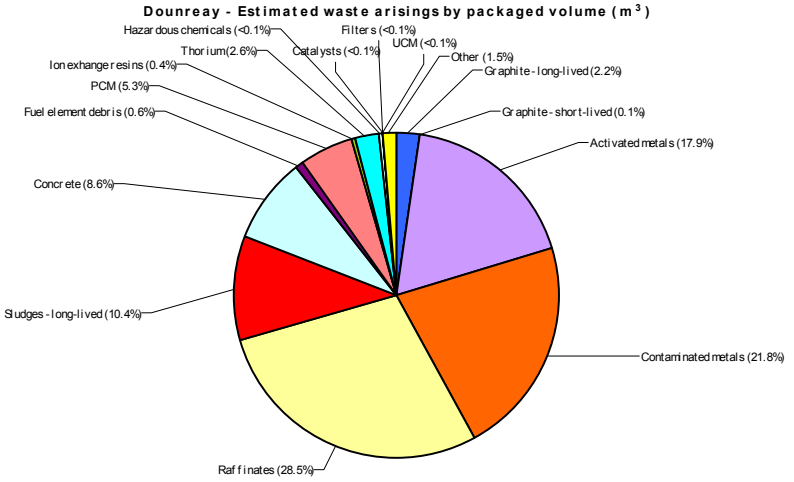

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The Waste

The Waste is categorised as:

- ILW with radioactivity levels exceeding the upper boundaries for LLW but which does not generate enough heat for this to need to be taken into account in the design of storage or disposal facilities; and
- LLW as defined in the March 2007 LLW policy

The 2007 UK Radioactive Waste Inventory describes waste volumes in terms of the above categorisation.

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Position of Scotland's Higher Activity Radioactive Waste Policy

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Definitions – long-term

- **The Policy**
- defines **long-term when applied to a storage facility** as at least 100 years, with the capability of extension beyond 100 years
- recognises that, in the management of radioactive waste facilities, it is now generally accepted as a matter of custom and practice that 300 years is an acceptable period for institutional control.
- This definition for long-term storage reflects the present approach to institutional control.

Definitions – long-term

- **Disposal facilities** would require to be capable of existing for much longer time periods. It will be for regulators to be satisfied that an environmental safety case can be met which complies with the principle that:
  - The level of protection provided to people and the environment against radiological hazards of the Waste both at the time of disposal and in the future is consistent with the standards at the time of disposal.

Definitions - near surface

- The definition of **near surface**, **which will apply to both near surface storage and near surface disposal facilities**, is:
  - Facilities located at the surface of the ground or at depths down to several tens of metres below the surface.
  - Near surface facilities may use the geology (rock structure) to provide an environmental safety function, but some may rely solely on engineered barriers. They could include facilities constructed under the seabed but accessed from land
  - Near surface facilities may use existing structures if an acceptable safety case is made.

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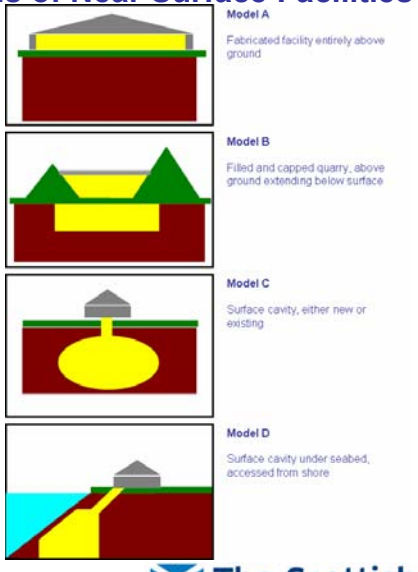
Possible Models of Near Surface Facilities



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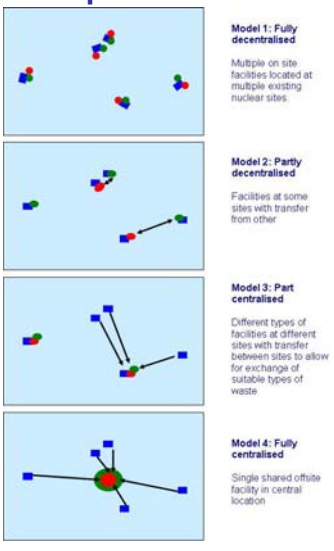
Definitions - near site

- The definition of **near site**, **which will apply to both near surface storage and near surface disposal facilities,** is not prescriptive nor does it determine a specific distance from a site.
- The definition of near site for the Policy is based on the Proximity Principle which is consistent with a risk informed approach to managing and regulating the Waste.
- The Policy allows the Waste to be moved from a site for treatment, long-term storage or disposal. It does not require such treatment, storage or disposal to take place on the site where the Waste has arisen.

Possible spatial interpretations of the Policy



Definitions - Storage and Disposal

- **The Policy now covers both storage and disposal**.
- These terms have specific internationally recognised and accepted definitions when applied to radioactive waste management.
- The definitions for the Policy are:
  - **Storage is** placing the Waste in a suitable facility **with the intent to retrieve** it at a later time.
  - **Disposal is** the emplacement of the Waste in a specialised land-based disposal facility **without the intent to retrieve** it at a later time.

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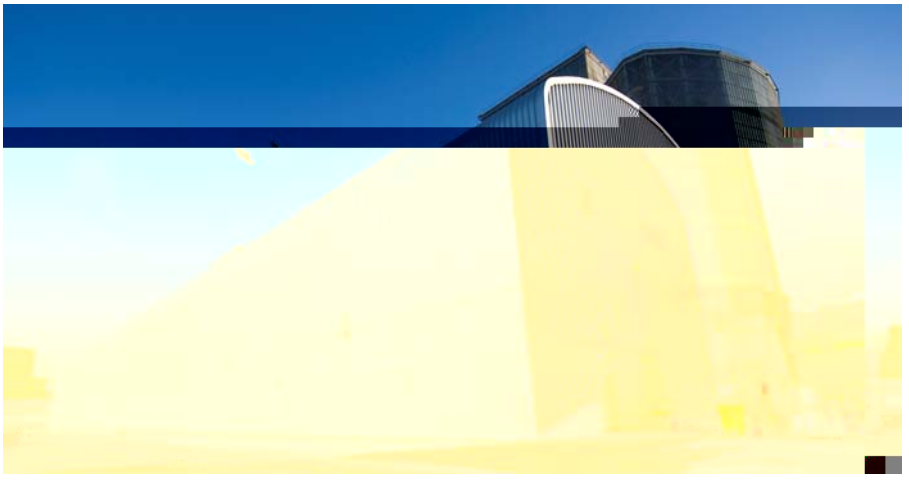
An example of an Intermediate Level Waste storage facility at Hunterston A



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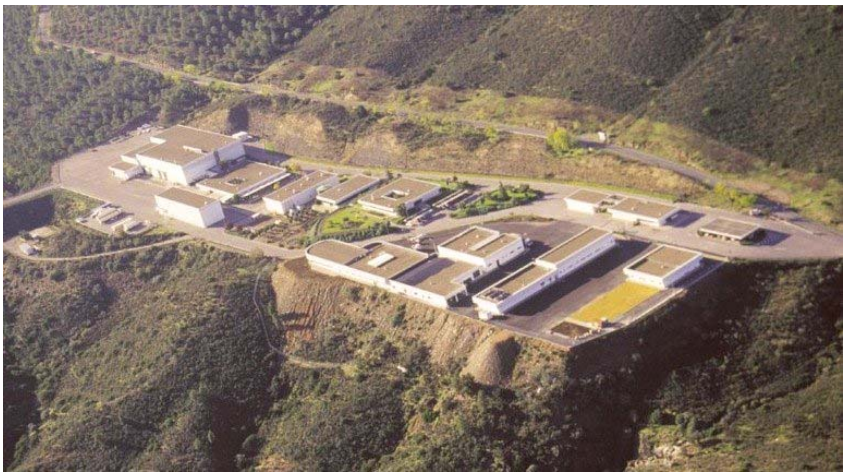
An example of an Intermediate Level Waste disposal facility at El Cabril in Spain (Courtesy ENRASA S.A)



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Definitions - Monitorable

- The Policy reflects the well established regulatory framework in Scotland for the management of the Waste which include monitoring requirements
- The Policy:
  - does not prescribe how monitoring should take place, that is a matter for operators to determine to the satisfaction of regulators;
  - requires regulators to be satisfied that the monitoring of treatment, storage or disposal facilities is sufficient to ensure that there is protection of the environment and people in accordance with the definition of long-term.

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Definitions - Retrievable

- **The concept of Retrievability is different for storage and disposal and this is reflected in the definitions of storage and disposal in the Policy.**
- The Policy definition for **storage already has retrievability as an inherent concept** and this will be built into the design and management plan of any storage facility.
- Explicit in the definition of disposal is that there is no intention to retrieve the Waste. It is not to say that if at some point in time material needed to be recovered that it could not happen, rather that there is no intent to do so.

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Definitions - Retrievable

- **The Policy defines retrievability when applied to a disposal facility as the possibility of reversing the action of waste emplacement and recovering the Waste.** This reversal and recovery could happen before or after a facility is closed.
- The Policy requires a developer to consider retrievability when planning a near surface disposal facility. It is for a developer to demonstrate to the satisfaction of the regulators when a facility might be deemed to be capable of closure. It is for the regulators to determine whether such closure is possible.

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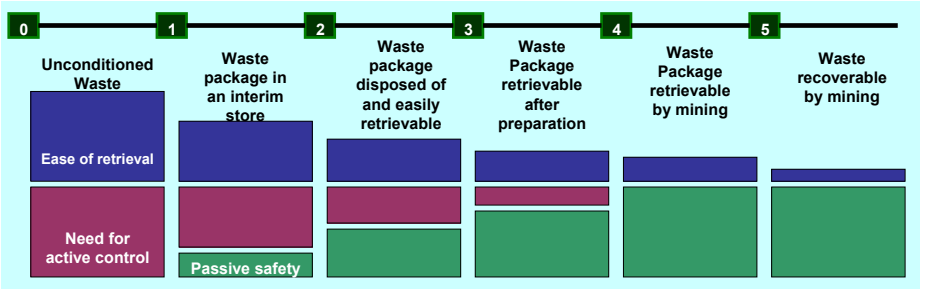
Lifecycle stages, retrievability, passive safety and active controls



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Definitions - need for transport over long distances is minimal

- The Policy recognises that some transportation of the Waste may be needed, for example, for treatment and this addressed in some detail in the Environmental Report
- The Policy **does not further define this requirement** as the use the Proximity Principle to define near site already requires consideration to be given to transportation issues.
- It will be for developers to determine, to the satisfaction of the regulators, the implications of transportation when considering the environment, health, safety, security and transport requirements for treatment, storage or disposal options.

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Environmental Assessment

- **High level** assessment of policy principles
  - Not locationally specific
- Reviewed the baseline environment and existing situation
- Considered theoretical effects of the policy
- Explored available evidence to define likely environmental effects
- Discussed emerging findings with key stakeholders

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Environmental Assessment Key Findings

- Near surface facilities:
  - Regulatory frameworks exist to control risk of radiological exposure to people and the environment
  - Infers inter-generational responsibility for management

    …but also leaves long term options open by facilitating retrievability
  - Mixed views on capacity of future generations to cope
  - Treatment to reduce the volume of waste would be beneficial

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Environmental Assessment Key findings

- Near site facilities:
  - Having only 'on-site' facilities may not be feasible in the long term due to constraints (climate change, transport networks)
  - Location should be defined by the nature of the waste and the character of the receiving environment
  - Minimising transportation distance should not outweigh other considerations
- Effects arising from the construction of facilities will require mitigation

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Environmental Assessment Conclusion

- First step in a longer process of identifying the environmental effects of the policy
- Possible significant effects will be mitigated through regulatory frameworks
- Some effects remain uncertain such as Timescales
- The Policy provides a flexible approach, taking these uncertainties into account

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Environmental Assessment Conclusion

- Population and human health
  - No additional risk of radioactive exposure and therefore significant direct effects on population and human health is expected, providing that existing regulatory regimes and advice are adhered to during the design and construction of facilities, and associated transportation of the Waste.
  - Effects could arise during the construction of facilities, in the form of disturbance, noise, dust and transport related impacts. These would be temporary and are not expected to be significant, subject to mitigation including good practice during construction.
  - Long-term negative effects are primarily associated with the responsibility for managing facilities that relatively accessible, largely stored waste implies. However, over the same time span, positive effects could equally be envisaged where future generations are empowered by the Waste being more readily retrievable, allowing them to deal with the Waste as more sustainable treatment or disposal options become available.

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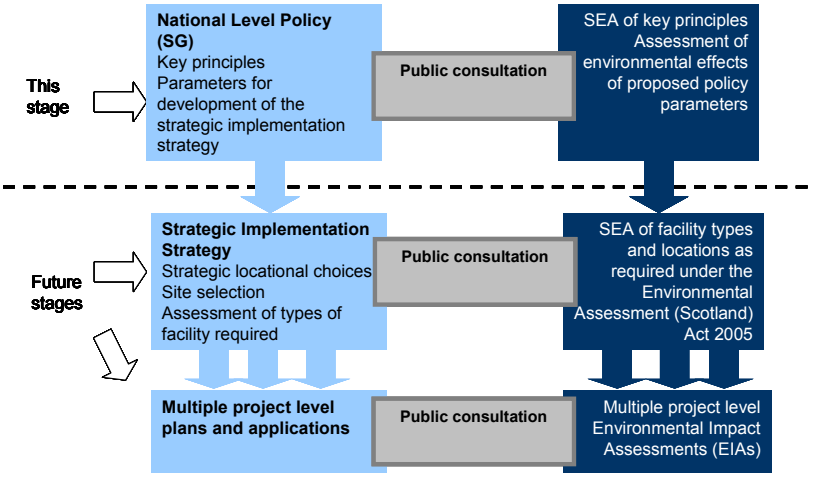
Hierarchy of decision making and environmental assessment for policy development and implementation



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Environmental Assessment Key Questions

- What are the environmental effects of storage, disposal and treatment?
- What are the effects of 'near surface' facilities?
- What are the effects of 'near site' facilities?

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Scotland's Higher Activity Radioactive Waste Policy

*"…**support long-term near surface, near site storage and disposal facilities so that waste is monitorable and retrievable and the need for transporting it over long distances is minimal**"*

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SUMMARY

- Not a consultation about siting
- High Level framework to enable informed decisions to be taken to manage waste
- Enables waste producers, owners, and regulators to understand the implications of the Policy and to prepare plans to manage the waste in the long term
- Enables local community stakeholders to comment on the proposals and understand how they might be affected by them
- Policy based on the higher activity radioactive waste we have in Scotland as defined in the UK Inventory

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NEXT STEPS

- Continue to engage with stakeholders during the process and after publication.
- Consider and take account of responses to the Consultation documents.
- Develop strategy for implementation.
- Publication of responses and the Detailed Statement of Policy for Scotland's Higher Activity Radioactive Waste Policy.

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NEXT STEPS

- Look forward to receiving responses **DEADLINE is 9 April 2010**
- Please send your response, including the **Respondent Information Form** to:
- Radioactivewasteteam@scotland.gsi.gov.uk
- Or
- Scotland's Higher Activity Radioactive Waste Consultation
- Scottish Government
- Waste and Pollution Reduction Division
- 1-J Dockside
- Victoria Quay
- Edinburgh
- EH6 6QQ
- If you require further clarification please contact us on the email address above or 0131 244 0199

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- More information on radioactive waste and Scotland's Higher Activity Radioactive Waste Policy consultation can be found on the Scottish Government website at:

http://www.scotland.gov.uk/Topics/Environment/waste-and-pollution/Waste-1/16293

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