

# Low Level Waste Repository

Our review of the Environmental Safety Case

February 2012

## Foreword

This is the first of a series of progress reports on our review of the Low Level Waste Repository's Environmental Safety Case, leading up to our review of the site's environmental permit.



Photograph of the LLWR taken from the North West, Courtesy of LLW Repository Limited

## Introduction

The Low Level Waste Repository near Drigg (LLWR) is used for the disposal, by burial, of low level radioactive waste (LLW). In May 2011 the operators of the site, LLW Repository Ltd, submitted an updated Environmental Safety Case (ESC) to us, as required by their Environmental Permit. We are carrying out a technical review of this ESC and we aim to publish our review in Spring 2012. We also anticipate LLW Repository Ltd applying to us late in 2012 to vary their permit to allow continued disposal of radioactive waste at the site. We will review and consult upon this application, which will be supported and informed by the ESC and our technical review of it.

## The importance of this review

LLW is generated by the nuclear industry (e.g. power generation) and non-nuclear sources (e.g. hospitals). As the environmental regulator we ensure that the nuclear industry minimises the

generation of LLW. However, some capacity is still required to dispose of LLW, to enable continued operations and to facilitate the decommissioning of old facilities. The LLWR is one of the facilities in the UK designed for the disposal of LLW and is the only UK site designed to take the majority of LLW types and the volumes required.

When the last ESC was submitted in 2002 we found it to be incomplete. As a result we were only able to authorise the disposal of LLW into the existing Vault 8. Vault 8 is now full and LLW Repository Ltd are asking for a permit to dispose in subsequent vaults. If we are to authorise this, we must be satisfied that the disposal of waste will be safe for people and the environment both now and in the longer term. The updated ESC aims to demonstrate this.

The ESC is a significant body of work looking at many issues associated with the safety of past and future disposals. The ESC should provide scientific evidence of environmental safety, to include:

1. Waste inventory assessment and chemistry
2. Geology and hydrogeology
3. Engineering assessment
4. Coastal and site evolution
5. Optimisation of the disposal design
6. Management and operation of the facility
7. Dose and impact assessments resulting from any releases into the environment (radiological and non-radiological)

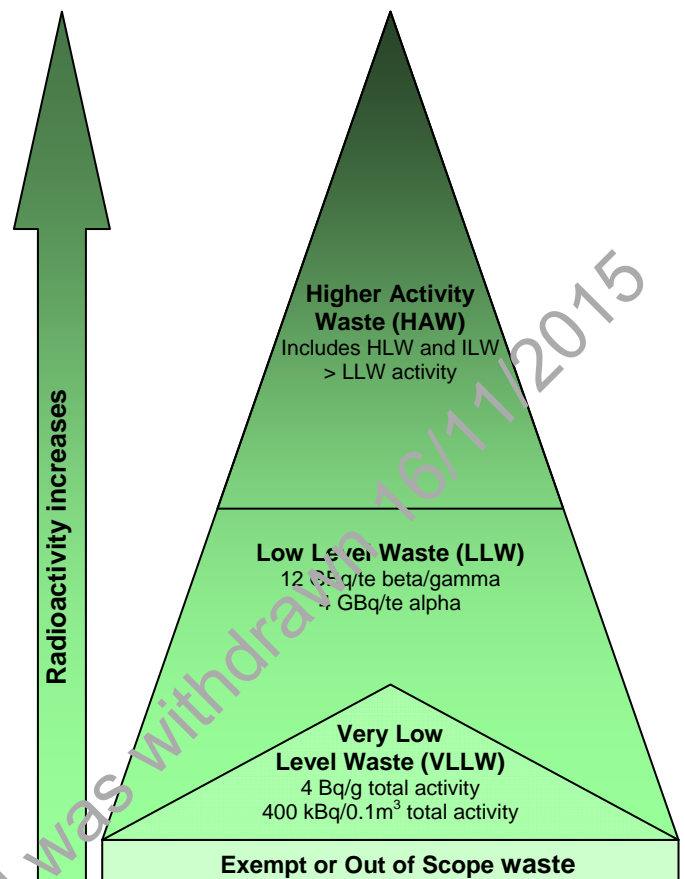
It is important that this review is thorough and reaches a firm conclusion to ensure the continued protection of people and the environment. It must provide certainty with regards to future LLW disposal capacity in the UK. Our review and subsequent permit consultations and determination could conclude that disposals at the LLWR can continue safely, or can continue with significant limitations, or must be stopped.

## LLW and other radioactive waste categories

In the UK radioactive waste is divided into a number of categories. Government policy is to manage them by different means, based upon the hazard presented.

Higher activity waste (HAW) includes High Level Waste (HLW) and Intermediate Level Waste (ILW). These wastes are extremely hazardous and require shielding to handle. Current Government policy in England and Wales for HAW disposal is deep geological disposal. Currently consultations and discussions are ongoing to identify a volunteer community to develop a deep disposal facility, which is currently anticipated to be available around 2040. In the meantime wastes are being stored under controlled conditions.

LLW is also hazardous but can generally be handled with limited protection. Government policy is for near surface disposal of LLW by burial. At present the operators of the LLWR hope that it will be able to provide the majority of the necessary disposal capacity for the UK. However, other LLW disposal facilities do exist such as sites at Clifton Marsh and Kings Cliffe and more sites are in development by operators such as at Keekle Head and Dounreay in Scotland. Various designs are used or proposed, but they generally involve isolation of the waste through packaging and/or engineering containment (e.g. caps, impermeable layers) near to the surface.



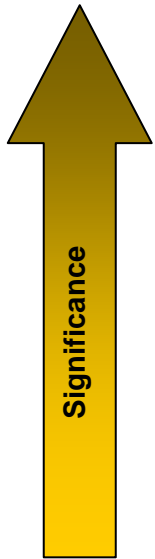
## ESC review progress and timescales

Our review of the ESC is being delivered by the Environment Agency's Nuclear Regulation Group with the support of our Nuclear Waste Assessment Team and other experts within the Environment Agency. The review has been broken down into a number of stages.

The first stage was an 'initial review' which ran for 4 months from May 2011. We focussed on gaining a general impression of the submitted ESC, identifying the main arguments presented and understanding how the case was structured. We undertook familiarisation visits to the LLWR and received presentations from LLW Repository Ltd on each area of the ESC. As an output from this initial phase we prepared a forward review plan and also identified a number of areas where we required further information from LLW Repository Ltd.

The next stage of the review is running through to January 2012. This is a more detailed review of the evidence provided, focussing initially on underpinning evidence such as site understanding and the inventory, whilst also looking at the basic framework presented for the assessment of impacts. We have continued to identify areas where we require further information from LLW Repository Ltd. Through to summer 2012 we will start to focus on the final stage of the review, focussing on the outcomes of the assessment and evidence supporting assessment assumptions and calculations, as well as responses to further information requests.

We have established an 'issues resolution process' whereby any significant questions, queries or further information requests we identify are formally raised with the operators, under one of three categories:



Category	Description	Examples to date
Regulatory Issue	The most significant issues, which if not adequately addressed could lead to us being unable to permit further disposals or to severely limit or condition disposals.	Provide further evidence to support the acceptability of impacts from Carbon-14 bearing gases released from the waste mass. Provide further evidence around the optimisation of the disposal design (e.g. vault sequencing, water ingress protection).
Regulatory Observation	Significant issues, which if not adequately addressed, could lead to significant limitation of disposals or permit conditions.	Develop a robust process to manage future changes to the ESC. Demonstrate long term management of records arising from the ESC.
Technical Query	Simple questions, unlikely on their own to affect any regulatory decision.	Explain how waste already disposed within Vault 8 will be subjected to future waste emplacement strategies (e.g. placing higher impact wastes lower).

The review to date has also made positive progress in certain areas. For example our review of the potential for criticality within the waste is nearly complete and we are so far satisfied with the assessment presented. We have nearly completed our review of LLW Repository Ltd's coastal evolution studies and have found no reason to disagree with their findings that coastal erosion of the site is likely to occur over a period of between a few hundred and a few thousand years.

Overall our review progress is broadly on track, although we are identifying more issues than anticipated, which may delay subsequent aspects of the technical review. However, we believe we can manage the review programme such that we still expect to be able to publish the findings of our technical review by Spring 2013, as planned.

### Planning permission

Both planning permission and an environmental permit are required for disposal of waste at LLWR. In June 2011 LLW Repository Limited submitted a planning application to Cumbria County Council for construction and disposal in further vaults, along with construction of closure engineering (e.g. final cap). These two applications are closely linked, for example the ESC may influence certain elements of the planning application (e.g. cap shape, import of materials) and the planning permission may influence the ESC, if for example it proves necessary to require changes to the proposed design.

We provided an initial response to the planning application during October 2011. We objected to the application on the grounds of lack of information in certain areas, including habitats assessment, details on the closure engineering design and construction and information on management and monitoring. We are working closely with Cumbria County Council and LLW Repository Ltd to seek the additional information. We will provide further comment back to Cumbria County Council around summer 2012, once we have completed our core technical review of the ESC and are able to comment more fully on the acceptability of the case to us. We then anticipate a planning decision will be made prior to our determination of any permit variation application, during 2013.

### **Stakeholder communications**

It is a key responsibility of the applicant to communicate effectively with community members, groups and professional partners. However, we have and will continue to work with LLW Repository Ltd to help ensure communication is effective and encompasses all interested parties. For example, in May 2011 we worked with LLW Repository Ltd to support them in issuing a letter informing stakeholders of the ESC publication.

We have and will make presentations at the LLWR sub committee of the West Cumbria Site Stakeholder Group as relevant and will issue further update notes like this one on a periodic basis. We would welcome any suggestions for topics of interest.

Our web site at [www.environment-agency.gov.uk/llwr](http://www.environment-agency.gov.uk/llwr) provides answers to a number of frequently asked questions on our review of the ESC and wider issues relating to our regulation of the site.

### **Opportunities to comment**

For now we would recommend that any queries with regards to the ESC are addressed to LLW Repository Ltd and contact details are provided on their web site at [www.llwrsite.com](http://www.llwrsite.com).

When we receive an application for a variation to LLW Repository Ltd's permit, which is anticipated to be late 2012, we will actively consult upon this. Following on from this consultation, we will prepare a draft decision on permitting the site based upon our published technical review of the ESC, the permit application and comments received. We will again consult upon this and will welcome comments on the technical aspects of our review of the ESC. Following these consultations we will reach a decision and publish this.

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