

Low Level Waste Repository

Our review of the Environmental Safety Case

September 2012

Foreword

This is the second of a series of progress reports on the Environment Agency's review of the Low Level Waste Repository's Environmental Safety Case, leading up to our review of the site's Environmental Permit and a decision on granting a revised Environmental Permit for on-going disposals at the site.

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 the Environment Agency, as required by their Environmental Permit. We are currently carrying out a technical review of this ESC and aim to publish our conclusions around spring/summer 2013. We anticipate that LLW Repository Ltd will apply to us late in 2012 or early 2013 to vary their Environmental Permit to allow continued disposal of radioactive waste at the site. We will review this application and consult with others. The application will be supported and informed by the ESC and our technical review of it.



Photograph of the LLWR taken from the north west, courtesy of LLW Repository Ltd

The importance of this review

LLW is generated by the nuclear industry, for example in power generation, and also by other non-nuclear sources, such as hospitals. LLW is typically made up of contaminated operational wastes such as protective clothing, paper, metals, rubble and soil.

As the environmental regulator, we work with the nuclear industry to ensure that it seeks to minimise the amount of LLW requiring disposal by reducing, reusing and recycling as much waste as possible. However, some capacity is still required to dispose of LLW, to enable continued operations and facilitate decommissioning of nuclear facilities. Government policy is for the near surface disposal of LLW by burial. The LLWR is one of the facilities in the UK able to dispose of LLW and is the only UK site currently designed to take nearly all LLW types, up to the maximum radioactivity for this category of waste, 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 disposal of LLW into the vault that was already being used at that time. This vault (Vault 8) is now full and LLW Repository Ltd is asking for a permit to dispose of LLW in other vaults. The Environment Agency will only authorise this if we are satisfied that disposal of LLW at this site will be safe for people and the environment both now and in the longer term. LLW Repository Ltd has aimed to demonstrate this in their updated ESC.

The ESC is a significant volume of work looking at many issues associated with the safety of past and future disposals at the site. Its key objective is to provide scientific evidence of environmental safety. It is important that the Environment Agency's review is thorough and reaches a clear conclusion about the continued protection of people and the environment. It must provide certainty with regards to future LLW disposal capacity in the UK.

Environmental safety case review process

A key reference point for our review is the joint environment agencies' published document on the guidance on requirements for the authorisation of near surface disposal (the GRA)¹.

The Environment Agency's conclusion from our review and any permitting decision will be predominantly a technical one, taking account of the scientific evidence presented. We will take due account of other issues, such as nuisance or concerns about the operation of the site. Such issues, however, may not be directly within our remit to consider, or we may not be able to give them significant weight within our decision, in line with our role and current regulations. We will aim to work closely with our partners (e.g. Office for Nuclear Regulation, Department for Energy and Climate Change, Department for Environment Food and Rural Affairs, Cumbria County Council, and Copeland Borough Council) to listen to their concerns and inform them of any issues we may have with the information provided in the ESC.

We have now completed the first two stages of our technical review: the 'initial review' and the 'detailed technical review'. We are now in the third and final stage of our review and are focussing on the outcomes of the assessment presented by LLW Repository Ltd, together with the evidence that supports their assumptions and calculations. We are also looking at the company's responses to our requests for further information.

To support the completion of the technical review, we have developed an issues resolution process. This is a way of formally raising significant questions, queries or requests for further information, with the operator.

We have made good progress across much of the review and are satisfied with the evidence presented in the ESC in many areas. The ESC presents a reasonable understanding of the site and the waste that has been deposited there, as well as the likely behaviour of the waste and the site over time. It presents a reasonable

¹ Near Surface Disposal Facilities on Land for Solid Radioactive Wastes. Guidance on Requirements for Authorisation. February 2009. Northern Ireland Environment Agency, Scottish Environment Protection Agency, Environment Agency.

assessment of the environmental impact of the waste, which on the whole is consistent with the assessment criteria in the GRA.

However, the Environment Agency has had to seek clarification, or further information, on a number of areas. These have ranged from simple queries for clarification or to ensure completeness of the ESC, through to more significant areas of concern that have required additional assessment or justification from LLW Repository Ltd. Some of the key areas we have prioritised are discussed below.

Key issues

Coastal erosion

Evidence provided by LLW Repository Ltd in the ESC suggests that the site is very likely to be subject to coastal erosion after a period of several hundred to thousands of years in the future. This has been a key focus for the Environment Agency in our review of the ESC. We have examined the evidence behind this carefully and find no reason to disagree with their findings. Therefore, we are treating the likelihood of coastal erosion happening, at some point in the future, as the most likely scenario for the site. LLW Repository Ltd's evidence suggests that the sea will begin to erode the site and the waste, eventually exposing it to the environment and ultimately dispersing it into the sea. For the Environment Agency to be able to consider permitting further disposal of waste at the site, LLW Repository Ltd must demonstrate to us that such erosion would not have impacts on people or the environment that are unacceptable, or outside of current legal targets.



Photograph of Drigg Beach, courtesy of LLW Repository Ltd

LLW Repository Ltd has presented what the Environment Agency believe is a broadly acceptable demonstration of the acceptability of coastal erosion for many aspects of the ESC. However, we have raised some specific concerns around this demonstration through our issue resolution process and are assessing LLW

Repository Ltd's responses. This links to some of the other issues discussed below.

Assessment of non-radiological risks

We have some concerns about the approach LLW Repository Ltd has used to assess possible non-radiological impacts at the site. These include the scale of impacts in the longer term future (hundreds of years), the potential for hazardous materials to leach from the bulk grout used to stabilise the waste, the use of monitoring data and the overall clarity of approach in the assessment. We require LLW Repository Ltd to clarify these issues before our review of the ESC can be properly concluded.

Asbestos

The LLWR has been used for the disposal of radiologically contaminated asbestos waste. We have asked LLW Repository Ltd to provide us with an assessment they have commissioned on the impacts of asbestos in the future, should coastal erosion occur and the waste is exposed. This will enable us to decide whether more asbestos should be disposed of at the site.

High specific activity particles and items

We have asked LLW Repository Ltd to assess the possible impacts of individuals coming into contact with high specific activity particles or items that could be within the waste at the LLWR. Although the radioactivity of the waste will overall decrease with time, some particles or items within the waste could remain, for example radium paints, trace plutonium oxide powders adhered to waste or items (objects, such as equipment or building materials) with a high specific activity.

People could potentially come into contact with these particles or items in a number of different ways, such as ingestion or inhalation, if the waste becomes exposed due to coastal erosion or the site is used for another purpose (e.g. excavation or drilling). If this happens there is a risk that people could be exposed to relatively high radiological doses. However, the probability of any one individual encountering them is very low. We are working with the Health Protection Agency to review the information provided by LLW Repository Ltd and reach a conclusion on possible impacts.

Waste container and grout condition surveys

Waste is delivered to the LLWR in metal ISO-freight containers. These are then filled with grout, which is designed to provide long term stability to the waste when the site is closed and a cap,

comprising of a number of protective layers, is put in place. Following investigations with LLW Repository Ltd earlier this year, we have concerns that some of the containers may be in a poorer condition than expected and the grout may be degrading or shrinking, creating gaps in the containers. The main implications of this could be excessive settlement of the cap after it has been put in place, which may allow water to leak in through the cap, and into the waste. Increased discharges may also result prior to the waste being covered by the cap if the containers and grout are not adequately containing the waste.



Waste container disposal in vaults at the LLWR, courtesy of LLW Repository Ltd.

In response to this, LLW Repository Ltd is surveying a large number of the containers and the condition of the grout, as well as assessing any radiological releases. They will then look at any necessary actions to address possible problems, and consider the implications for future vault and container design, as well as future operations. The first phase of this programme is due to be completed around late September 2012. In the short term, we expect LLW Repository Ltd to demonstrate that any degradation of the containers and grout can be resolved by short term actions or addressed in the design of the final cap for the site.



A cross-section of a grouted waste container, courtesy of LLW Repository Ltd.

We have also asked LLW Repository Ltd to provide information on how the vault and disposal designs can be improved. We believe the waste container designs and plans for vault capping can be improved to provide more effective protection for the waste from water and degradation. We expect LLW Repository Ltd to carry out further work to investigate such improvements. One key element of this will be looking at the period that waste containers remain exposed before the final capping of the site takes place.

Timescales

Overall progress of our review of the ESC has been reasonable. However, the Environment Agency has asked LLW Repository Ltd to supply further information on a range of issues, including those detailed above and we will need to review this information once we receive it. This detailed technical review is vital to allow us to reach a robust decision, underpinned by detailed analysis of the evidence provided.

We anticipate that we will complete our technical review around the end of 2012, or early 2013, and publish our technical review outcomes around late spring/summer 2013. This is subject to LLW Repository Ltd supplying suitable further information. We anticipate that we will receive an application for a permit variation from LLW Repository Ltd around the end of 2012 or early 2013. We will then consult on the application around spring 2013 and on our draft decision around autumn 2013. We expect to be able to make a final decision around the end of 2013.

Planning permission

Both planning permission and an Environmental Permit are required for disposal of waste at the LLWR. In June 2011, LLW Repository Ltd submitted a planning application to Cumbria County Council for construction and disposal in further vaults, along with construction of closure engineering (e.g. the final cap).

In October 2011, we provided an initial response to the Council's consultation on this application. We objected due to a lack of information in certain areas, including habitats assessment, closure engineering design, and management and monitoring. The Council is awaiting a response

from LLW Repository Ltd and we are continuing to work with both the Council and the company to obtain the required information.

Once we have completed our full review of the ESC we will inform the Council of our conclusions and provide any feedback that will be relevant for their planning decision. We anticipate that a planning decision will be made prior to our determination of any permit variation, during 2013.

Article 37

In line with Article 37 of the Euratom Treaty, Member States must, under certain circumstances make submissions in relation to relevant nuclear sites to the European Commission (EC) for an opinion on possible impacts to other Member States. It is anticipated that further permitting of the LLWR would in effect increase disposal limits, so a submission is required. LLW Repository Ltd has started preparing this submission, which must include general data relevant to site operations, closure, and certain types of accident. Once this is submitted by the UK Government, the EC typically responds with an opinion within six months, subject to requirements for further information. We cannot issue an environmental permit to the operators until an opinion has been received.

Communications

It is a key responsibility of the applicant (LLW Repository Ltd) to communicate effectively with community members, groups, and professional partners. We will continue to work with LLW Repository Ltd to help ensure communication is effective and targets all interested parties. LLW Repository Ltd will be hosting an open day on 20 September 2012 at Drigg Village Hall. The purpose of the event is to allow local residents to ask LLW Repository Ltd questions on the ESC and expected permit application. The Environment Agency will be available on the day to explain our role and to answer any questions.

The Environment Agency aims to ensure that local residents and other interested organisations are well informed as to our review of the ESC and understand the process. We plan to give presentations and provide reports to the LLWR sub-committee of the West Cumbria Site Stakeholder Group, and produce further external

briefings. We will continue to place information on our website (www.environment-agency.gov.uk/llwr) including answers to a number of frequently asked questions. As part of the consultation, we will hold open public information events at key points in the process and give presentations to interested groups and organisations.

Opportunities to comment

At this stage in the process, we recommend that any queries with regards to the ESC are addressed to LLW Repository Ltd. Full contact details are provided on their web site at www.llwrsite.com.

When we receive an application for a variation to LLW Repository Ltd's permit, which is anticipated to be around the end of 2012 or early 2013, we will actively consult on this. Following on from this consultation, we will prepare a further consultation document incorporating our provisional views and decisions on permitting the site. This will be based on our published technical review of the ESC, the permit application, and comments received. We will hold another consultation on this document 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.

Environment Agency contact

Andrew Fairhurst, Nuclear Regulator
Tel: 01768 215729
Email: andrew.fairhurst@environment-agency.gov.uk