



# **ENVIRONMENTAL PERMITTING REGULATIONS 2010**

## **Explanatory Document**

**Consultation on Sita (Lancashire) Ltd.'s application for a radioactive substances activity permit, reference CD0235**

**2 June 2011**

## Introduction

We have received an application from Sita (Lancashire) Limited for a permit under the Environmental Permitting (England and Wales) Regulations 2010<sup>1</sup> to dispose of solid, low level radioactive waste at their landfill premises at Clifton Marsh, Preston New Road, Lancashire. We wish to consult with relevant public bodies prior to granting or refusing the application.

This document summarises the application made, our initial (and ongoing) assessment, our consultation process and forward plans. It accompanies copies of the application (which consists of an Environmental Safety Case and Radiological Risk Assessment, plus supporting references). Also enclosed is additional information provided by Sita (Lancashire) Limited in response to a request made by us.

We have also provided a copy of a draft Environmental Permit. This draft permit illustrates the type of certificate that we would issue, should the application be successful.

Details of our guidance on disposal of radioactive waste to landfills and some 'frequently asked questions' on the subject can be found on our website at:

<http://www.environment-agency.gov.uk/business/sectors/100241.aspx>

## Background

Low level radioactive waste is already disposed of at Clifton Marsh, authorised by permits held by sites that generate the waste. Although those permits remain effective, compliance requires collaboration between the consignor and the landfill operator, and we decided several years ago that regulation would be improved if the landfill site operators themselves held permits. Sita's decision to apply for a permit took account of this change in our approach.

The Clifton Marsh facility is a conventional, waste disposal landfill site, accepting conventional waste mainly from Preston, Blackpool and Fylde areas, as well as radioactive waste. Most of the non-radioactive disposals fall into the categories of degradable household, industrial, and commercial wastes; inert waste and contaminated soils.

An adjacent landfill site to the West of Clifton Marsh, now referred to as Grange Farm, was used for waste disposal up to 1986. The Clifton Marsh site was licensed and came into operation in 1986; the waste management licensing regime has evolved since then, and we now regulate conventional waste disposals by way of an Environmental Permit, reference number BK2348IU. Low level radioactive waste disposal at Grange Farm and Clifton Marsh commenced in 1974, through authorisations granted originally to British Nuclear Fuels Ltd. in respect of their sites at Capenhurst and Springfields. The authorisations are now Environmental Permits and are held by Urenco UK Ltd. and Sellafield Ltd. (at Capenhurst) and Springfields Fuels Ltd. If we decide to grant Sita's application, we would vary those permits such that consignors would be authorised for transfer of their waste, but not its actual burial (which would fall within Sita's permit).

---

<sup>1</sup> Prior to 2010, radioactive waste disposal required authorisation under the Radioactive Substances Act 1993, which has been superseded by the 2010 Regulations.

## Scope of the application

*Type of waste to be disposed:* Solid, low level waste (LLW).

*Disposal route:* Burial alongside non-radioactive controlled wastes at the Clifton Marsh Landfill site, Lancashire.

*Available landfill capacity:* The estimated total remaining site capacity is 2.5 million cubic metres. Assuming planning permission is granted such that disposals to the landfill continue to 2020, this would be equivalent to about 250,000 m<sup>3</sup> of waste per year. LLW would represent about 10% by volume of these disposals.

*Proposed approach to limitation:* Disposals will only be permitted until the expected end of site life (in 2020, assuming other relevant consents are in place), and disposal activities will be limited annually to ensure that the site lifetime inventory of radionuclides stays within quantities derived in the Environmental Safety Case. Specific activity limits (activity per unit weight) will also be applied.

*Non-radioactive properties:* Will be consistent with the waste types currently landfilled at the site, as regulated through the existing Environmental Permit for the site (BK2348IU<sup>2</sup>).

## Application documents (including updates following requests for more information)

1. Application letter, dated 2 November 2009.
2. Response to the Environment Agency's Questions requiring further information from Sita (Lancashire) Ltd., dated 2 May 2010.
3. Environmental Safety Case for the Disposal of Very Low and Low Level Radioactive Waste at the Clifton Marsh Landfill Site, Issue 3, dated 9 December 2010.
4. Radiological Risk Assessment and Capacity Calculation for the Clifton Marsh Landfill Site, Issue 2, dated 6 May 2010.
5. Addenda to Radiological Risk Assessment and Capacity Calculation for the Clifton Marsh Landfill Site, Issue 2, dated 19 January 2011.

## Radiological Assessment

Sita have provided an assessment of the radiological impact on members of the public and hypothetical future users of the site as a result of the historical and proposed future

---

<sup>2</sup> BK2348IU is the official reference number for the landfill permit, and applies to all subsequent variations, of which the most recent was referenced LP3132LC.

disposals. Their assessment is conservative, looking at impacts that are expected to occur (such as impacts from releases into groundwater) and those that are not certain to occur (such as construction of properties on the landfill in the future after knowledge of the site is lost). An initial, simplified approach suggested that the highest doses for comparison against the criteria would be associated with the following exposure pathways –

<b>Operational phase</b>	Normally expected to occur	Public – exposure to aerosols formed from leachate lagoons
	Not certain to occur	Leachate spillage – ingestion of fish
<b>Post-closure phase</b>	Normally expected to occur	Seafood consumers – ingestion of samphire
	Not certain to occur	Human intrusion – site resident exposure to Rn <sup>222</sup>

The table below summarises Sita’s results in comparison to our regulatory screening criteria and background doses.

<b>Category</b>		<b>Exposure pathway</b>	<b>Maximum Estimated Doses mSv/year</b>	<b>Regulatory Criterion for a simplified approach mSv/year</b>	<b>Average UK Radiation Doses from all sources</b>
<b>Operational phase</b>	Normally expected to occur	Public – farming family (via sludge used for land conditioning)	0.017 #	0.02	2.7 mSv yr <sup>-1</sup> , taking account of natural and other man-made sources
	Not certain to occur	Leachate spillage – ingestion of fish	0.89 *	1	
<b>Post-closure phase</b>	Normally expected to occur	Seafood consumers – ingestion of samphire	0.0053 \$	0.02	
	Not certain to occur	Human intrusion – site resident exposure to Rn <sup>222</sup>	12.7 £	1	

Notes

# This is the calculated dose from cobalt-60 if that accounted for all the disposals of the most restrictive group of beta emitters, at the disposal limit. If all other radionuclide groups were disposed of at maximum limits, the sum of the total

individual doses would be about 0.02 mSv/year; however, because the dose contributions peak at different times, the critical group dose would always be less than the criterion in any one year.

- \* This is the calculated total dose from all radionuclides, but only including carbon-14 from the most restrictive group of beta emitters, at the disposal limit. Because the dose contributions from different radionuclides peak at different times, the critical group dose would always be less than the figure given, in any one year.
- \$ This is the hypothetical calculated dose from all radionuclides at their disposal limits. Because of (i) the use of group limits and (ii) the dose contributions peaking at different times, the critical group dose would always be less than the figure given, in any one year.
- £ This figure is based on radon diffusing directly from the waste mass into property assumed to be built on top of it. The applicant states that no account has been taken of any foundations or concrete at the base of a house.

The first three figures are below the relevant criterion for a simplified approach, but the fourth is higher, warranting further consideration. Greater potential impact represented by higher calculated doses has to be balanced against the probability of that scenario – house building – actually taking place. We consider house building on a disused landfill site close to an estuary unlikely in practice. Even if it occurred, the risks from radon are well recognised and can be readily mitigated, just as radon risks are already managed successfully in other parts of the UK, such as Cornwall.

## **Consultation**

All information relating to this application has been placed on the public register.

We have attended meetings and public exhibitions at Freckleton, Lea and Preston, where we explained our role in the permitting of landfill sites to accept low level radioactive wastes.

We are now consulting

### Statutory Consultees

Fylde Borough Council  
Food Standards Agency  
Health & Safety Executive

### Other consultees

Lancashire County Council (a statutory consultee when application was first made)  
West Lancashire District Council  
Preston City Council  
South Ribble Borough Council  
Newton with Clifton Parish Council

Lea Parish Council  
Freckleton Parish Council

Sita (Lancashire) Ltd. (to check factual accuracy)  
Springfields Fuels Ltd.  
Sellafield Ltd. (Capenhurst site)  
Urenco UK Ltd. (Capenhurst)  
NULEAF (Nuclear legacy advisory forum)

Members of the public who have previously expressed an interest.

### **Monitoring**

Responsibility for monitoring radioactive waste at the point of disposal normally rests with the organisation making the disposal. However, in the case of solid waste received from other permitted sites, it is not usually practicable to monitor more than a fraction of the waste consignments. We expect permitted landfill disposal sites to carry out *some* monitoring of waste receipts – the amount depends on the waste type and radioactive content, notably the strength of gamma-ray emissions (which allow radioactivity to be detected without opening packages). We also expect Sita, if we grant them a permit, to carry out quality assurance checks at the sites consigning waste to Clifton Marsh.

The environmental impact of radioactive waste disposals is kept acceptably low by controlling the quantities of radioactivity and by proper design and operation. Monitoring of the local environment provides direct evidence of impact, and has been an accepted process around nuclear and some other sites, including Clifton Marsh. We currently require Springfields Fuels Ltd. to monitor the local environment for radioactivity, because of their proximity to Clifton Marsh, the presence of their effluent discharge pipeline close to the landfill site, and the fact that their site has contributed most of the radioactive waste disposed of at the site. However, if we grant a radioactive substances activity permit to Sita (Lancashire) Ltd., some of the environmental monitoring requirements will be transferred to Sita. The exact details have yet to be finalised, but we anticipate requiring regular monitoring of leachate and also groundwater extracted from some of the many boreholes distributed around the site.

### **Our considerations and plans**

Based upon our initial assessment of the application, we consider the radiological impact of the proposed low level waste disposals to be low, and within legal constraints. However, we are continuing to review some of the finer details of the radiological assessment, which could affect our final decisions on some of the disposal limits.

Continuing disposal of LLW to Clifton Marsh Landfill will help to reduce the volume of waste going for disposal at the Low Level Waste Repository (LLWR) near Drigg in Cumbria. We support the intention to reduce the overall volume of waste going to the LLWR, to preserve its limited capacity for wastes which warrant higher levels of engineered containment. This intention aligns with the 2007 UK Government and Devolved Administrations Policy for the Long Term Management of Solid Low Level Radioactive Wastes in the United Kingdom, published on 26 March 2007.

Subject to comments from consultees and our further review of technical information, at this stage we consider the application to be broadly sound. We will therefore plan for the issue of a permit to Sita (Lancashire) Limited, containing limits and conditions similar to those set out in the draft environmental permit accompanying this document.

However, we will not make any final decision until we have completed our technical review of the application and reviewed and carefully considered all comments from consultees. No permit will be issued until we are also satisfied that Sita (Lancashire) Limited have appropriate management systems, appropriately skilled resources and monitoring infrastructure in place to comply with the permit requirements.

If we grant a permit to Sita (Lancashire) Limited, we would vary the permits currently held by Springfields Fuels Ltd. and operators based at Capenhurst, revoking their present authorisations to dispose of LLW at Clifton Marsh and replacing them with authorisations to transfer LLW to landfill operators permitted to receive it (and dispose of it). Any other nuclear site operators wishing to transfer LLW for disposal at Clifton Marsh would have to demonstrate, on a case-by-case basis, that transport to and disposal of the waste at Clifton Marsh was the best practicable environmental option.

## **Summary**

Sita (Lancashire) Limited have applied for a radioactive substances activity permit under the Environmental Permitting (England and Wales) Regulations 2010 to dispose of solid low level radioactive waste at their existing landfill premises at Clifton Marsh, Lancashire. We are inviting consultees to comment on the application by 8 July 2011.

Please send an acknowledgement of receipt of this correspondence using the reply slip overleaf.

