

# Permit with introductory note

The Environmental Permitting (England & Wales) Regulations 2010

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LLW Repository Limited

Low Level Waste Repository  
Old Shore Road  
Drigg  
Holmrook  
Cumbria  
CA19 1XH

Permit number  
EPR/YP3293SA

# Low Level Waste Repository

## Permit number EPR/YP3293SA

### Introductory note

#### ***This introductory note does not form a part of this permit***

The permit allows the operator to receive and dispose of radioactive waste on the specified premises which are a nuclear licensed site.

The permit is issued under the provisions of regulation 13 of the Environmental Permitting (England and Wales) Regulations 2010. Those Regulations are concerned, amongst other things, with the control of radioactive material and radioactive waste.

The operator must also comply with other legislation to which the keeping or use of radioactive material and the transfer, accumulation and disposal of radioactive waste is subject. This includes legislation enforced by the Office for Nuclear Regulation.

The main features of the facility are as follows.

The Low Level Waste Repository (LLWR) located near to Drigg receives radioactive waste for near surface disposal by burial. Most of this waste is contained within standard ISO freight containers. After receipt on site, checks are made on the waste and it is then grouted in place within the ISO freight container. These containers, along with any un-containerised items, are then disposed of within lined concrete vaults. Once full, the intent is that these vaults will be covered and capped. The site also consists of historical disposals of Low Level Waste (LLW) into lined trenches. These trenches have been temporarily capped pending construction of the final closure cap over all the buried waste.

As part of operations the site manages the disposals referred to above, along with leachate that is generated on site, any solid waste generated and gaseous discharges from certain buildings. The site also consists of some historical facilities used for the storage of plutonium contaminated materials (PCM). These facilities are currently undergoing clean up and decommissioning, with any PCM generated being transferred to Sellafield for storage and future treatment and/or disposal.

In addition to this permit, the operators are also required to comply with two Consents to Discharge, initially issued under the Water Resources Act 1991, but which now come within the Environmental Permitting (England and Wales) Regulations 2010. One permit controls discharges of biologically treated sewerage effluent, the other controls discharges of waste disposal site leachate and other minor arisings. These permits place limits and conditions on discharges to protect the water environment.

This document is a varied and consolidated permit reflecting the changes made to the permit since issue.

The status log of the permit sets out the permitting history, including any changes to the permit reference number.

**Status Log of the permit**

<b>Detail</b>	<b>Date</b>	<b>Response Date</b>
Authorisation under the Radioactive Substances Act 1993 BZ2508/BZ2508	Issued 01/04/06 Effective 01/05/06	
Variation BZ2508/CA6466	Issued 11/08/06 Effective 01/09/06	
Permit transfer BZ2508/BA8485 (Transfer of Authorisation from Sellafield Limited to LLWR Repository Limited)	Issued 19/07/07 Effective 29/07/07	
Variation BZ2508/CB8189	Issued 03/12/07 Effective 01/01/08	
Variation BZ2508/CD5857	Issued 09/07/09 Effective 24/07/09	
Application EPR/YP3293SA/V001	Duly Made 04/10/10	
Additional information received (EPR/YP3293SA/V001)		12/11/10
Variation EPR/YP3293SA/V001 (Varied and consolidated permit issued)	Issued 21/12/10 Effective 01/01/11	
Application EPR/YP3293SA/V002	Duly Made 30/10/13	
Additional information received (EPR/YP3293SA/V002)		06/06/14
Variation EPR/YP3293SA/V002 (Varied and consolidated permit issued)	Issued 28/10/15 Effective 01/11/15	

End of Introductory Note

## Permit

The Environmental Permitting (England and Wales) Regulations 2010

# Permit

Permit number  
**EPR/YP3293SA**

The Environment Agency hereby authorises, under regulation 13 of the Environmental Permitting (England and Wales) Regulations 2010 ("the regulations")

**LLW Repository Limited** ("the operator")

whose registered office is  
**Low Level Waste Repository**  
**Old Shore Road**  
**Drigg**  
**Holmrook**  
**Cumbria**  
**CA19 1XH**

company registration number 05608448

to carry on radioactive substance activities at  
**Low Level Waste Repository**  
**Old Shore Road**  
**Drigg**  
**Holmrook**  
**Cumbria**  
**CA19 1XH**  
("the premises")

to the extent authorised by and subject to the conditions of this permit.

Name	Date
K Ashcroft (Area Manager - Cumbria and Lancashire)	28/10/15

Authorised on behalf of the Environment Agency

The permit shall come into effect from 01/11/15

# 1 Management

## 1.1 General management

- 1.1.1 The operator shall manage and operate the activities:
- (a) in accordance with a written management system that is sufficient to achieve compliance with the conditions of this permit;
  - (b) using sufficient competent persons and resources.
- 1.1.2 The operator shall maintain records demonstrating compliance with condition 1.1.1.
- 1.1.3 The operator shall maintain a documented environmental safety case in relation to the burial of radioactive waste, which demonstrates:
- (a) the use of best available techniques to protect members of the public and the environment;
  - (b) protection of members of the public and the environment from the non-radiological hazards of the radioactive waste;
- throughout the life-cycle of the facility.
- 1.1.4 Any person having duties that are or may be affected by the matters set out in this permit shall have convenient access to a copy of it kept at or near the place where those duties are carried out.
- 1.1.5 The operator shall manage and operate the activities in consultation with such suitable Radioactive Waste Advisers as are necessary for the purpose of advising the operator as to compliance with this permit.

# 2 Operations

## 2.1 Permitted activities

- 2.1.1 The operator is only authorised to carry on the activities specified in schedule 1 table S1.1 (the “activities”).

## 2.2 The site

- 2.2.1 The activities shall not extend beyond the site, being the land shown edged in green on the site plan at schedule 7 to this permit.

## 2.3 Operating techniques

- 2.3.1 The operator shall use the best available techniques to minimise the activity of radioactive waste produced on the premises that will require to be disposed of on or from the premises.
- 2.3.2 The operator shall use the best available techniques in respect of the disposal of radioactive waste pursuant to this permit to:
- (a) minimise the activity of gaseous and aqueous radioactive waste disposed of by discharge to the environment;
  - (b) minimise the volume of radioactive waste disposed of by transfer to other premises;
  - (c) dispose of radioactive waste at times, in a form, and in a manner so as to minimise the radiological effects on the environment and members of the public.
- 2.3.3 The operator shall use the best available techniques to:

- (a) exclude all entrained solids, gases and non-aqueous liquids from radioactive aqueous waste prior to discharge to the environment;
- (b) characterise, sort and segregate solid and non-aqueous liquid radioactive wastes, to facilitate their disposal by optimised disposal routes;

2.3.4 The operator shall maintain in good repair the systems and equipment provided:

- (a) to meet the requirements of conditions 2.3.1, 2.3.2 and 2.3.3;
- (b) to carry out any monitoring and measurements necessary to determine compliance with the conditions of this permit;
- (c) to measure and assess the exposure of members of the public and radioactive contamination of the environment.

2.3.5 The operator shall check, at an appropriate frequency, the effectiveness of systems, equipment and procedures provided to meet the requirements of conditions 2.3.1, 2.3.2 and 2.3.3.

2.3.6 The operator shall have and comply with appropriate criteria for the acceptance into service of systems, equipment and procedures for:

- (a) carrying out any monitoring and measurements necessary to determine compliance with the conditions of this permit;
- (b) measuring and assessing exposure of members of the public and radioactive contamination of the environment.

2.3.7 The operator shall post copies of this permit on the premises, in such characters and in such positions to be conveniently read by persons who have duties on the premises which are or could be affected by the matters set out in this permit.

## **2.4 Improvement and information programme**

2.4.1 The operator shall complete the requirements specified in schedule 1 table S1.2 by the date specified in that table unless otherwise agreed in writing by the Environment Agency.

2.4.2 Except in the case of a requirement which consists only of a submission to the Environment Agency, the operator shall notify the Environment Agency within 14 days of completion of each requirement.

## **2.5 Pre-operational conditions**

2.5.1 The activities shall not be brought into operation until the measures specified in schedule 1 table S1.3A have been completed.

2.5.2 The specific disposals and receipts of radioactive waste identified in schedule 1 table S1.3B shall not commence until the relevant measures specified in that table have been completed.

## **2.6 Receipt of radioactive waste**

2.6.1 The operator shall:

- (a) for each type of radioactive waste that the operator is prepared to receive, produce a written specification of the information required to:
  - (i) enable the disposal of that type of radioactive waste in compliance with this permit; or
  - (ii) where disposal of that type of radioactive waste is not currently permitted, sufficiently characterise that waste to, as far as reasonably practicable, enable its future disposal;
- (b) provide that written specification to any person from whom the operator is prepared to receive radioactive waste of that type;
- (c) only accept a consignment of radioactive waste that is accompanied by a legible note providing the information specified in 2.6.1(a);
- (d) keep a copy of any such note received;

- (e) provide a receipt to the consignor in respect of each consignment of radioactive waste that the operator accepts.
- 2.6.2 The operator shall visually inspect, without unloading it, radioactive waste that is not in an enclosed container or enclosed vehicle on arrival at the premises and at the point of burial and shall establish as far as reasonably practicable whether it conforms to the consignor's characterisation documentation provided for that radioactive waste.
- 2.6.3 The operator shall ensure that any radioactive waste which does not comply with the specifications produced pursuant to condition 2.6.1 is returned to the consignor as soon as reasonably practicable, unless otherwise agreed in writing with the Environment Agency.
- 2.6.4 Before the operator first receives radioactive waste from a consignor for the purpose of final disposal of that waste from or on the premises, the operator shall, at the earliest opportunity, inform the local authority, in whose area of responsibility the premises is situated, of the origin and nature of the radioactive waste.
- 2.6.5 The provisions of 2.6.4 do not apply:
- (a) where the waste consignor is exempt from the requirement to hold an environmental permit for the disposal of radioactive waste; and
  - (b) to the extent that it would require the disclosure of information relating to sealed radioactive sources.
- 2.6.6 The provisions of 2.6.1 to 2.6.4 do not apply to any radioactive waste collected as a result of the operator's participation in the National Arrangements for Incidents involving Radioactivity or in the Radsafe scheme.

## **3 Disposals of radioactive waste and monitoring**

### **3.1 Disposals of radioactive waste**

- 3.1.1 Subject to condition 3.1.4 there shall be no disposals of radioactive waste except of the types of radioactive waste and by the disposal routes specified in schedule 3.
- 3.1.2 The limits on disposals given in schedule 3 shall not be exceeded.
- 3.1.3 Subject to condition 3.1.1, the operator shall dispose of each form of solid and non-aqueous liquid radioactive waste by an optimised disposal route for that waste form.
- 3.1.4 The operator may dispose of radioactive waste, not being radioactive waste otherwise authorised to be disposed of, which is collected as a result of the operator's participation in the National Arrangements for Incidents involving Radioactivity or in the Radsafe scheme provided that the operator:
- (a) transfers the radioactive waste to a person whom the Environment Agency has agreed in writing may receive that radioactive waste;
  - (b) as soon as reasonably practicable provides available details in writing to the Environment Agency of the nature of the radioactive waste, the radionuclides present, their activities and the manner and date of disposal.
- 3.1.5 The operator shall ensure that the transfer of radioactive waste is in accordance with the directions of the person to whom the radioactive waste is transferred that are necessary to enable that person to comply with all relevant regulatory requirements.
- 3.1.6 The operator shall:
- (a) ensure that the person to whom radioactive waste is transferred receives at the time of transfer of each consignment a clear and legible note signed on the operator's behalf stating:
    - (i) the total activity in the consignment of each relevant radionuclide or group of radionuclides listed in the relevant table in schedule 3; or
    - (ii) when no relevant radionuclide or group of radionuclides is specified in schedule 3, the total activity in the consignment of each radionuclide or group of radionuclides as listed in the written specification of the person to whom the radioactive waste is transferred.
  - (b) obtain a note signed on behalf of the person to whom radioactive waste is transferred, at the time of transfer, stating that the transfer has taken place;
  - (c) keep a copy of any note issued under condition 3.1.6(a) and any note received under condition 3.1.6(b).

- 3.1.7 If required by the Environment Agency, the operator shall ensure that any consignment or part of any consignment of radioactive waste found, following transfer, not to be in accordance with the conditions of this permit:
- (a) is packaged in accordance with the relevant legislation;
  - (b) is returned as soon as is reasonably practicable to the operator's premises.
- 3.1.8 The operator shall only dispose of solid radioactive waste by burial if:
- (a) all the relevant radioactive waste acceptance procedures have been completed and it fulfils the relevant radioactive waste acceptance criteria as defined by the environmental safety case, unless otherwise agreed in writing by the Environment Agency;
  - (b) it has not been diluted or mixed solely to meet condition 3.1.8(a) or any other condition of the permit.
- 3.1.9 The operator shall, not later than 14 days after the end of each month or within such longer period as the Environment Agency may approve in writing, record all disposals of radioactive waste made during that month.

## 3.2 Monitoring

- 3.2.1 The operator shall:
- (a) take samples and conduct measurements, tests, surveys, analyses and calculations to determine compliance with the conditions of this permit;
  - (b) unless otherwise agreed in writing by the Environment Agency:
    - (i) define, document and carry out an environmental monitoring programme;
    - (ii) use the results of that programme to carry out an annual retrospective assessment of the dose to the representative person;
    - (iii) inform the Environment Agency in writing in advance of any modifications affecting the extent of that programme or that have a potential to change the results obtained;
  - (c) use the best available techniques when taking such samples, conducting such measurements, tests, surveys, analyses and calculations, and carrying out such an environmental monitoring programme and retrospective dose assessment, unless particular techniques are specified in schedule 3 of this permit or in writing by the Environment Agency;
  - (d) define and document the techniques being employed to determine the activity of radioactive waste disposals and inform the Environment Agency in writing in advance of any modifications to those techniques that have a potential to change the results obtained.
- 3.2.2 The operator shall maintain records of all monitoring required by this permit including records of the taking and analysis of samples, instrument measurements (periodic and continual), calibrations, examinations, tests and surveys and any assessment or evaluation made on the basis of such data.
- 3.2.3 Monitoring equipment, techniques, personnel and organisations employed for the monitoring of disposals and the environment required by condition 3.2.1 or 3.2.5 shall have either MCERTS certification or MCERTS accreditation (as appropriate), where available, unless otherwise agreed in writing by the Environment Agency.
- 3.2.4 Permanent means of access shall be provided to enable sampling and monitoring to be carried out in relation to the disposal outlets specified in schedule 3 unless otherwise agreed in writing by the Environment Agency.
- 3.2.5 If required by the Environment Agency, the operator shall:
- (a) take such samples and conduct such measurements, tests, surveys, analyses and calculations, including environmental measurements and assessments, at such times and using such methods and equipment as the Environment Agency specifies;
  - (b) keep samples, provide samples, or dispatch samples for tests at a laboratory, as the Environment Agency specifies, and ensure that the samples or residues thereof are collected from the laboratory within three months of receiving written notification that testing and repackaging in accordance with the relevant legislation are complete.
- 3.2.6 The operator shall carry out:
- (a) regular calibration, at an appropriate frequency, of systems and equipment provided for:



- (i) carrying out any monitoring and measurements necessary to determine compliance with the conditions of this permit;
  - (ii) measuring and assessing exposure of members of the public and radioactive contamination of the environment;
- (b) regular checking, at an appropriate frequency, that such systems and equipment are serviceable and correctly used.

## 4 Information

### 4.1 Records

4.1.1 All records required to be made by this permit shall:

- (a) be legible;
- (b) be made as soon as reasonably practicable;
- (c) if amended, be amended in such a way that the original and any subsequent amendments remain legible, or are capable of retrieval;
- (d) be retained until notified in writing by the Environment Agency that records no longer need to be retained.

4.1.2 The operator shall keep on the premises all records, plans and the management system required by this permit, unless otherwise agreed in writing by the Environment Agency.

4.1.3 The operator shall:

- (a) retain records made in accordance with any previous relevant permit issued to the operator and related to the premises covered by this permit;
- (b) retain records transferred to the operator, which were made in accordance with any previous relevant permit related to the premises covered by this permit.

### 4.2 Reporting

4.2.1 The operator shall send all reports and notifications required by this permit to the Environment Agency using the contact details supplied in writing by the Environment Agency.

4.2.2 The operator shall supply such information in relation to:

- (a) the disposals of radioactive waste;
- (b) the samples, tests, surveys, analysis and calculations, environmental monitoring and assessments undertaken under conditions 3.2.1 and 3.2.5 in relation to disposals of radioactive waste;

in such format and within such timescales as the Environment Agency may specify in writing.

### 4.3 Notifications

4.3.1 The operator shall notify the Environment Agency without delay following the detection of:

- (a) any malfunction, breakdown or failure of equipment or techniques or any accident that has caused, is causing or may cause significant pollution or may generate significant amounts of radioactive waste;
- (b) the breach of a limit specified in this permit, or disposal of waste other than by a relevant permitted route;
- (c) any significant adverse environmental effects that could reasonably be seen to result from the operation of the facility.

4.3.2 Any information provided under condition 4.3.1 shall be confirmed by sending the information listed in schedule 5 within the time period specified in that schedule.

- 4.3.3 Where the operator proposes to make a change to the environmental safety case, including a change to the waste acceptance criteria, which might have, or might reasonably be seen to have significant repercussions for the management of the disposal of radioactive wastes by burial the operator shall:
- (a) notify the Environment Agency at least 28 days before making that change, including in the notification a description of the proposed changes;
  - (b) where the Environment Agency so notifies the operator, not implement the proposed changes until the Environment Agency has given its agreement in writing.
- 4.3.4 Where the Environment Agency has requested in writing that it shall be notified when the operator is to undertake monitoring and/or spot sampling, the operator shall inform the Environment Agency when the relevant monitoring and/or spot sampling is to take place. The operator shall provide this information to the Environment Agency at least 14 days before the date the monitoring is to be undertaken.
- 4.3.5 The operator shall notify the Environment Agency within 14 days of the occurrence of the following matters, except where such disclosure is prohibited by Stock Exchange rules:
- (a) any change in the operator's trading name, registered name or registered office address;
  - (b) any steps taken with a view to the operator going into administration, entering into a company voluntary arrangement or being wound up.
- 4.3.6 Where the operator proposes to make a change in the management system or resources, which might have, or might reasonably be seen to have, a significant impact on how compliance with the conditions of this permit is achieved:
- (a) the operator shall notify the Environment Agency at least 28 days before making that change, or where that is not possible, without delay; and
  - (b) shall include in the notification a description of the proposed changes.

## 4.4 Interpretation

- 4.4.1 In this permit the expressions listed in schedule 6 shall have the meaning given in that schedule.
- 4.4.2 In this permit references to reports and notifications mean written reports and notifications, except where reference is made to notification being made "without delay", in which case it may be provided by telephone.

# Schedule 1 - Operations

**Table S1.1 activities**

Activity reference	Activity listed in Schedule 23 of the regulations	Description of activity	Limit of activity
A1	Schedule 23 Part 2 para 11(2)(b)	Disposal of radioactive waste on or from the premises	Disposal on or from the premises of radioactive wastes from justified practices and work not subject to the requirement for justification.
A2	Schedule 23 Part 2 para 11(4)(a)	Receipt of radioactive waste for the purpose of disposal	

**Table S1.2 Improvement and information requirements**

Reference	Requirement	Date
IC1	<p>Submit a written plan to the Environment Agency. The plan must contain:</p> <p>(a) Proposals for the provision of protection of waste within Vault 8 and Vault 9, up to and including the capping of Vault 8 and a programme for implementation;</p> <p>(b) A programme of work to address the protection of waste in the longer-term within Vault 9 and future vaults.</p> <p>The plan must demonstrate the use of best available techniques and the minimisation of degradation of waste containers and their contents, so as to minimise radiological effects on the environment.</p>	28/01/16
IC2	The operator shall develop a procedure for determining what changes to the environmental safety case and waste acceptance criteria might have, or might reasonably be seen to have, significant repercussions for the management of the disposal of radioactive waste by burial.	28/04/16
IC3	Submit a written report to the Environment Agency identifying an optimised approach for the management of discrete items and particles carrying a significant burden of radioactivity in past disposals. This report should identify all items and particles that it covers to the extent that available records make this possible.	28/04/16
IC4	<p>Submit a written plan to the Environment Agency. The plan must contain the operator's comprehensive forward programme of work to support the environmental safety case. The plan should address, but not necessarily be limited to:</p> <ul style="list-style-type: none"> <li>• The Environment Agency's review of the 2011 environmental safety case.</li> <li>• Conditions and limits in this permit.</li> <li>• Learning from development and implementation of the 2002 and 2011 environmental safety cases.</li> <li>• Monitoring data.</li> <li>• Uncertainties identified within the environmental safety case.</li> <li>• Peer review comments on the environmental safety case.</li> </ul> <p>The plan must be implemented unless otherwise agreed in writing by the Environment Agency.</p>	29/08/16
IC5	Submit a written plan to the Environment Agency. The plan must describe in suitable detail how stored wastes held on site in Vaults 8 and 9 are to be disposed of and must provide the programme for disposal. This plan must be supported by an assessment of all stored wastes against the requirements of the environmental safety case, waste acceptance criteria and this permit. The management option chosen must be an optimised solution.	28/10/16
IC6	Submit an updated non-radiological hydrogeological risk assessment taking into account the Environment Agency's review of the 2011 environmental safety case.	02/10/17

IC7	Submit an update to the environmental safety case for the site based upon a comprehensive review, covering the full life-cycle of the facility. The review shall demonstrate that all the requirements of the latest version of the environment agencies' guidance on requirements for authorisation for near-surface disposal facilities on land for solid radioactive waste have been met. The review shall address the findings of the Environment Agency's review of the 2011 ESC.	03/05/21
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**Table S1.3A Pre-operational measures**

Reference	Measure
	None specified

**Table S1.3B Pre-operational measures for future development**

Reference	Disposal or receipt	Measure
PM1	Disposal of radioactive waste in Vaults 9a and above at the LLWR	<p>Prior to the disposal of radioactive waste in each vault, including Vault 9a and higher, a report shall be submitted to the Environment Agency. This report shall:</p> <ul style="list-style-type: none"> <li>a) Provide assurance that the vault has been constructed in accordance with the environmental safety case.</li> <li>b) Include Construction Quality Assurance (CQA) validation.</li> </ul> <p>The report shall be agreed in writing by the Environment Agency before disposal takes place.</p>

## Schedule 2 – Holding of Open Sources

There are no requirements under this schedule

## Schedule 3 – Disposals of radioactive waste and monitoring

<b>Table S3.1 Specified disposals to air</b>			
<b>Specified radioactive waste type</b>	<b>Disposal outlet reference</b>	<b>Disposal outlet</b>	<b>Limits</b>
Gaseous waste	Approved outlets (air)	All outlets to air, not otherwise described in this table, that are approved by the Environment Agency	No limits specified for these disposal outlets
Gaseous waste	A1	B735.1 stack serving Magazine 5 Retrieval Facility	No limits specified for these disposal outlets
Gaseous waste	A2	B739.1 stack serving Magazine 9 Retrieval Facility	
Gaseous waste	A3	B740.1 stack serving Magazine 10 Retrieval Facility	
Gaseous waste	A4	B746 stack serving PCM Drum Processing Building	
Gaseous waste	A5	B747 stack serving Transportable PCM Waste Storage Facility	
Gaseous waste	A6	B755 stack serving the Grouting Facility	

<b>Table S3.2 Specified disposals to water</b>			
<b>Specified radioactive waste type</b>	<b>Disposal outlet reference</b>	<b>Disposal outlet</b>	<b>Limits</b>
Aqueous waste	Approved outlets (water)	All outlets to water, not otherwise described in this table, that are approved by the Environment Agency.	No limits specified for these disposal outlets
Aqueous waste	W1	System provided by the Operator for the discharge of aqueous waste from the premises to the Irish Sea via the marine pipeline.	No limits specified for these disposal outlets

<b>Table S3.3 Specified transfers to other premises</b>					
<b>Specified radioactive waste type</b>	<b>Person to whom radioactive waste may be transferred<sup>1</sup></b>	<b>Purpose of transfer</b>	<b>Radionuclide or group of radionuclides</b>	<b>Calendar year limit</b>	<b>Annual volume limit – m<sup>3</sup></b>
VLLW	The holder of an environmental permit for the receipt and disposal of VLLW	For any one or more of: - treatment - onward transfer for treatment or disposal - incineration - metals recovery - final disposal	Any	No limit	No limit
LLW	The holder of an environmental permit for the receipt and disposal of LLW	For any one or more of: - treatment - onward transfer for treatment or disposal - incineration - metals recovery - final disposal	Any	No limit	No limit
Plutonium Contaminated Material	The Sellafield Site Operator	For treatment and / or storage before future disposal	Any	No limit	No limit
Radioactive Waste as defined in the Transfrontier Shipment of Radioactive Waste and Spent Fuel Regulations 2008	Transfer in accordance with the conditions of an authorisation granted under the Transfrontier Shipment of Radioactive Waste and Spent Fuel Regulations 2008		Any	No Limit	No Limit

<sup>1</sup> For the purposes of this table, "environmental permit" includes an authorisation issued under the Radioactive Substances Act 1993 by the environmental regulator for Scotland or Northern Ireland.

Table S3.4 Disposal by burial on the premises							
Waste type	Disposal route	Disposal limits <sup>1</sup>					
		Individually for each of the 5 assessment cases, the sum of the ratios of the activity of radioactive waste disposed of at the premises (in TBq) to the relevant value listed below <sup>2</sup> for each radionuclide or group of radionuclides, shall be less than 1.					
		Radionuclide or group of radionuclides	Relevant values for each assessment case				
Assessment case 1 (Groundwater)	Assessment case 2 (Coastal erosion, beach user)		Assessment case 3 (Coastal erosion, marine foodstuffs)	Assessment case 4 (Gaseous releases, C-14)	Assessment case 5 (Gaseous releases, H-3)		
Solid radioactive waste, including any immediate packaging, in which the activity of alpha emitting radionuclides does not exceed 4 gigabecquerels per tonne and the activity of all other radionuclides does not exceed 12 gigabecquerels per tonne when averaged over a consignment.	Burial on the premises in accordance with the environmental safety case.	H-3	no value	no value	no value	no value	18000
		C-14	190	530000	180	130	no value
		Cl-36	35	16000	no value	no value	no value
		Ca-41	3500	no value	no value	no value	no value
		Se-79	no value	100000	400	no value	no value
		Mo-93	130	64000	79000	no value	no value
		Zr-93	no value	140000	70000	no value	no value
		Nb-94	no value	5.3	53000	no value	no value
		Tc-99	250000	210000	9000	no value	no value
		Ag-108m	no value	34	2500	no value	no value
		I-129	1.5	1800	780	no value	no value
		Cs-135	no value	130000	170000	no value	no value
		Ra-226	1500	6.4	3.8	no value	no value
		Th-229	no value	26	48	no value	no value
		Th-230	5600	8.2	4.6	no value	no value
		Th-232	no value	3.0	59	no value	no value
		Pa-231	7100	16	130	no value	no value
		U-233	220000	160	340	no value	no value
U-234	250000	820	620	no value	no value		
U-235	240000	58	2900	no value	no value		
U-236	250000	2100	7100	no value	no value		
U-238	350000	330	6900	no value	no value		

<sup>1</sup> The limit values below are single radionuclide limits, each of which would be the site lifetime limit if that radionuclide was the only radionuclide ever disposed in the repository. Because many different radionuclides are present in radioactive waste, it is necessary to determine what fraction of each single radionuclide limit has been deposited to date. When the sum of those fractions reaches 1, the repository has reached its radiological capacity. The calculation must be carried out independently for each assessment case described in the table headings, since the mix of radionuclides deposited can vary quite widely and will affect which assessment case eventually becomes the most limiting.

<sup>2</sup> Only applies where a relevant value is stated. Radionuclides are only significant in certain safety case assessments; "no value" indicates they are of low or no significance in that particular assessment case.



**Table S3.4 continued**

		Np-237	49000	41	1400	no value	no value
		Pu-238	no value	750000	no value	no value	no value
		Pu-239	no value	200	420	no value	no value
		Pu-240	no value	210	460	no value	no value
		Pu-241	no value	38000	130000	no value	no value
		Pu-242	no value	180	420	no value	no value
		Am-241	340000	1300	4500	no value	no value
		Am-242m	no value	13000	89000	no value	no value
		Am-243	140000	49	540	no value	no value
		Cm-243	no value	150000	350000	no value	no value
		Cm-244	no value	75000	170000	no value	no value
		Cm-245	35000	65	280	no value	no value
		Cm-246	72000	240	600	no value	no value
		Cm-248	23000	2.9	130	no value	no value
		Others*	1000000	1000000	1000000	no value	no value

\* 'Others' includes all radionuclides not listed above and radionuclides with 'no value' listed above, but excludes radionuclides of less than three months half-life.

**Table S3.5 monitoring techniques**

<b>Table and radionuclide</b>	<b>Monitoring technique</b>
Not applicable	None specified

# Schedule 4 - Reporting

There are no requirements under this schedule.

# Schedule 5 - Notification

These pages outline the information that the operator must provide.

Units of measurement used in information supplied under Part A and B requirements shall be appropriate to the circumstances of the disposal. Where appropriate, a comparison should be made of actual disposals and permitted disposal limits.

## Part A – to be provided within 24 hours

Permit Number	
Name of operator	
Location of Facility	
Time and date of the detection	

### **(a) Notification requirements for any malfunction, breakdown or failure of equipment or techniques, accident, or disposal which has caused, is causing or may cause significant pollution or may generate significant amounts of radioactive waste**

Date and time of the event	
Reference or description of the location of the event	
Description of where any disposal into the environment took place	
Radionuclides potentially released	
Best estimate of the quantity or rate of release of radionuclides or amount of radioactive waste generated	
Measures taken, or intended to be taken, to stop any disposal	
Description of the failure or accident.	

### **(b) Notification requirements for the breach of a limit or disposal of radioactive waste other than by a relevant permitted route**

Disposal outlet reference/ source	
Radionuclides	
Limit	
Measured value and uncertainty	
Date and time of monitoring	
Measures taken, or intended to be taken, to stop the disposal	

### **(c) Notification requirements for the detection of any significant adverse environmental effect**

Description of where the effect on the environment was detected	
Radionuclides detected	
Activity of radionuclides detected	
Date of monitoring/sampling	

## Part B - to be provided as soon as practicable

Any more accurate information on the matters for notification under Part A.	
Measures taken, or intended to be taken, to prevent a recurrence of the incident	
Measures taken, or intended to be taken, to rectify, limit or prevent any contamination of the environment which has been or may be caused by the disposal	
The dates of any unauthorised disposals from the facility in the preceding 24 months.	

<b>Name*</b>	
<b>Post</b>	
<b>Signature</b>	
<b>Date</b>	

\* authorised to sign on behalf of *LLW Repository Ltd*

# Schedule 6 - Interpretation

In this permit, except where otherwise specified, words and expressions defined in the regulations in relation to radioactive substances activities shall have the same meanings when used in this permit as they have in those regulations.

"*activity*", expressed in becquerels, means the number of spontaneous nuclear transformations occurring in a period of one second.

"*aqueous waste*" means radioactive waste in the form of a continuous aqueous phase together with any entrained solids, gases and non-aqueous liquids.

"*best available techniques*" means the latest stage of development (state of the art) of processes, of facilities or of methods of operation which indicate the practical suitability of a particular measure for limiting discharges, emissions and waste. In determining whether a set of processes, facilities and methods of operation constitute the best available techniques in general or individual cases, special consideration shall be given to:

- a. comparable processes, facilities or methods of operation which have recently been successfully tried out;
- b. technological advances and changes in scientific knowledge and understanding;
- c. the economic feasibility of such techniques;
- d. time limits for installation in both new and existing plants;
- e. the nature and volume of the discharges and emissions concerned

"*techniques*" include both the technology used and the way in which the installation is designed, built, maintained, operated and dismantled.

"*Bq, kBq, MBq, GBq, TBq and PBq*" are used as abbreviations meaning becquerels, kilobecquerels, megabecquerels, gigabecquerels, terabecquerels and petabecquerels respectively.

"*calendar year*" means a period of 12 consecutive months beginning on 1 January.

"*consignment*" means an individual shipment to the premises of radioactive waste not greater in volume than 40 cubic metres or such volume as specified by the Environment Agency in writing.

"*Construction Quality Assurance (CQA)*" is applicable specifically to construction activities and is an essential tool for the assurance of quality and ensures the constructed structure complies with the agreed design and specification. CQA should be certified by an independent (third party) quality engineer. CQA is required to ensure that the objective of producing a high quality, practically flaw free liner is achieved, as even small variations in material and physical characteristics could prejudice the integrity of the liner and hence the design specification may not be met.

"*environment*" means all, or any, of the media of air, water (to include sewers and drains) and land.

"*environmental safety case*" means the set of claims concerning the environmental safety of the disposal of solid radioactive waste as described in the guidance on the "Near-surface Disposal Facilities on land for Solid Radioactive Waste" at [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/296507/geho0209bpjl-e-e.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/296507/geho0209bpjl-e-e.pdf)

"*gaseous waste*" means radioactive waste in the form of gases and associated mists and particulate matter.

"*LLW*" means solid radioactive waste, including any immediate packaging, with an activity concentration greater than the maximum for VLLW but not exceeding 4 gigabecquerels per tonne of alpha emitting radionuclides nor 12 gigabecquerels per tonne of all other radionuclides.

"*MCERTS*" means the Environment Agency's Monitoring Certification Scheme.

"*month*" means calendar month.

"*packaging*" includes any sack, drum, container or wrapping.

"*Radioactive Waste Adviser*" means, subject to the transitional arrangements in the Environment Agencies' Scheme for Radioactive Waste Advisers ("the Scheme"), either an individual certified under the Scheme and appointed in writing by the operator, or those individuals advising the operator under the operator's arrangements, approved under the Scheme, for "corporate radioactive waste adviser". The Scheme is set out in the Environment Agencies' Statement on Radioactive Waste Advisers of 24 May 2011, together with the associated guidance and other documents published by the Environment Agencies from time to time. (Current documents are available at: [http://www.sepa.org.uk/radioactive\\_substances/radioactive\\_waste\\_advisers.aspx](http://www.sepa.org.uk/radioactive_substances/radioactive_waste_advisers.aspx).)

"*Radsafe*" means the consortium of organisations which offer mutual assistance in the event of a transport accident

involving radioactive materials belonging to a RADSAFE member.

"*samples*" includes samples that have been prepared or treated to enable measurements of activity to be made.

"*spot sampling*" means the taking of samples of radioactive substances on a non-continuous basis for subsequent analysis.

"*VLLW*" means solid radioactive waste with a maximum concentration of 40 megabecquerels per tonne of tritium and carbon-14 (in total) and 4 megabecquerels per tonne of all other radionuclides.

"*waste acceptance criteria*" means qualitative and/or quantitative criteria, specified by the operator of a disposal facility, for solid radioactive waste to be accepted for disposal.

"*week*" means a period of 7 consecutive days commencing at a day and time to be notified in writing to the Environment Agency by the Operator at least 14 days before any disposal of radioactive waste is made under the terms of this permit, any subsequent change being notified in writing to the Environment Agency at least 7 days in advance;

"*year*" means any period of 12 consecutive months;

"*Sellafield Site Operator*" means the holder of the licence issued under the Nuclear Installations Act 1965 for the Sellafield Site.

