Permit with introductory note

The Environmental Permitting (England & Wales) Regulations 2016

Sellafield Limited

Sellafield Site
Seascale, Cumbria
CA20 1PG

Variation notice number

EPR/KP3690SX/V012

Permit number

EPR/KP3690SX

Sellafield Site
Permit number KP3690SX

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 or from the specified premises, which are part of a nuclear licensed site.

The permit is issued under the provisions of regulation 13 of the Environmental Permitting (England and Wales) Regulations 2016. Those Regulations are concerned, amongst other things, with the control of radioactive material and radioactive waste.

The main features of the facility are as follows: the reprocessing of Magnox spent nuclear fuel; long-term storage of spent nuclear fuel and radioactive materials; processing of backlog liquid wastes; solid waste retrieval, processing and storage; decommissioning of nuclear reactors and redundant plant; site remediation; and research and development.

Radioactive wastes are produced as by-products of these undertakings in gaseous, aqueous and solid forms. A small amount of waste oil is produced. The radioactive waste contains a wide range of fission and activation product radionuclides together with fuel residues (i.e. uranium). Some wastes are received for treatment prior to disposal. Gaseous wastes are generally subject to abatement (e.g. using filtration, precipitation or scrubbing) before being discharged into the atmosphere via stacks. Aqueous wastes are generally treated in effluent treatment plants (e.g. using precipitation or ion-exchange) prior to being discharged into the Irish Sea.

Some solid radioactive waste is disposed of in designated landfill locations on the Sellafield site. Other low-level solid wastes are subject to compaction and encapsulation before being disposed of by transfer for disposal, or subject to decontamination to enable them to be managed through conventional routes including recycling. Combustible low-level solid wastes and contaminated waste oil are disposed of by transfer to permitted incinerator operators, some of this oil is processed prior to incineration. Some very low-level solid waste is transferred for disposal to permitted landfill sites. Higher activity wastes are being progressively conditioned into passive waste forms which can be stored on site until a geological disposal facility is available.

Status log of the permit

Detail	Date	Response Date
Authorisation under the Radioactive Substances Act BX9838/BX9838	Issued 12/07/04 Effective 01/10/04	
Variation BX9838/CA3777	Issued 29/03/06 Effective 01/04/06	
Variation BX9838/CB9754	Issued 19/03/08 Effective 01/04/08	
Variation BX9838/CD2114	Issued 14/11/08 Effective 15/11/08	
Variation BX9838/CD8899	Issued 19/10/09 Effective 21/10/09	
Variation BX9838/CE1318	Issued 13/11/09 Effective 01/12/09	
Variation BX9838/CE1369	Issued 29/03/10 Effective 01/04/10	
Application EPR/KP3690SX/V001	Duly made 03/05/11	
Additional Information Received		26/05/11
Permit determined	14/07/11	
Variation EPR/KP36390SX/V001 (varied and consolidated permit issued)	01/08/11	
Variation determined EPR/KP36390SX/V002	09/09/11	
Application EPR/KP3690SX/V003	Duly made 31/01/12	
Additional Information Received		12/03/2012
Permit determined	17/05/2012	
Variation EPR/KP36390SX/V003 (varied and consolidated permit issued)	01/06/2012	
Application EPR/KP3690SX/V004	Duly made 10/12/14	
Additional Information Received	16/01/15	
Permit determined	24/02/15	
Variation EPR/KP36390SX/V004 (varied and consolidated permit issued)	01/03/15	
Application EPR/KP3690SX/V005	Duly made 18/1/16	
Additional Information Received	26/01/16	
Permit determined	09/02/16	
Variation EPR/KP3690SX/V005 (varied and consolidated permit issued)	01/03/16	
Application EPR/KP3690SX/V006	Duly made 01/11/16	
Permit determined	18/11/16	
Variation EPR/KP3690/V006 issued	01/12/16	
Variation EPR/KP3690/V007 (varied and consolidated permit issued)	01/04/17	
Application EPR/KP3690SX/V008	Duly Made 06/04/17	
Permit Determined	29/11/17	
Variation EPR/KP3690/V008 (varied and consolidated permit issued)	01/12/17	
Application EPR/KP3690SX/V009	Duly made 17/10/18	
Additional Information Received	31/07/19	
Permit determined	20/02/20	
Variation EPR/KP3690SX/V009 (varied and consolidated permit issued)	Issued 27/02/20 Effective 01/04/20	
Variation EPR/KP3690SX/V009 withdrawn (Letter SEL/O/20/016, 27/3/20)	27/03/20	
Application EPR/KP3690SX/V010	25/03/20	

Status log of the permit

Detail	Date	Response Date
Permit determined	27/03/20	
Variation EPR/KP3690SX/V010 (varied and consolidated permit issued)	Issued 27/03/20 Effective 01/10/20	
Variation EPR/KP3690/V011 (varied and consolidated permit issued)	Issued 24/09/20 Effective 01/10/20	
Variation EPR/KP3690/V012 (varied and consolidated permit issued)	Issued 11/03/21	

End of Introductory Note

Permit

Permit number
EPR/ KP3690SX

The Environment Agency hereby authorises, under regulation 13 of the Environmental Permitting (England and Wales) Regulations 2016 (the "regulations"),

Sellafield Limited ("the operator")

whose registered office is

Hinton House
Birchwood Park Avenue
Risley
Warrington
WA3 6GR

company registration number 1002607

to carry on a radioactive substances activity/ radioactive substance activities at

Sellafield Site
Seascale
Cumbria
CA20 1PG
("the premises")

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

Name	Date
ROB ALLOTT	**11/03/2021**

Authorised on behalf of the Environment Agency

The permit shall come into effect from 1 April 2021

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; and

(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 an environmental safety case in relation to the burial of radioactive waste in the Calder Landfill Extension Segregation Area, which demonstrates:

(a) the use of best available techniques to protect members of the public and the environment; and

(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 After completion of requirement S1.2.7 specified in Schedule 1 table S1.2, the operator shall maintain a waste management plan and a site-wide environmental safety case, which together demonstrate throughout the lifecycle of the regulated facility:

(a) how the production and disposal of radioactive waste is managed to protect the environment and to optimise the protection of people;

(b) how the disposability of radioactive waste that will require disposal on or from the premises is assured;

(c) how members of the public and the environment are protected from the non-radiological hazards of disposals of radioactive waste; and

(d) how the premises will be brought to a condition at which it can be released from regulation under this permit.

1.1.5 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.

1.1.6 The operator shall manage and operate the activities in consultation with a suitable Radioactive Waste Adviser 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 and maintenance 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 adequate 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 Subject to condition 2.3.2, the operator shall carry on the activities in a manner so as to minimise the risk of pollution from any non-radioactive substances in, or any non-radiological properties of, the radioactive waste, except to the extent the risk is addressed in a separate environmental permit.

2.3.8 The operator shall use appropriate measures such that the burial of radioactive waste in the Calder Landfill Extension Segregation Area on the premises shall not give rise to:

(a) pollution or hazards from pests;

(b) noise and vibration at levels likely to cause pollution outside the premises;

(c) odour at levels likely to cause pollution outside the premises.

2.4 Improvement and information programme

2.4.1 The operator shall complete the requirements specified in schedule 1 table S1.2 by the dates 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 S1.3 A have been completed.

2.5.2 The specific disposals and receipts of radioactive waste identified in schedule 1 table S1.3 B 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 ensure that any radioactive waste which does not comply with the specifications produced pursuant to condition to 2.6.1 is returned to the consignor as soon as reasonably practicable, unless otherwise agreed in writing with the Environment Agency.

2.6.3 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.

2.6.4 The provisions of 2.6.3 do not apply

(a) where the waste consignor is exempt from the requirement to hold an environmental permit for the disposal of radioactive waste;

(b) to the extent that it would require the disclosure of information relating to sealed radioactive sources.

2.6.5 The provisions of conditions 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 3.1.5, 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 Tables S3.3 and S3.4 shall not be exceeded.

(a) The lower limits specified in Tables S3.1A and S3.2A shall not be exceeded, subject to the defined milestones in Tables S3.1A and S3.2A.

(b) Where:

(i) the operator has provided the Environment Agency with a written submission regarding the need for the upper limits which includes:

(A) details of the circumstances giving rise to the need for specified upper limits and the discharge predictions and the duration;

(B) a description of the techniques used to minimise the activity of radioactive waste discharged;

(C) demonstration of compliance with conditions 2.3.1, 2.3.2, and 2.3.3

(ii) and the Environment Agency has agreed in writing, the relevant radionuclide upper limits specified in Tables 3.1A and 3.2A shall not be exceeded.

3.1.3 The operator shall ensure the use of an optimised disposal route when disposing of any radioactive waste in accordance with Table S3.3.

3.1.4 The operator shall only dispose of solid radioactive waste by burial in the Calder Landfill Extension Segregation Area if:

(a) all the relevant radioactive waste acceptance procedures have been completed and it fulfils the relevant radioactive waste acceptance criteria as defined in the environmental safety case;

(b) if it has not been diluted or mixed except where this represents the application of the best available techniques.

3.1.5 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.

3.1.6 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.

3.1.7 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 3.1.7(a) and any note received under condition 3.1.7(b).

3.1.8 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.

3.1.9 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 measuring instruments and other 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 measuring instruments and other 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; and

(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; and

(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 radioactive 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 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.

4.3.4 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.

4.3.5 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, the operator shall:

(a) notify the Environment Agency at least 28 days before making that change, or where that is not possible, without delay; and

(b) include in the notification a description of the proposed changes.

4.3.6 Where the operator proposes to make a change to the waste management plan, to the site-wide environmental safety case (condition 1.1.4) or, where applicable, to the facility-specific environmental safety case (condition 1.1.3), including a change to the waste acceptance criteria, which might have, or might reasonably be seen to have, a significant impact on the quantity or nature of radioactive wastes disposed or planned to be disposed of on the site, or result in a significant change to the nature, place or environmental impact of such disposals, 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; and

(b) where the Environment Agency so notifies the operator, not implement the proposed changes until the Environment Agency has given its agreement in writing.

4.3.7 If, in any quarter, the activity in any waste discharged from any outlet or group of outlets specified in schedule 3 of any radionuclide or group of radionuclides exceeds the relevant Quarterly Notification Level (where specified), the operator shall provide the Environment Agency with a written submission which includes:

(a) details of the occurrence;

(b) a description of the means used to minimise the activity of radioactive waste discharged;

(c) a review of those means having regard to conditions 2.3.1, 2.3.2 and 2.3.3;

not later than 14 days from making the record which demonstrates such excess.

4.3.8 If, in any year, the activity in any waste discharged from any outlet or group of outlets specified in schedule 3 of any radionuclide or group of radionuclides exceeds the relevant Annual Plant Notification Level (where specified), the operator shall provide the Environment Agency with a written submission which includes:

(a) details of the occurrence;

(b) a description of the means used to minimise the activity of radioactive waste discharged;

(c) a review of those means having regard to conditions 2.3.1, 2.3.2 and 2.3.3;

not later than 14 days from making the record which demonstrates such excess.

4.3.9 The operator shall notify the Environment Agency in writing of the completion of Magnox reprocessing within one month of the date of completion.

4.3.10 The operator shall notify the Environment Agency in writing of the completion of active commissioning of HEPA filtration for the MSSS ventilation stack within one month of the date of completion.

4.3.11 The operator shall notify the Environment Agency in writing in advance of the start and end of operations associated with the removal of fuel, isotopes or graphite from Piles 1 and 2.

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 specified activity	Limit of specified activity
A1	Sch 23 Part 2 para 11(2)(b)	Disposal of radioactive waste on or from the premises	Production of nuclear fuel. Generation of electricity by nuclear reactors. Recovery of usable products from spent nuclear fuel.
A2	Sch 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
S1.2.5	The operator shall submit a Closure and Aftercare Management Plan for CLESA which outlines the aftercare standards that will be applied when the site has been capped to the satisfaction of the Environment Agency and a Closure Report has been agreed. The Closure and Aftercare Management Plan should be prepared in accordance with the Environment Agency document 'How to Comply with your environmental permit. Additional guidance for landfill (EPR5.02)'.	1 November 2020
S1.2.7	Prepare a suitable waste management plan and a site-wide environmental safety case to meet the requirements of condition 1.1.4 of this permit, and have these available for inspection by the Environment Agency.	31 March 2023
S1.2.8	The operator shall provide summary progress reports covering the prioritised programme of work to demonstrate all radioactive gaseous waste is contained for all radiological ventilation systems external to active facilities. Reports should cover progress with: the programme of plant inspection; the independent review of Sellafield Limited's ventilation asset management arrangements; and work to address identified deficiencies in the physical ventilation assets and the asset management arrangements.	1 February 2021 and six monthly thereafter until the programme of work is complete
S1.2.9	The operator shall undertake an assessment of future aqueous radioactive waste discharges of cobalt-60 from legacy waste. A report containing the output from this assessment and substantiated proposals for revised cobalt-60 site aqueous discharge limits shall be submitted to the Environment Agency in writing.	1 October 2023
S1.2.10	The operator shall establish, implement and provide a written work programme to the Environment Agency in response to the Magnox Swarf Storage Silo Original Building leak. The work programme shall include: • The schedule and scope of the work that will be undertaken. • What the key decisions are, when they will be taken, the logic to identify the work scope which informs each key decision and the general criteria that the operator will use to inform its decision making. • Details of how the work programme will be appropriately resourced by the operator.	31 July 2021
S1.2.11	The operator shall provide written progress reports to the Environment Agency which set out a summary of the progress made against the work programme detailed in S1.2.10. The progress report shall include: • A summary of progress made in the reporting period and details of any key decisions taken. • A list of references of the internal reports produced under the work programme in the reporting period.	Three months after submitting the work programme under S1.2.10 (i.e. 31 October 2021) and three monthly thereafter until the programme of work is complete.
S1.2.12	The operator shall provide a written report to the Environment Agency which details the findings of a systematic review of all of the potential mechanisms that in the operator's judgement could have caused or could cause Magnox Swarf Storage Silo Original Building to leak. The report shall: • State all of the potential mechanisms which in SL's judgement could have caused or could cause leakage to occur. • Provide a referenced summary assessment of the relative likelihood of each potential leak mechanism being the cause of the current leak. • Include a conceptual model which summarises SL's understanding of the potential leak mechanisms.	31 January 2022

Reference	Requirement	Date
S1.2.13	i) The operator shall provide a written report(s) to the Environment Agency which assesses and identifies the Best Available Techniques (BAT) solution(s) with the objectives of seeking to: stop/minimise/prevent any leak from the Magnox Swarf Storage Silos; and minimise any migration to, or remediate any contamination of, the ground/groundwater. In finding the BAT solution particular consideration should be given to: • The operator's understanding of potential leak mechanisms referred to in improvement requirement S1.2.12 • The lead techniques identified in SL's MSSS GEMS Study Output Report – In Ground Leak Mitigation (ref: RP/3508810/PROJ/00197/A, March 2017) • Developments in techniques, including new techniques, since the SL report (ref: RP/3508810/PROJ/00197/A, March 2017) and its supporting work was undertaken • Evaluation of in ground techniques which could re-establish facility containment and isolate/stabilise the contamination in the ground, taking into account recent developments in materials and deployment techniques • Combinations of complementary techniques including the BAT in-ground monitoring solution referred to in improvement requirement S1.2.14 • A solution which also addresses contamination in the ground from past leaks at the Magnox Swarf Storage Silos facility.	31 July 2022
	ii) Based on the outcome of this BAT assessment, the operator shall implement and validate the BAT solution to a programme agreed with the Environment Agency in writing, subject to being able to make an appropriate safety and environment case.	As agreed with Environment Agency in writing.
S1.2.14	i) The operator shall provide a written report to the Environment Agency which assesses and identifies the best available techniques (BAT) solution for ground monitoring systems with the objectives of: identifying the location of the Magnox Swarf Storage Silos Original Building leak and the movement of contamination from this within the ground and groundwater; and to support the implementation and validation of the BAT solution referred to in improvement requirement S1.2.13.	31 July 2022
	ii) Based on the outcome of this BAT assessment, the operator shall implement the BAT solution to a programme agreed with the Environment Agency in writing, subject to being able to make an appropriate safety and environment case.	As agreed with the Environment Agency in writing.

Table S1.3 A Pre-operational measures

Reference	Measure

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

Reference	Disposal or receipt	Measure
S1.3B.2	Disposal of VLLW by transfer for the purpose of subsequent treatment, transfer for disposal, incineration, metals recovery or final disposal	The Operator shall have in place adequate arrangements to ensure compliance with conditions 3.1.6 and 3.1.7 before making disposals to new consignees.
S1.3B.3	Disposal of LLW by transfer for the purpose of subsequent treatment, transfer for disposal, incineration, metals recovery or final disposal	The Operator shall have in place adequate arrangements to ensure compliance with conditions 3.1.6 and 3.1.7 before making disposals to new consignees.
S1.3B.5	Disposal of aqueous radioactive waste to sea via the Calder interceptor sewer or factory sewer	The Operator shall submit proposals for any new engineered routing of aqueous radioactive waste via the Calder Interceptor Sewer or Factory Sewer, including a report which demonstrates how best available techniques (BAT) will be used to minimise the activity of discharges of aqueous radioactive waste to the environment and to minimise its radiological effects on the environment and members of the public. These proposals will require approval in writing from the Environment Agency prior to such disposals being made.

Schedule 2 – Holdings of Open Sources

There are no requirements under this schedule

Schedule 3 - Disposals of radioactive waste and monitoring

Table S 3.1 A Specified disposals to air – Annual Site Limits

Specified radioactive waste type	Disposal outlet reference	Disposal outlet	Radionuclide or group of nuclides	Upper or Lower (1)	Annual Limits (MBq)	Quarterly Notification Level (MBq)
Gaseous waste	All outlets excluding open fuel storage ponds and other approved outlets (4)	As specified in Table S 3.1 C	Tritium H-3 (4)	Upper (2) Lower	3.7E+08 1.7E+08	9.3E+07 4.3E+07
			Carbon-14 (4)	Upper (2) Lower	2.3E+06 3.8E+05	5.8E+05 9.5E+04
			Krypton-85	Upper (2) Lower	7.0E+10 No limit	1.8E+10 No limit
			Strontium-90	Upper (3) Lower	5.0E+02 7.4E+01	1.3E+02 1.9E+01
			Ruthenium-106	Upper Lower	1.8E+04 2.8E+03	4.5E+03 7.0E+02
			Antimony-125	Upper (2) Lower	3.0E+04 No limit	7.5E+03 No limit
			Iodine-129	Upper (2) Lower	4.2E+04 1.3E+04	1.1E+04 3.3E+03
			Caesium-137	Upper (3) Lower	4.8E+03 4.1E+02	1.2E+03 1.0E+02
			Plutonium-Alpha (5)	Upper (3) Lower	1.3E+02 7.2E+01	3.3E+01 1.8E+01
			Americium-241 & Curium-242 in total	Upper (3) Lower	8.4E+01 5.0E+01	2.1E+01 1.3E+01
Gaseous waste	All outlets including open fuel storage ponds and other approved outlets	As specified in Table S 3.1 C, or otherwise approved by the Environment Agency	Alpha-emitting radionuclides associated with particulate matter (6)	Upper (3) Lower	6.6E+02 3.2E+02	1.7E+02 8.0E+01
			Beta-emitting radionuclides associated with particulate matter (6)	Upper(3) Lower	3.2E+04 5.1E+03	8.0E+03 1.3E+03

(1) Lower limit in force unless notes 2 or 3 below apply; or where a BAT case has been agreed in writing by the Environment Agency (in which case the upper limit applies for the period of time agreed in writing).
(2) Upper limit in force until the completion of Magnox reprocessing.
(3) Upper limit in force until completion of the active commissioning of HEPA filtration in the MSSS stack.
(4) Except for Pile 1 and Pile 2 ventilation stacks. For the purposes of determining compliance with the site annual limits and quarterly notification levels for Tritium H-3 and Carbon-14, discharges from Piles 1 and 2 ventilation stacks are to be included for those periods when operations associated with the removal of fuel, isotopes or graphite from those facilities are ongoing.
(5) Plutonium-Alpha means the sum of plutonium-238, plutonium-239 and plutonium-240.
(6) As measured using the techniques defined in Schedule 3 Table S3.5.

Table S 3.1 B Specified disposals to air – Annual Plant Notification Levels for individual Outlets / Groups of Outlets

Specified radioactive waste type	Disposal outlet reference	Disposal outlet	Radionuclide or group of nuclides	Annual Plant Notification Level (MBq)
Gaseous waste	A1	Decanner caves, wet bays and inlet building of the First Generation Magnox storage pond (FGMSP & decanning facility) stack	Caesium-137	7.3E-01
			Alpha-emitting radionuclides associated with particulate matter (1)	8.0E-01
			Beta-emitting radionuclides associated with particulate matter (1)	2.6E+00
Gaseous waste	A2	Original building, 1st and 2nd extensions Magnox Swarf Storage Silo (MSSS) stack	Strontium-90	3.7E+02
			Caesium-137	1.6E+03
			Alpha-emitting radionuclides associated with particulate matter (1)	2.8E+00
			Beta-emitting radionuclides associated with particulate matter (1)	2.7E+03
Gaseous waste	A3	Fuel Handling Plant (FHP) stack	Strontium-90	4.8E+00
			Antimony-125	2.4E+04
			Caesium-137	3.6E+01
			Alpha-emitting radionuclides associated with particulate matter (1)	1.3E+00
			Beta-emitting radionuclides associated with particulate matter (1)	1.3E+02
Gaseous waste	A4	Waste Vitrification Plant (WVP) stack	Carbon-14	2.2E+05
			Ruthenium-106	1.1E+03
			Iodine-129	2.3E+02
			Alpha-emitting radionuclides associated with particulate matter (1)	2.4E-01
			Beta-emitting radionuclides associated with particulate matter (1)	1.1E+01
Gaseous waste	A8	Thermal Oxide Reprocessing Plant (Thorp) stack	Tritium H-3	3.6E+07
			Carbon-14	1.5E+05
			Iodine-129	7.4E+03
			Alpha-emitting radionuclides associated with particulate matter (1)	8.0E+00
			Beta-emitting radionuclides associated with particulate matter (1)	4.5E+01
Gaseous waste	A9	Solvent Treatment Plant and HALES vessel ventilation (STP) stack	Carbon-14	2.8E+05
			Iodine-129	1.0E+03
			Alpha-emitting radionuclides associated with particulate matter (1)	1.7E-01
			Beta-emitting radionuclides associated with particulate matter (1)	1.0E+00
Gaseous waste	A10	Analytical Services and Product Finishing and Storage Plant (AS and PF&S) stack	Caesium-137	6.9E+01
			Plutonium-alpha (2)	5.4E+01
			Americium-241 & Curium-242 in total	3.6E+01
			Alpha-emitting radionuclides associated with particulate matter (1)	8.6E+01
			Beta-emitting radionuclides associated with particulate matter (1)	2.3E+02

Table S 3.1 B Specified disposals to air – Annual Plant Notification Levels for individual Outlets / Groups of Outlets

Specified radioactive waste type	Disposal outlet reference	Disposal outlet	Radionuclide or group of nuclides	Annual Plant Notification Level (MBq)
Gaseous waste	A11	Waste Encapsulation Plant (WEP) stack	Carbon-14	1.1E+04
			Iodine-129	1.7E+02
			Alpha-emitting radionuclides associated with particulate matter (1)	5.3E-01
			Beta-emitting radionuclides associated with particulate matter (1)	3.9E+00
Gaseous waste	A12	3rd extension Magnox Swarf Storage Silo (MSSS) stack	Strontium-90	4.4E+02
			Caesium-137	4.8E+03
			Alpha-emitting radionuclides associated with particulate matter (1)	1.5E+00
			Beta-emitting radionuclides associated with particulate matter (1)	3.5E+03
Gaseous waste	A13	National Nuclear Laboratory (NNL) stack	Alpha-emitting radionuclides associated with particulate matter (1)	2.9E-01
			Beta-emitting radionuclides associated with particulate matter (1)	1.4E+00
Gaseous waste	A16	Separation Area Ventilation (SAV) stack	Tritium H-3	1.8E+08
			Carbon-14	1.0E+05
			Krypton-85	2.1E+10
			Iodine-129	4.4E+03
			Alpha-emitting radionuclides associated with particulate matter (1)	1.8E+00
			Beta-emitting radionuclides associated with particulate matter (1)	1.2E+01
Gaseous waste	A18	Open Fuel Storage Ponds & Other approved outlets	Tritium H-3 (3)	2.3E+06
			Carbon-14 (3)	8.4E+04
			Alpha-emitting radionuclides associated with particulate matter (1)	9.0E+01
			Beta-emitting radionuclides associated with particulate matter (1)	1.2E+03

(1) As measured using the techniques defined in Schedule 3 Table S 3.5.
(2) Plutonium-Alpha means the sum of plutonium-238, plutonium-239 and plutonium-240.
(3) For the purpose of determining compliance with these annual notification levels, the operator may disregard the discharges of the relevant radionuclides from the Open Fuel Storage Ponds and Other approved outlets specified in Table S3.1 C except for the Pile 1 and Pile 2 ventilation stacks. Reporting of these discharges is only required when operations associated with the removal of fuel, isotopes or graphite from Piles 1 and 2 are ongoing.

Table S 3.1 C Specified disposals to air – Disposal Outlets

Specified radioactive waste type	Disposal outlet reference	Disposal outlet
Gaseous waste	A1	Decanner caves, wet bays and inlet building of the First Generation Magnox Storage Pond stack (FGMSP & decanning facility) stack
Gaseous waste	A2	Original building, 1st and 2nd extensions Magnox Swarf Storage Silo (MSSS) stack
Gaseous waste	A3	Fuel Handling Plant (FHP)stack
Gaseous waste	A4	Waste Vitrification Plant (WVP) stack
Gaseous waste	A8	Thermal Oxide Reprocessing Plant (Thorp) stack
Gaseous waste	A9	Solvent Treatment Plant (STP) and HALES vessel ventilation stack
Gaseous waste	A10	Analytical Services and Product Finishing and Storage Plant (AS and PF&S) stack
Gaseous waste	A11	Waste Encapsulation Plant (WEP) stack
Gaseous waste	A12	3rd extension Magnox Swarf Storage Silo (MSSS) stack
Gaseous waste	A13	National Nuclear Laboratory (NNL) stack
Gaseous waste	A16	Separation Area Ventilation (SAV) stack
Gaseous waste	A18	Open Fuel Storage Ponds: LWR Storage Pond open surface (LWRSP) Pile Fuel Storage Pond open surface (PFSP) First Generation Magnox Storage Pond open surface (FGMSP) AGR Storage Pond open surface (AGRSP) Approved outlets approved by Environment Agency in writing but not specified in Table S3.1 C

.

Table S 3.2 A Specified disposals to water – Annual Site Limits

Specified radioactive waste type	Disposal outlet reference	Disposal outlet	Radionuclide or group of nuclides	Upper or Lower (1)	Annual Limits (GBq)	Quarterly Notification Level (GBq)
Aqueous waste	All outlets specified in Table S 3.2 C [W1-4]	As specified in Table S 3.2 C (5)	Tritium H-3	Upper (2) Lower	3.0.E+06 7.0E+05	7.5E+05 1.8E+05
			Carbon-14	Upper (2) Lower	1.3E+04 5.1E+03	3.3E+03 1.3E+03
			Cobalt-60	Upper Lower	3.6E+03 2.5E+03	9.0E+02 6.3E+02
			Strontium-90	Upper Lower	3.2E+04 1.4E+04	8.0E+03 3.5E+03
			Technetium-99	Upper (2) Lower	7.5E+03 4.5E+03	1.9E+03 1.1E+03
			Ruthenium-106	Upper Lower	1.0E+04 3.1E+03	2.5E+03 7.8E+02
			Iodine-129	Upper Lower	8.0E+02 3.2E+02	2.0E+02 8.0E+01
			Caesium-137	Upper Lower	2.4E+04 1.7E+04	6.0E+03 4.3E+03
			Plutonium-Alpha (3)	Upper Lower	5.0E+02 2.9E+02	1.3E+02 7.3E+01
			Plutonium-241	Upper Lower	1.8E+04 6.0E+03	4.5E+03 1.5E+03
			Americium-241	Upper Lower	2.2E+02 1.4E+02	5.5E+01 3.5E+01
			Alpha-emitting radionuclides (4)	Upper Lower	6.0E+02 3.4E+02	1.5E+02 8.5E+01
			Beta-emitting radionuclides (4)	Upper Lower	1.2E+05 6.3E+04	3.0E+04 1.6E+04
			Uranium	Upper Lower	7.0E+01 2.0E+01	1.8E+01 5.0E+00

(1) Lower limit in force unless note 2 below applies; or where a BAT case has been agreed in writing by the Environment Agency (in which case the upper limit applies for the period of time agreed in writing).
(2) Upper limit in force until the completion of Magnox reprocessing.
(3) Plutonium-Alpha means the sum of plutonium-238, plutonium-239 and plutonium-240.
(4) As measured using the techniques defined in Schedule 3 Table S3.5.
(5) These limits apply to the total combined discharge from all disposal outlets specified in Table S3.2C

Table S 3.2 B Specified disposals to water – Annual Plant Notification levels for discharges

Specified radioactive waste type	Plant/disposal outlet	Radionuclide or group of nuclides	Annual Plant Notification Level (GBq)
Aqueous waste	Segregated Effluent Treatment Plant (SETP)	Tritium H-3	2.5E+06
		Carbon-14	6.3E+03
		Cobalt-60	1.8E+01
		Strontium-90	8.3E+02
		Ruthenium-106	3.9E+02
		Iodine-129	8.0E+01
		Caesium-137	2.0E+03
		Plutonium-Alpha (1)	8.0E+01
		Plutonium-241	1.8E+03
		Americium-241	1.8E+01
		Alpha-emitting radionuclides (2)	1.0E+02
		Beta-emitting radionuclides (2)	4.3E+03
		Uranium	1.2E+01
Aqueous waste	Enhanced Actinide Removal Plant (EARP)	Tritium H-3	3.2E+04
		Carbon-14	8.0E+02
		Strontium-90	1.2E+03
		Technetium-99	2.3E+03
		Ruthenium-106	1.7E+03
		Caesium-137	5.0E+02
		Plutonium-Alpha (1)	7.0E+00
		Plutonium-241	7.0E+01
		Americium-241	1.7E+01
		Alpha-emitting radionuclides (2)	2.6E+01
		Beta-emitting radionuclides (2)	5.6E+03
Aqueous waste	Site Ion Exchange Plant (SIXEP) (3)	Tritium H-3	2.0E+04
		Carbon-14	3.4E+01
		Cobalt 60	1.8E+01
		Strontium-90	1.7E+03
		Technetium-99	6.0E+02
		Ruthenium-106	1.9E+02
		Caesium-137	3.0E+03
		Plutonium-Alpha (1)	1.4E+02
		Plutonium-241	2.0E+03
		Americium-241	4.0E+00
		Alpha-emitting radionuclides (2)	1.5E+02
		Beta-emitting radionuclides (2)	6.7E+03
Aqueous waste	Laundry & Lagoon	Tritium H-3	1.2E+01
		Strontium-90	1.5E+03
		Americium-241	2.0E-01
		Alpha-emitting radionuclides	3.5E-01
		Beta-emitting radionuclides	2.3E+03

Specified radioactive waste type	Plant/disposal outlet	Radionuclide or group of nuclides	Annual Plant Notification Level (GBq)
Aqueous waste	THORP Receipt & Storage pond	Tritium H-3	7.0E+01
		Cobalt -60	4.0E+01
		Ruthenium-106	4.2E+01
		Caesium-137	8.5E+02
		Plutonium-Alpha (1)	9.0E+00
		Plutonium-241	2.0E+02
		Alpha-emitting radionuclides (2)	1.1E+01
		Beta-emitting radionuclides (2)	9.7E+02
Aqueous waste	THORP Carbon-14 removal plant	Tritium H-3	9.9E+02
		Carbon-14	1.9E+02
		Iodine-129	4.8E+02
		Alpha-emitting radionuclides (2)	1.8E-01
		Beta-emitting radionuclides (2)	3.4E+02
Aqueous waste	Factory Sewer	Tritium H-3	1.0E+01
		Alpha-emitting radionuclides (2)	1.5E-01
		Beta-emitting radionuclides (2)	7.0E+00
Aqueous waste	Calder Interceptor Sewer	Tritium H-3	1.0E+01
		Alpha-emitting radionuclides (2)	1.0E-01
		Beta-emitting radionuclides (2)	1.0E+00

(1) Plutonium-Alpha means the sum of plutonium-238, plutonium-239 and plutonium-240.
(2) As measured using the techniques specified in Schedule 3 Table S3.5.

Table S 3.2 C Specified disposals to water – Disposal Outlets

Specified radioactive waste type	Disposal outlet reference	Disposal outlet
Aqueous waste	W1	Discharge routes from Segregated Effluent Treatment Plant (SETP), Site Ion Exchange Plant (SIXEP), Enhanced Actinide Removal Plant (EARP), THORP Receipt & Storage Pond, THORP Carbon-14 Removal Plant, Laundry and Lagoon to the 2 sea pipelines, used for the discharge of aqueous radioactive waste, which are manifolded to the effluent Break Pressure Tank and discharge to the Irish Sea 2km offshore from the Sellafield beach.
Aqueous waste	W2	Discharge routes from the Factory Sewer and overflow from the Lagoon Y-sump and pumped from the lagoon under exceptional storm conditions or as notified to the Environment Agency in writing, used for the discharge of treated sewage effluent and other aqueous effluent which discharges to the Ehen Estuary, at the confluence with the R Calder.
Aqueous waste	W3	Discharge route from the Calder Interceptor Sewer (principally supporting very low level liquid effluents generated on the East of the Sellafield site) discharging to sea to the South of the river Calder approximately 800m offshore.
Aqueous waste	W4	Approved outlets approved by the Environment Agency in writing but not specified in Table S3.2 C.

Table S3.3 Disposals by transfer to other premises

Radioactive waste type	Disposal route: person to whom radioactive waste may be transferred [1]	Purpose of transfer	Radionuclide or group of radionuclides	Calendar year limit	Annual volume limit m^3
VLLW (2)	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 (3)	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
Liquid waste with an activity concentration not exceeding 4 GBq/t of alpha emitting radionuclides nor 12 GBq/t of all other radionuclides	The holder of an environmental permit for the receipt and disposal of liquid waste	For any one or more of: - treatment - onward transfer for treatment or disposal - incineration - final disposal	Any	No limit	No limit
Liquid waste with an activity concentration exceeding 4 GBq/t of alpha emitting radionuclides or 12 GBq/t of all other radionuclides	Any nuclear operator holding an environmental permit for the receipt of radioactive waste A specified holder of an environmental permit for the receipt and disposal of liquid waste, as agreed in writing by the Environment Agency	For any one or more of: - treatment - onward transfer for treatment or disposal - incineration - final disposal	Any	No limit	No limit
ILW	Any nuclear operator holding an environmental permit for the receipt of radioactive waste A specified holder of an environmental permit for the receipt and disposal of ILW, as agreed in writing by the Environment Agency	For any one or more of: - treatment - onward transfer for treatment or storage - incineration - 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

(1) For the purposes of this table, "environmental permit" includes any authorisation or permit issued by the environmental regulator for Wales, Scotland or Northern Ireland.
(2) See Reference S1.3B.2 in Table S1.3B for pre-operational measures prior to disposal.
(3) See Reference S1.3B.3 in Table S1.3B for pre-operational measures prior to disposal.

Table S3.4 Specified disposal by burial

Specified waste type	Where disposed of	Annual Volume limit m^3 (1) (2)
Solid waste not exceeding 3.7 Bq/g (3)(4)	Calder Floodplain Landfill Extension – Main Area	24000
Solid waste not exceeding 12,000 Bq/g for tritium (H-3) and not exceeding 200 Bq/g for the total of all other radionuclides (4)(5)(6)	Calder Floodplain Landfill Extension – Segregated Area	36000

(1) These limits apply on a calendar year basis.
(2) Volume means the waste and its primary containment (immediate packaging).
(3) Total activity concentration of all radionuclides, where the activity concentration of alpha emitting radionuclides shall not exceed more than one half of the total activity concentration limit.
(4) Averaged over a consignment (single vehicle load)
(5) Radium 226 activity concentrations in the top 3 metres of disposals in the top plane of the facility shall not exceed 0.35Bq/g.
(6) The activity of hotspots within a consignment shall meet this requirement:

$(\alpha / 1{,}700) + (\beta / 40{,}000) < 1$

Where:
α is the total surface alpha activity (Bq/g)
β is the total surface beta/gamma (excluding tritium) activity (Bq/g)

Table S 3.5 monitoring techniques

Table and radionuclide	Monitoring technique
Table S3.1 A and Table S3.1 B Beta-emitting radionuclides associated with particulate matter and alpha-emitting radionuclides associated with particulate matter	For the purposes of demonstrating compliance with the conditions of this permit relating to "beta-emitting radionuclides associated with particulate matter" and "alpha-emitting radionuclides associated with particulate matter", the operator shall measure the gross beta and alpha activity of all particulate samples collected for these purposes, after an appropriate period for decay of radon daughters, by using suitable sample preparation methods and a suitable counting system, which have been agreed in writing by the Agency. The Environment Agency agrees the operator shall measure the gross alpha activity of all particulate samples using: • Zinc Sulphide alpha scintillation counters calibrated with Pu-239+240 standards. or • Silver activated zinc sulphide alpha scintillation counters calibrated with Pu-239,240 standards or • Gas flow proportional counters, using 10% methane in argon and calibrated with Pu-239,240 standards or • Berthold LB770 10 Sample low level alpha sampler, calibrated using Americium-241. or • any other suitable counting system agreed in writing by the Agency. The Environment Agency agrees the operator shall measure the gross beta activity of all particulate samples using: • Gas flow proportional counters, using 10% methane in argon and calibrated using Sr-90/Y-90 standards for filter papers. and • Geiger-Muller thin end window tube counter and calibrated using K-40 standards for charcoal granules. or • 50mm diameter pancake Geiger-Muller detector in a lead castle, calibrated using Chlorine-36, and connected to a 6000 series scaler or • any other suitable counting system agreed in writing by the Agency. These techniques are not used for the determination of alpha and beta discharges from the miscellaneous and approved outlets, which are calculated. All alpha and beta counting equipment is to be set up in compliance with the manufacturer's instructions. Sample preparation and the operation of the counting equipment are to be conducted according to detailed methods which cover all aspects which could affect the relative accuracy of the method used, e.g.: • sample preparation • the detector type • the detector window thickness • the detector, sample and shielding configuration • the operating voltage • lower and upper energy thresholds • the calibration standard. The operator shall notify the Agency of any changes to the methods, which could affect the relative accuracy of the sample measurement, prior to any changes being made. All changes shall be agreed in writing prior to their implementation.
Table S3.2 A and Table S3.2 B Beta-emitting radionuclides and alpha-emitting radionuclides	For the purposes of demonstrating compliance with the conditions of this permit relating to "beta-emitting radionuclides" and "alpha-emitting radionuclides", the operator shall measure the gross beta and alpha activity of all samples collected for these purposes by using suitable sample preparation methods and a suitable counting system, which have been agreed in writing by the Agency. The Environment Agency agrees the operator shall measure the gross alpha activity of all samples using: • Silver activated zinc sulphide alpha scintillation counters calibrated with Pu-239,240 standards

Table and radionuclide	Monitoring technique
	or • Gas flow proportional counters, using 10% methane in argon and calibrated with Pu-239,240 standards or • Zinc sulphide alpha scintillation counters calibrated using Pu-239+240 standards. The Environment Agency agrees the operator shall measure the gross beta activity of samples using: • Geiger-Muller end window tube counter calibrated using Sr-90/Y-90 standards for all samples other than samples of aqueous discharges from the Factory Sewer and Laundry and Lagoon. or • Geiger-Muller equipment with 10ml well tube calibrated using K-40 standards for samples of aqueous discharges from the Factory Sewer and Laundry and Lagoon only. or • Beta liquid scintillation counting in the Cerenkov mode, calibrated using K-40 standards for samples of aqueous discharges from the Factory Sewer and Laundry and Lagoon only. All alpha and beta counting equipment is to be set up in compliance with the manufacturer instructions. Sample preparation and the operation of the counting equipment are to be conducted according to detailed methods which cover all aspects which could affect the relative accuracy of the method used, e.g.: • sample preparation • the detector type • the detector window thickness • the detector, sample and shielding configuration • the operating voltage • lower and upper energy thresholds • the calibration standard. The operator shall notify the Agency of any changes to the methods, which could affect the relative accuracy of the sample measurement, prior to any changes being made. All changes shall be agreed in writing prior to their implementation.

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.	

Name*	
Post	
Signature	
Date	

* authorised to sign on behalf of Sellafield Limited

Schedule 6 - Interpretation

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

"active commissioning of HEPA filtration in MSSS" means the active commissioning of HEPA filtration as part of the commissioning and operation of the retrievals ventilation system extract modification for MSSS.

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

"*annual limit*" means the limit over a period of any consecutive 12 months.

"*annual plant notification level*" means the plant notification level over a period of any consecutive 12 months.

"*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.

"*disposability*" means capable of being conditioned, packaged and disposed of in a way that meets the standards and specifications for final disposal using the identified disposal route, and where the conditioned waste will maintain its integrity such that safe and efficient storage, handling, transport and disposal is achieved.

"*disposal facility*" means an on-site engineered facility where solid radioactive waste is permanently emplaced solely for the purpose of disposing of that waste.

"*disposal for a purpose*" means on-site disposal of solid radioactive waste by permanent deposit where, if suitable radioactive waste were not available, other materials would have to be found to fulfil the purpose.

"*disposal in-situ*" means on-site disposal of solid radioactive waste by leaving it permanently in its original position, together with any necessary preparatory works.

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

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

"*ILW*" means solid radioactive waste with an activity concentration greater than the maximum for LLW, but which does not require heating to be taken into account in the design of storage or disposal facilities.

"*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.

"Magnox reprocessing" means the feed of fuel into the Magnox reprocessing dissolver.

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

"*month*" means calendar month.

"*National Arrangements for Incidents Involving Radioactivity*" means the arrangements co-ordinated by Public Health England to protect the public from hazards arising from the use and transport of radioactive materials and in situations where no formal contingency plans exist.

"*nuclear operator*" means a person who carries on a radioactive substances activity on a nuclear site.

"*open radioactive source*" means radioactive material not in the form of a sealed radioactive source.

“*optimise*” and “*optimised*” means the outcome of the process of optimisation, in which all exposures to ionising radiation of any member of the public and of the population as a whole resulting from the disposal of radioactive waste are kept as low as reasonably achievable, taking into account economic and social factors.

“*other than in a disposal facility*” means one or both of “*disposal for a purpose*” and “*disposal in-situ*”.

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

"*quarter*" means any period of three consecutive months.

“Radio*active Waste Adviser”* means an individual, or group of individuals, with the knowledge, training and experience needed to give radioactive waste management and environmental radiation protection advice in relation to radioactive waste to ensure the effective protection of members of the public whose competence is recognised by the Environment Agency.

“*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.

“*site-wide environmental safety case*” means a documented set of claims made by the operator, and substantiated by a structured collection of arguments and evidence, to demonstrate achievement by the site as a whole of the required standard of environmental safety. Where relevant it includes the facility-specific environmental safety case for any on-site *disposal facility*.

“*spot sampling*” means the taking of samples on a non-continuous basis of radioactive substances 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.

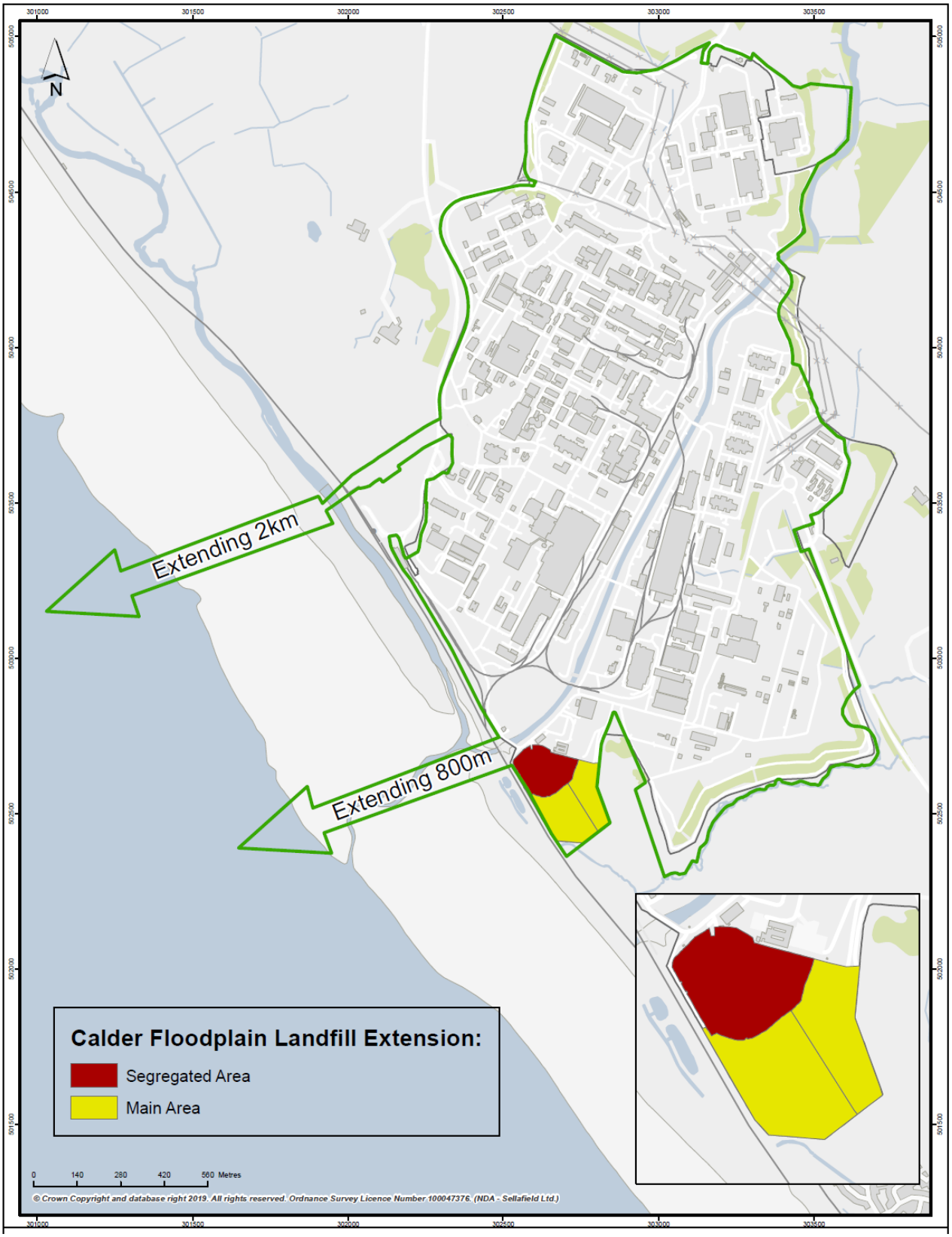
“*waste acceptance criteria*” means qualitative and/or quantitative criteria, specified by the operator, for solid radioactive waste to be accepted for disposal.

“waste management plan” means a documented plan, prepared by the operator, which provides a comprehensive description of the current intent for dealing with all radioactive waste on or adjacent to the site and demonstrates how waste management has been optimised.

"*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.

Schedule 7 - Site plan



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