

WASTE STREAM	2X16	Low Active Effluent Management Group: Salt Evaporator LLW
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SITE Sellafield

SITE OWNER Nuclear Decommissioning Authority

WASTE CUSTODIAN Sellafield Ltd

WASTE TYPE LLW

WASTE VOLUMES

	Reported (m ³)	OR	Conditioned (m ³)	Packaged (m ³)
Stocks:	At 1.4.2025	= 0		
Future arisings:	1.4.2025 - 31.3.2026	14.5		
	1.4.2026 - 31.3.2027	14.5		
	1.4.2027 - 31.3.2028	14.5		
	1.4.2028 - 31.3.2029	14.5		
	1.4.2029 - 31.3.2030	14.5		
Total future arisings:		72.4		
Total waste volume:		72.4		

Number of waste packages in stock: At 1.4.2025..... - packages

Comment on arising rates: Arisings are based on 5 years of forecasts, with the final year extrapolated to the end of the lifetime of the waste stream.

Additional information on quantities: Uncertainty information is notional.

Uncertainty factors on volumes: Stock (upper): x - Arisings (upper): x 1.50
Stock (lower): x - Arisings (lower): x 0.50

WASTE SOURCE Waste arises as a result of routine operations and maintenance at the facility.

PHYSICAL CHARACTERISTICS

General description: The waste will mainly include metallic waste and organics (pipe, PPE etc) arising from maintenance.

Changes since waste generated: The waste has not undergone any changes since it was generated.

Bulk density (t/m³): = 0.42

Comment on density: The total bulk density has been calculated based on the 5 year forecast and relevant waste characterisation document.

CHEMICAL COMPOSITION

General description and components (%wt): Metals (24.3%), Concrete/Rubble (1%), Wood (4%), Rubber (1%), Halogenated Plastics (19.3%), Non-Halogenated Plastics (19.3%), Hydrocarbons (2.9%), Other Organics (24%), Asbestos (1.2%) and Other (3%).

Chemical state: Neutral

Sheet metal proportion / thickness: Metal thickness not specified

Metals and alloys (%wt):

	(%wt)	Type(s) / Grades(s) with proportions	% of total C14 activity
Stainless steel.....	= 2.7	-	
Other ferrous metals.....	= 13.5	-	
Iron.....	= 4.6	-	
Aluminium.....	= 1.9	-	
Beryllium.....		-	
Cobalt.....		-	
Copper.....	= 0.39	-	
Lead.....	= 0.39	-	
Magnox/Magnesium.....		-	
Nickel.....		-	
Titanium.....		-	
Uranium.....		-	
Zinc.....	= 0.77	-	
Zircaloy/Zirconium.....		-	
Other metals.....	= 0.02	-	

Organics (%wt):

	(%wt)	Type(s) and comment	% of total C14 activity
Total cellulose.....	= 4.0	-	
Paper, cotton.....		-	
Wood.....	= 4.0	-	
Halogenated plastics.....	= 19.3	-	
Total non-halogenated plastics.....	= 19.3	-	
Condensation polymers.....		-	
Others.....		-	
Organic ion exchange materials.....		-	
Total rubber.....	= 1.0	-	
Halogenated rubber.....		-	
Non-halogenated rubber.....		-	
Hydrocarbons.....	= 2.9	-	
Oil or grease.....	= 1.9	-	
Fuel.....		-	
Asphalt/Tarmac (cont.coal tar).....	= 0.39	-	
Asphalt/Tarmac (no coal tar).....	= 0.39	-	
Bitumen.....	= 0.19	-	
Others.....		-	
Other organics.....	= 24.0	-	

Other materials (%wt):

	(%wt)	Type(s) and comment	% of total C14 activity
Inorganic ion exchange materials.....		-	
Inorganic sludges and flocs.....		-	
Soil.....		-	
Brick/Stone/Rubble.....	= 1.0	-	
Cementitious material.....		-	
Sand.....		-	
Glass/Ceramics.....	= 2.7	-	
Graphite.....		-	
Desiccants/Catalysts.....		-	
Asbestos.....	= 1.2	-	
Non/low friable.....	= 0.77	-	
Moderately friable.....	= 0.19	-	
Highly friable.....	= 0.19	-	
Free aqueous liquids.....		-	
Free non-aqueous liquids.....		-	
Powder/Ash.....	= 0.39	-	

COMPONENTS OF MATERIALS, WASTE PROPERTIES, MATERIALS NOT CONTRIBUTING TO MASS

Inorganic anions (%wt):

	(%wt)	Type(s) and comment
Fluoride.....		-
Chloride.....		-
Iodide.....		-
Cyanide.....		-
Carbonate.....		-
Nitrate.....		-
Nitrite.....		-
Phosphate.....		-
Sulphate.....		-
Sulphide.....		-

Materials of interest for waste acceptance criteria:

	(%wt)	Type(s) and comment
Combustible metals.....		-
Low flash point liquids.....		-
Explosive materials.....		-
Phosphorus.....		-
Hydrides.....		-
Biological etc. materials.....		-
Biodegradable materials.....	= 24.0	-
Putrescible wastes.....		-
Non-putrescible wastes.....	= 24.0	-
Corrosive materials.....		-
Pyrophoric materials.....		-
Generating toxic gases.....		-
Reacting with water.....	= 2.7	-
Higher activity particles.....		-
Soluble solids as bulk chemical compounds.....		-

Hazardous substances / non hazardous pollutants:

-

	(%wt)	Type(s) and comment
Acrylamide.....	-	-
Benzene.....	-	-
Chlorinated solvents.....	-	-
Formaldehyde.....	-	-
Organometallics.....	-	-
Phenol.....	-	-
Styrene.....	-	-
Tri-butyl phosphate.....	-	-
Other organophosphates.....	-	-
Vinyl chloride.....	-	-
Arsenic.....	-	-
Barium.....	-	-
Boron.....	-	-
Boron (in Boral).....	-	-
Boron (non-Boral).....	-	-
Cadmium.....	-	-
Caesium.....	-	-
Selenium.....	-	-
Chromium.....	-	-
Molybdenum.....	-	-
Thallium.....	-	-
Tin.....	-	-
Vanadium.....	-	-
Mercury compounds.....	-	-
Others.....	-	-

Complexing agents (%wt):

Yes

	(%wt)	Type(s) and comment
EDTA.....	< 0.01	-
DPTA.....	-	-
NTA.....	-	-
Polycarboxylic acids.....	-	-
Other organic complexants.....	-	-
Total complexing agents.....	< 0.01	-

Physical components:

	Number	Type(s) and comment
Sources.....	= 0	-
Electronic & Electrical Equipment (EEE)	-	-
EEE Type 1.....	30 items every 5 years.	-
EEE Type 2.....	15 items every 5 years.	-
EEE Type 3.....	30 items every 5 years.	-
EEE Type 4.....	5 items every 5 years.	-
EEE Type 5.....	5 items every 5 years.	-

TREATMENT, PACKAGING AND DISPOSAL

Planned on-site / off-site treatment(s):

Treatment	On-site / Off-site	Stream volume %
Size reduction	On-site	= 74.2
Decay storage		
Low force compaction		
Supercompaction (HFC)		
Incineration		
Drying/dewatering/liquid separation	Off-site	= 4.9
Tie down/fixatives/strippable coating/painting application		
Decontamination		
Metal treatment		
Recycling / reuse		
Thermal treatment, including vitrification		
Encapsulation		
Polymer encapsulation		
Other physical treatment		
Other chemical treatment		
Containerisation		= 20.9
Treatment not yet determined		
None		

Comments on planned treatments:

For Inventory purposes, it is assumed that super-compaction will continue after the closure of WAMAC in 2028. Metal treatment will take place off site. Waste not requiring treatment is non compactable LLW for direct disposal to LLWR.

Conditioning method:

-

Conditioning plants:

Plant Name	Location

Likely conditioning matrix:

-

Further information on the conditioning matrix:

-

Waste Packaging:

Likely container type:	Container	Waste packaged (vol%)	Waste loading (m³)	Payload (m³)	Number of packages	Estimated start date for packaging
	1/2 Height IP-2 Disposal/Re-usable ISO (TC01/TC02)	20.9	10.0	18.3	2	-
	1/2 Height WAMAC IP-2 ISO (TC08)	74.2	59.3	18.8	1	-

Range in container waste loading:

Other information on packaging and conditioning: -

Conditioned density (t/m³): -

Conditioned density comment: -

Management Routes:

Disposal Route	Stream volume %	Raw density t/m³	Start date
Expected to be consigned to a Near Site, Near Surface Disposal Facility (Scotland)	= 95.1	= 0.37	2025
Expected to be Non-NSD HAW managed under Scottish Government's policy			
Expected to be disposed to LLW Vaults NRS Dounreay			
Expected to be consigned to the Geological Disposal Facility			
Expected to be consigned to a Near Surface Disposal Facility			
Expected to be consigned to the LLW Repository	= 4.9	= 1.4	2025
Expected to be consigned to a Landfill Facility			
Expected to be disposed On-Site			
Expected to be managed by In-Situ Disposal			
Expected to be consigned to an Incineration Facility			
Expected to be consigned to a Metal Treatment Facility	= 4.9	= 1.4	2025
Expected to be Out of Scope			
Expected to be recycled / reused			
Disposal route not known			

Classification codes for waste expected to be consigned to a landfill facility:

Opportunities for alternative disposal routing: No

Baseline Management Route	Opportunity Management Route	Stream volume (%)	Opportunity Confidence	Comment
-	-	-	-	-

RADIOACTIVITY

Source: The activity arises as a result of processing raffinates from reprocessing operations. The waste has become contaminated during routine operations.

Uncertainty: The uncertainty associated with the fingerprinting analysis is likely to be low, however the volumes and total activity information (and possibly some other assumptions) are likely to be more notional and thus more uncertain.

Measurement of radioactivities: Specific activity data is based on data in the corresponding WCH, which in turn maps an estimated total activity to an analytically derived radionuclide fingerprint.

Chemical form of radionuclides:

- H-3: -
- C-14: -
- Cl-36: -
- Se-79: -
- Tc-99: -
- I-129: -
- Ra: -
- Th: -
- U: -
- Np: -
- Pu: -

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Bands (Upper and Lower)

A a factor of 1.5
B a factor of 3
C a factor of 10
D a factor of 100
E a factor of 1000

Note: Bands quantify uncertainty in the mean radioactivity.

Code

1 Measured activity
2 Derived activity (best estimate)
3 Derived activity (upper limit)
4 Not present
5 Present but not significant
6 Likely to be present but not assessed
7 Present in significant quantities but not determined
8 Not expected to be present in significant quantity
* Total calculated from the 114 declared radionuclides