

WASTE STREAM	9H34	Pile Cap, Dry Fuel Store and associated areas
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SITE Wylfa

SITE OWNER Nuclear Decommissioning Authority

WASTE CUSTODIAN Nuclear Restoration Services Ltd (NRS)

WASTE TYPE ILW

WASTE VOLUMES

	Reported (m ³)	OR	Conditioned (m ³)	Packaged (m ³)
Stocks:	At 1.4.2025	= 0.2		
Future arisings:				
Total future arisings:		0.0		
Total waste volume:		0.2		

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

Comment on arising rates: -

Additional information on quantities: -

Uncertainty factors on volumes:

Stock (upper):	x 1.20	Arisings (upper):	x -
Stock (lower):	x 0.80	Arisings (lower):	x -

WASTE SOURCE Operational Waste

PHYSICAL CHARACTERISTICS

General description: The waste consists of small metallic items, cloth, plastics held in a single 200 litre drum.

Changes since waste generated: -

Bulk density (t/m³): ~ 0.060

Comment on density: Calculated from mass of waste of 10kg (0.01 tonnes) of waste in 200 litre drum no more than 75% full (0.15m³).

CHEMICAL COMPOSITION

General description and components (%wt): Metal content ~10%w, Plastic (halogenated) ~10%w, Plastic (non halogenated) ~10%w, Other materials (Cloth & Oil Cloth) ~70%w.

Chemical state: Neutral

Sheet metal proportion / thickness: Metal thicknesses will be variable from about 1 mm up to about 30 mm. Steel drum containing the waste have a typical wall thickness of 1-2 mm

Metals and alloys (%wt):

	(%wt)	Type(s) / Grades(s) with proportions	% of total C14 activity
Stainless steel.....	~~ 10.0	-	
Other ferrous metals.....		Carbon steel,	
Iron.....		-	
Aluminium.....		-	
Beryllium.....		-	
Cobalt.....		-	
Copper.....		-	
Lead.....		-	
Magnox/Magnesium.....		-	
Nickel.....		-	
Titanium.....		-	
Uranium.....		-	
Zinc.....		-	
Zircaloy/Zirconium.....		-	
Other metals.....		-	

Organics (%wt):

	(%wt)	Type(s) and comment	% of total C14 activity
Total cellulose.....	70.0	-	
Paper, cotton.....	= 70.0	-	
Wood.....		-	
Halogenated plastics.....	= 10.0	-	
Total non-halogenated plastics.....	= 10.0	-	
Condensation polymers.....	NE	-	
Others.....	= 10.0	-	
Organic ion exchange materials.....		-	
Total rubber.....	= 0	-	
Halogenated rubber.....		-	
Non-halogenated rubber.....		-	
Hydrocarbons.....		-	
Oil or grease.....		-	
Fuel.....		-	
Asphalt/Tarmac (cont.coal tar).....		-	
Asphalt/Tarmac (no coal tar).....		-	
Bitumen.....		-	
Others.....		-	
Other organics.....		-	

Other materials (%wt):

	(%wt)	Type(s) and comment	% of total C14 activity
Inorganic ion exchange materials.....		-	
Inorganic sludges and flocs.....		-	
Soil.....		-	
Brick/Stone/Rubble.....		-	
Cementitious material.....		-	
Sand.....		-	
Glass/Ceramics.....		-	
Graphite.....		-	
Desiccants/Catalysts.....		-	
Asbestos.....	0	-	
Non/low friable.....		-	
Moderately friable.....		-	
Highly friable.....		-	
Free aqueous liquids.....		-	
Free non-aqueous liquids.....		-	
Powder/Ash.....		-	

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.....	0	-
Putrescible wastes.....		-
Non-putrescible wastes.....		-
Corrosive materials.....		-
Pyrophoric materials.....		-
Generating toxic gases.....		-
Reacting with water.....		-
Higher activity particles.....		-
Soluble solids as bulk chemical compounds.....		-

Hazardous substances / non hazardous pollutants:

	(%wt)	Type(s) and comment
Acrylamide.....	0	-
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):

No		
	(%wt)	Type(s) and comment
EDTA.....	= 0	-
DPTA.....		-
NTA.....		-
Polycarboxylic acids.....		-
Other organic complexants.....		-
Total complexing agents.....		-

Physical components:

	Number	Type(s) and comment
Sources.....		-
Electronic & Electrical Equipment (EEE)		-
EEE Type 1.....		-
EEE Type 2.....		-
EEE Type 3.....		-
EEE Type 4.....		-
EEE Type 5.....		-

TREATMENT, PACKAGING AND DISPOSAL

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

Treatment	On-site / Off-site	Stream volume %
Size reduction		
Decay storage		
Low force compaction		
Supercompaction (HFC)		
Incineration		
Drying/dewatering/liquid separation		
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		
Treatment not yet determined		
None		

Comments on planned treatments:

-

Conditioning method:

Waste is assumed to be co-disposed in a total of three Type VI DCICs with 9H24, 9H25, 9H27, 9H33 and 9H35. Containers are allocated to 9H24, 9H25 & 9H27 as three largest volume streams.

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
	-	-	-	-	-	-

Range in container waste loading: -

Other information on packaging and conditioning: Waste is assumed to be co-disposed in a total of three Type VI DCICs with 9H24, 9H25, 9H27, 9H33 and 9H35. Containers are allocated to 9H24, 9H25 & 9H27 as three largest volume streams.

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)			
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			
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			
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: -

Uncertainty: -

Measurement of radioactivities: -

Chemical form of radionuclides:

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

WASTE STREAM 9H34 Pile Cap, Dry Fuel Store and associated areas									
Nuclide	Mean radioactivity, TBq/m³				Nuclide	Mean radioactivity, TBq/m³			
	Waste at 1.4.2025	Bands and Code	Future Arisings	Bands and Code		Waste at 1.4.2025	Bands and Code	Future Arisings	Bands and Code
H 3	2.09E-01	D D 1			Gd 153			8	
Be 10					Ho 163			8	
C 14	7.06E-03	D D 1			Ho 166m			8	
Na 22					Tm 170			8	
Al 26					Tm 171			8	
Cl 36	2.67E-03	C C 1			Lu 174			8	
Ar 39					Lu 176			8	
Ar 42					Hf 178n			8	
K 40					Hf 182			8	
Ca 41					Pt 193			8	
Mn 53					Ti 204			8	
Mn 54	6.88E-07	D D 2			Pb 205			8	
Fe 55	5.41E-02	C C 1			Pb 210			8	
Co 60	2.41E-02	C C 2			Bi 208			8	
Ni 59					Bi 210m			8	
Ni 63	5.18E-03	A A 1			Po 210			8	
Zn 65	1.92E-07	C C 2			Ra 223			8	
Se 79					Ra 225			8	
Kr 81					Ra 226			8	
Kr 85					Ra 228			8	
Rb 87					Ac 227			8	
Sr 90	1.36E-06	C C 2			Th 227			8	
Zr 93					Th 228			8	
Nb 91					Th 229			8	
Nb 92					Th 230			8	
Nb 93m					Th 232			8	
Nb 94	2.43E-05	C C 2			Th 234			8	
Mo 93					Pa 231			8	
Tc 97					Pa 233			8	
Tc 99					U 232			8	
Ru 106	4.73E-08	C C 2			U 233			8	
Pd 107					U 234			8	
Ag 108m	5.59E-05	C C 2			U 235			8	
Ag 110m	9.88E-08	C C 2			U 236			8	
Cd 109					U 238			8	
Cd 113m					Np 237			8	
Sn 119m					Pu 236			8	
Sn 121m					Pu 238	4.64E-07	C C 2		
Sn 123					Pu 239	5.22E-07	C C 2		
Sn 126					Pu 240	6.81E-07	C C 2		
Sb 125	7.61E-06	C C 2			Pu 241	4.23E-05	C C 2		
Sb 126					Pu 242			8	
Te 125m	1.91E-06	C C 2			Am 241	2.44E-06	C C 2		
Te 127m					Am 242m			8	
I 129					Am 243			8	
Cs 134	1.02E-06	C C 2			Cm 242			8	
Cs 135					Cm 243			8	
Cs 137	3.80E-05	C C 2			Cm 244			8	
Ba 133	2.67E-08	C C 2			Cm 245			8	
La 137					Cm 246			8	
La 138					Cm 248			8	
Ce 144	2.01E-09	C C 2			Cf 249			8	
Pm 145					Cf 250			8	
Pm 147	7.11E-07	C C 2			Cf 251			8	
Sm 147					Cf 252			8	
Sm 151					Unsp a				
Eu 152	5.83E-05	C C 2			Unsp b/g				
Eu 154	1.56E-04	C C 2			Total a	4.11E-06	*	0	*
Eu 155	4.09E-05	C C 2			Total b/g	3.02E-01	*	0	*

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