

WASTE STREAM	9D930	Bradwell ILW skips
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SITE Hinkley Point A
SITE OWNER Nuclear Decommissioning Authority

WASTE CUSTODIAN Magnox Limited

WASTE TYPE ILW

Is the waste subject to Scottish Policy: No

WASTE VOLUMES

		Reported
Stocks:	At 1.4.2022.....	~3.3m ³
Total future arisings:		0 m ³
Total waste volume:		3.3 m ³
Comment on volumes:	3 ILW skips from Bradwell, downsized into irregular pieces which are currently stored in 16 x 205 litre drums (hence total volume is ~3.3m ³). The short ends of the skips have been milled and are included in 9B927 as VLLW.	
Uncertainty factors on volumes:	Stock (upper): x 1.2	Arisings (upper) x
	Stock (lower): x 0.8	Arisings (lower) x

WASTE SOURCE -

PHYSICAL CHARACTERISTICS

General description: -
 Physical components (%vol): Steel (100%)
 Sealed sources: The waste does not contain sealed sources.
 Bulk density (t/m³): 0.46
 Comment on density: Density is based on estimated waste weight and volume of ~1.5 t and ~3.3m³ respectively.

CHEMICAL COMPOSITION

General description and components (%wt): -
 Chemical state: -
 Chemical form of radionuclides: -
 Metals and alloys (%wt): -

	(%wt)	Type(s) / Grade(s) with proportions	% of total C14 activity
Stainless steel.....			
Other ferrous metals.....	100.0		
Iron.....			
Aluminium.....			
Beryllium.....			
Cobalt.....			
Copper.....			
Lead.....			
Magnox/Magnesium.....			
Nickel.....			
Titanium.....			
Uranium.....			
Zinc.....			

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Zircaloy/Zirconium.....

Other metals.....

Organics (%wt): -

	(%wt)	Type(s) and comment	% of total C14 activity
Total cellulosics.....	0		
Paper, cotton.....			
Wood.....			
Halogenated plastics			
Total non-halogenated plastics.....	0		
Condensation polymers.....			
Others.....			
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.....			

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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.....		
Benzene.....		
Chlorinated solvents.....		
Formaldehyde.....		
Organometallics.....		
Phenol.....		
Styrene.....		
Tri-butyl phosphate.....		

Other organophosphates.....
 Vinyl chloride.....
 Arsenic.....
 Barium.....
 Boron..... 0
 Boron (in Boral).....
 Boron (non-Boral).....
 Cadmium.....
 Caesium.....
 Selenium.....
 Chromium.....
 Molybdenum.....
 Thallium.....
 Tin.....
 Vanadium.....
 Mercury compounds.....
 Others.....
 Electronic Electrical Equipment (EEE)
 EEE Type 1.....
 EEE Type 2.....
 EEE Type 3.....
 EEE Type 4.....
 EEE Type 5.....

Complexing agents (%wt):

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

Potential for the waste to contain discrete items: Yes. Large Metal Items (LMIs)/"substantial" thickness items considered "durable" assumed DIs; Stainless items assumed DIs

PACKAGING AND CONDITIONING

Conditioning method: Load into CBs for flood grouting in the MILWEP.
 Plant Name: Hinkley Point A
 Location: Hinkley
 Plant startup date: -
 Total capacity (m³/y incoming waste): -
 Target start date for packaging this stream: -
 Throughput for this stream (m³/y incoming waste): -

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Other information: Assume co-disposed with 9D931, container allocated to 9D931.

Likely container type:	Container	Waste packaged (%vol)	Waste loading (m ³)	Payload (m ³)	Number of packages

Likely container type comment: -

Range in container waste volume: -

Other information on containers: -

Likely conditioning matrix: Other information: -

Conditioned density (t/m³): -

Conditioned density comment: -

Other information on conditioning: -

Opportunities for alternative disposal routing: -

Baseline Management Route	Opportunity Management Route	Stream volume (%)	Estimated Date that Opportunity will be realised	Opportunity Confidence	Comment
-	-	-	-	-	-

RADIOACTIVITY

Source: -

Uncertainty: The values quoted represent an indicative Total Activity derived from decay correction of Waste Consignment Information.

Definition of total alpha and total beta/gamma: Where totals are shown on the table of radionuclide activities they are the sums of the listed alpha or beta/gamma emitting radionuclides plus 'other alpha' or 'other beta/gamma'.

Measurement of radioactivities: The update provides data transposed from Table 2 of the desktop review in project report HPA/PROG/SILW/0123

Other information: -

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Nuclide	Mean radioactivity, TBq/m ³				Nuclide	Mean radioactivity, TBq/m ³			
	Waste at 1.4.2022	Bands and Code	Future arisings	Bands and Code		Waste at 1.4.2022	Bands and Code	Future arisings	Bands and Code
H 3	4.09E-05	CC 2			Gd 153				
Be 10					Ho 163				
C 14	1.67E-06	CC 2			Ho 166m				
Na 22					Tm 170				
Al 26					Tm 171				
Cl 36					Lu 174				
Ar 39					Lu 176				
Ar 42					Hf 178n				
K 40					Hf 182				
Ca 41					Pt 193				
Mn 53					Tl 204				
Mn 54					Pb 205				
Fe 55	4.09E-05	CC 2			Pb 210		8		
Co 60	7.9E-04	CC 2			Bi 208				
Ni 59					Bi 210m				
Ni 63	9.60E-04	CC 2			Po 210		8		
Zn 65					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	6.27E-02	CC 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					Th 234	4.94E-07	CC 2		
Mo 93					Pa 231		8		
Tc 97					Pa 233	1.67E-09	CC 2		
Tc 99					U 232				
Ru 106					U 233		8		
Pd 107					U 234	6.01E-07	CC 2		
Ag 108m					U 235	1.19E-08	CC 2		
Ag 110m					U 236	5.08E-08	CC 2		
Cd 109					U 238	4.94E-07	CC 2		
Cd 113m					Np 237	1.74E-09	CC 2		
Sn 119m					Pu 236				
Sn 121m					Pu 238	3.66E-04	CC 2		
Sn 123					Pu 239	4.10E-04	CC 2		
Sn 126					Pu 240	4.82E-04	CC 2		
Sb 125					Pu 241	1.13E-02	CC 2		
Sb 126					Pu 242				
Te 125m					Am 241	1.81E-03	CC 2		
Te 127m					Am 242m				
I 129					Am 243		8		
Cs 134	2.58E-06	CC 2			Cm 242		8		
Cs 135					Cm 243	2.07E-06	CC 2		
Cs 137	1.39E-02	CC 2			Cm 244	2.76E-05	CC 2		
Ba 133					Cm 245				
La 137					Cm 246				
La 138					Cm 248				
Ce 144					Cf 249				
Pm 145					Cf 250				
Pm 147	3.12E-05	CC 2			Cf 251				
Sm 147		8			Cf 252				
Sm 151	2.50E-04	CC 2			Other a				
Eu 152					Other b/g				
Eu 154	7.14E-05	CC 2			Total a	3.10E-03	CC 2	0	
Eu 155	1.6E-05	CC 2			Total b/g	9.01E-02	CC 2	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 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