

WASTE STREAM	3T06	LLW Sludges
---------------------	-------------	--------------------

SITE Hinkley Point C

SITE OWNER NNB GenCo (HPC) Ltd

WASTE CUSTODIAN NNB GenCo (HPC) Ltd

WASTE TYPE LLW

WASTE VOLUMES

	Reported (m ³)	OR	Conditioned (m ³)	Packaged (m ³)
Stocks:	At 1.4.2025			
Future arisings:	1.4.2029 - 31.3.2030	~ 1.0		
	1.4.2030 - 31.3.2031	~ 1.0		
	1.4.2031 - 31.3.2032	~ 1.0		
	1.4.2032 - 31.3.2033	~ 1.0		
	1.4.2033 - 31.3.2034	~ 1.0		
	1.4.2034 - 31.3.2035	~ 1.0		
	1.4.2035 - 31.3.2036	~ 1.0		
	1.4.2036 - 31.3.2037	~ 1.0		
	1.4.2037 - 31.3.2038	~ 1.0		
	1.4.2038 - 31.3.2039	~ 1.0		
	1.4.2039 - 31.3.2040	~ 1.0		
	1.4.2040 - 31.3.2041	~ 1.0		
	1.4.2041 - 31.3.2042	~ 1.0		
	1.4.2042 - 31.3.2043	~ 1.0		
	1.4.2043 - 31.3.2044	~ 1.0		
	1.4.2044 - 31.3.2045	~ 1.0		
	1.4.2045 - 31.3.2046	~ 1.0		
	1.4.2046 - 31.3.2047	~ 1.0		
	1.4.2047 - 31.3.2048	~ 1.0		
	1.4.2048 - 31.3.2049	~ 1.0		
	1.4.2049 - 31.3.2050	~ 1.0		
	1.4.2050 - 31.3.2051	~ 1.0		
	1.4.2051 - 31.3.2052	~ 1.0		
	1.4.2052 - 31.3.2053	~ 1.0		
	1.4.2053 - 31.3.2054	~ 1.0		
	1.4.2054 - 31.3.2055	~ 1.0		
	1.4.2055 - 31.3.2056	~ 1.0		
	1.4.2056 - 31.3.2057	~ 1.0		
	1.4.2057 - 31.3.2058	~ 1.0		
	1.4.2058 - 31.3.2059	~ 1.0		
	1.4.2059 - 31.3.2060	~ 1.0		
	1.4.2060 - 31.3.2061	~ 1.0		
	1.4.2061 - 31.3.2062	~ 1.0		
	1.4.2062 - 31.3.2063	~ 1.0		
	1.4.2063 - 31.3.2064	~ 1.0		
	1.4.2064 - 31.3.2065	~ 1.0		
	1.4.2065 - 31.3.2066	~ 1.0		
	1.4.2066 - 31.3.2067	~ 1.0		
	1.4.2067 - 31.3.2068	~ 1.0		
	1.4.2068 - 31.3.2069	~ 1.0		
	1.4.2069 - 31.3.2070	~ 1.0		
	1.4.2070 - 31.3.2071	~ 1.0		
	1.4.2071 - 31.3.2072	~ 1.0		
	1.4.2072 - 31.3.2073	~ 1.0		
	1.4.2073 - 31.3.2074	~ 1.0		
	1.4.2074 - 31.3.2075	~ 1.0		
	1.4.2075 - 31.3.2076	~ 1.0		
	1.4.2076 - 31.3.2077	~ 1.0		
	1.4.2077 - 31.3.2078	~ 1.0		
	1.4.2078 - 31.3.2079	~ 1.0		
	1.4.2079 - 31.3.2080	~ 1.0		
	1.4.2080 - 31.3.2081	~ 1.0		
	1.4.2081 - 31.3.2082	~ 1.0		
	1.4.2082 - 31.3.2083	~ 1.0		
	1.4.2083 - 31.3.2084	~ 1.0		
	1.4.2084 - 31.3.2085	~ 1.0		
	1.4.2085 - 31.3.2086	~ 1.0		
	1.4.2086 - 31.3.2087	~ 1.0		
	1.4.2087 - 31.3.2088	~ 1.0		
	1.4.2088 - 31.3.2089	~ 1.0		
Total future arisings:	60.0			
Total waste volume:	60.0			

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

Comment on arising rates: -

Additional information on quantities: No volume uncertainty data currently available.

Uncertainty factors on volumes: Stock (upper): x - Arisings (upper): x 1.00
Stock (lower): x - Arisings (lower): x 1.00

WASTE SOURCE

During the operation of the Hinkley Point C UK EPR units, particulates will settle as sludges in various buffer and storage tanks associated with the auxiliary water circuits (e.g. Liquid Waste Processing System (TEU [LWPS]), Liquid Radwaste Monitoring and Discharge System (KER [LRMDS])). These are contaminated with a range of fission and activated corrosion products. This sludge is periodically cleaned out and removed for treatment prior to disposal.

PHYSICAL CHARACTERISTICS

General description: The physical form of this waste stream is described as a sludge consisting of settled metal oxide particulate.

Changes since waste generated: -

Bulk density (t/m³): NE

Comment on density: -

CHEMICAL COMPOSITION

General description and components (%wt): Inorganic sludge (100%)

Chemical state: -

Sheet metal proportion / thickness: Metals that are also hazardous are reported in the hazardous section

Metals and alloys (%wt):

	(%wt)	Type(s) / Grades(s) with proportions	% of total C14 activity
Stainless steel.....	-	-	-
Other ferrous metals.....	-	-	-
Iron.....	-	-	-
Aluminium.....	-	-	-
Beryllium.....	-	-	-
Cobalt.....	-	-	-
Copper.....	-	-	-
Lead.....	~ 0.03	-	-
Magnox/Magnesium.....	-	-	-
Nickel.....	~ 0.02	-	-
Titanium.....	-	-	-
Uranium.....	-	-	-
Zinc.....	-	-	-
Zircaloy/Zirconium.....	-	-	-
Other metals.....	< 0.01	antimony	-

Organics (%wt):

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

Other materials (%wt):

	(%wt)	Type(s) and comment	% of total C14 activity
Inorganic ion exchange materials.....	~ 100.0	-	
Inorganic sludges and flocs.....		-	
Soil.....		-	
Brick/Stone/Rubble.....		-	
Cementitious material.....		-	
Sand.....		-	
Glass/Ceramics.....		-	
Graphite.....		-	
Desiccants/Catalysts.....		-	
Asbestos.....		-	
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.....	NE	-
Chloride.....	NE	-
Iodide.....	NE	-
Cyanide.....	NE	-
Carbonate.....	NE	-
Nitrate.....	NE	-
Nitrite.....	NE	-
Phosphate.....	NE	-
Sulphate.....	NE	-
Sulphide.....	NE	-

Materials of interest for waste acceptance criteria:

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

Hazardous substances / non hazardous pollutants:

	(%wt)	Type(s) and comment
Acrylamide.....	~ 0.10	-
Benzene.....		-
Chlorinated solvents.....		-
Formaldehyde.....		-
Organometallics.....		-
Phenol.....		-
Styrene.....		-
Tri-butyl phosphate.....		-
Other organophosphates.....		-
Vinyl chloride.....		-
Arsenic.....		-
Barium.....		-
Boron.....		-
Boron (in Boral).....		-
Boron (non-Boral).....		-
Cadmium.....	~ 0.02	-
Caesium.....		-
Selenium.....		-
Chromium.....		-
Molybdenum.....	< 0.01	-
Thallium.....		-
Tin.....		-
Vanadium.....		-
Mercury compounds.....	< 0.01	-
Others.....		-

Complexing agents (%wt):

No

	(%wt)	Type(s) and comment
EDTA.....	-	-
DPTA.....	-	-
NTA.....	-	-
Polycarboxylic acids.....	-	-
Other organic complexants.....	-	-
Total complexing agents.....	= 0	-

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	On-site	= 100.0
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:

Encapsulation

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)	100.0	2.4	18.3	25	-

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/m ³	Start date	
Expected to be consigned to a Near Site, Near Surface Disposal Facility (Scotland)	= 100.0			
Expected to be Non-NSD HAW managed under Scottish Government's policy				
Expected to be disposed to LLW Vaults NRS Dounreay		NE		
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: During the operation of the Hinkley Point C UK EPR units, particulates will settle as sludges in various buffer and storage tanks associated with the auxiliary water circuits (e.g. Liquid Waste Processing System (TEU [LWPS]), Liquid Radwaste Monitoring and Discharge System (KER [LRMDS])). These are contaminated with a range of fission and activated corrosion products. This sludge is periodically cleaned out and removed for treatment prior to disposal.

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		3T06		LLW Sludges					
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			~ 8.16E-04	B B 2	Gd 153				
Be 10				6	Ho 163				
C 14			~ 3.86E-05	B B 2	Ho 166m				
Na 22					Tm 170				
Al 26					Tm 171				
Cl 36				6	Lu 174				
Ar 39					Lu 176				
Ar 42					Hf 178n				
K 40					Hf 182				
Ca 41				6	Pt 193				
Mn 53					Tl 204				
Mn 54					Pb 205				
Fe 55					Pb 210				
Co 60			~ 3.51E-03	B B 2	Bi 208				
Ni 59				6	Bi 210m				
Ni 63					Po 210				
Zn 65					Ra 223				
Se 79				6	Ra 225				
Kr 81					Ra 226				
Kr 85					Ra 228				
Rb 87					Ac 227				
Sr 90				6	Th 227				
Zr 93					Th 228				
Nb 91					Th 229				
Nb 92					Th 230				
Nb 93m				6	Th 232				
Nb 94				6	Th 234				
Mo 93				6	Pa 231				
Tc 97					Pa 233				
Tc 99				6	U 232				
Ru 106					U 233				
Pd 107				6	U 234				
Ag 108m		6	U 235						
Ag 110m			U 236						
Cd 109			U 238						
Cd 113m			Np 237						
Sn 119m			Pu 236						
Sn 121m		6	Pu 238						
Sn 123			Pu 239						
Sn 126		6	Pu 240						
Sb 125		6	Pu 241						
Sb 126			Pu 242						
Te 125m			Am 241						
Te 127m			Am 242m						
I 129	~ 1.80E-10	B B 2	Am 243						
Cs 134		6	Cm 242						
Cs 135		6	Cm 243						
Cs 137		6	Cm 244						
Ba 133			Cm 245						
La 137			Cm 246						
La 138			Cm 248						
Ce 144			Cf 249						
Pm 145			Cf 250						
Pm 147			Cf 251						
Sm 147			Cf 252						
Sm 151		6	Unsp a						
Eu 152			Unsp b/g						
Eu 154			Total a						
Eu 155			Total b/g						
			0	*			0	*	
			0	*			4.36E-03	*	

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