

WASTE STREAM	2S311	Other Facilities Decommissioning LLW
---------------------	--------------	---

Magnox/Magnesium.....	0	
Nickel.....	0	
Titanium.....		
Uranium.....	P	
Zinc.....	0	
Zircaloy/Zirconium.....	0	
Other metals.....	<1.0	Other metals include tungsten at <1% by weight.

Organics (%wt): Small quantities (< 1%) of cellulose, in the form of Sisal Kraft Paper and wood, and plastic material will be present. Halogenated plastics - PVC. Halogenated rubber - neoprene.

	(%wt)	Type(s) and comment	% of total C14 activity
Total cellulosics.....	<1.0		
Paper, cotton.....	<1.0		
Wood.....	<1.0		
Halogenated plastics	<1.0		
Total non-halogenated plastics.....	<1.0		
Condensation polymers.....	NE		
Others.....	NE		
Organic ion exchange materials....	0		
Total rubber.....	P		
Halogenated rubber	P		
Non-halogenated rubber.....	P		
Hydrocarbons.....			
Oil or grease			
Fuel.....			
Asphalt/Tarmac (cont.coal tar)...			
Asphalt/Tarmac (no coal tar)....			
Bitumen.....			
Others.....			
Other organics.....	0		

Other materials (%wt): Any sludges found, e.g. in pipes, will be immobilised.

	(%wt)	Type(s) and comment	% of total C14 activity
Inorganic ion exchange materials..	0		
Inorganic sludges and flocs.....	TR		
Soil.....	0		
Brick/Stone/Rubble.....	0		
Cementitious material.....	80.0		
Sand.....			
Glass/Ceramics.....	0		
Graphite.....	0		
Desiccants/Catalysts.....			
Asbestos.....	NE		

WASTE STREAM	2S311	Other Facilities Decommissioning LLW
---------------------	--------------	---

Non/low friable.....

Moderately friable.....

Highly friable.....

Free aqueous liquids..... NE

Free non-aqueous liquids..... NE

Powder/Ash..... 0

Inorganic anions (%wt): Inorganic anions present as constituents of concrete.

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

Materials of interest for Hazardous materials are not expected to be present, but requires confirmation.
waste acceptance criteria:

	(%wt)	Type(s) and comment
Combustible metals.....		
Low flash point liquids.....	0	
Explosive materials.....	0	
Phosphorus.....	0	
Hydrides.....	0	
Biological etc. materials.....	0	
Biodegradable materials.....	NE	
Putrescible wastes.....	0	
Non-putrescible wastes.....	NE	
Corrosive materials.....	0	
Pyrophoric materials.....	0	
Generating toxic gases.....	0	
Reacting with water.....		
Higher activity particles.....	NE	
Soluble solids as bulk chemical compounds.....	NE	

Hazardous substances / Only bulk metals, such as lead, expected to be present.
non hazardous pollutants:

	(%wt)	Type(s) and comment
Acrylamide.....		
Benzene.....	NE	

WASTE STREAM	2S311	Other Facilities Decommissioning LLW
---------------------	--------------	---

Chlorinated solvents.....
 Formaldehyde.....
 Organometallics.....
 Phenol..... NE
 Styrene.....
 Tri-butyl phosphate..... NE
 Other organophosphates.....
 Vinyl chloride..... NE
 Arsenic..... NE
 Barium.....
 Boron..... NE
 Boron (in Boral).....
 Boron (non-Boral).....
 Cadmium..... NE
 Caesium.....
 Selenium..... NE
 Chromium..... NE
 Molybdenum..... NE
 Thallium.....
 Tin..... NE
 Vanadium..... NE
 Mercury compounds.....
 Others..... NE
 Electronic Electrical Equipment (EEE)
 EEE Type 1.....
 EEE Type 2.....
 EEE Type 3.....
 EEE Type 4.....
 EEE Type 5.....

Complexing agents (%wt): Not yet determined

	(%wt)	Type(s) and comment
EDTA.....		
DPTA.....		
NTA.....		
Polycarboxylic acids.....		
Other organic complexants.....	NE	Complexing agents are not expected to be present.
Total complexing agents.....	NE	

Potential for the waste to contain discrete items: Yes. Potential for tools and steel fabrications to be present in this waste stream.

TREATMENT, PACKAGING AND DISPOSAL

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

Treatment	On-site / Off site	Stream volume %
Low force compaction		
Supercompaction (HFC)		
Incineration		
Solidification		
Decontamination		
Metal treatment		
Size reduction		
Decay storage		
Recycling / reuse		
Other / various		
None		80.0

Comment on planned treatments:

This is dependant upon the origin of the waste and characterisation that will be carried out upon decommissioning. Disposal routes will depend upon the results obtained through characterisation. Based on current experience we have assumed the treatment methods set out in the table for the purposes of the 2022 UK Inventory.

Disposal Routes:

Disposal Route	Stream volume %	Disposal density t/m3
Expected to be consigned to the LLW Repository	80.0	1.2
Expected to be consigned to a Landfill Facility		
Expected to be consigned to an On-Site Disposal Facility		
Expected to be consigned to an Incineration Facility		
Expected to be consigned to a Metal Treatment Facility	<20.0	1.4
Expected to be consigned as Out of Scope		
Expected to be recycled / reused		
Disposal route not known		

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

Upcoming (2022/23-2024/25) Waste Routing (if expected to change from above):

Disposal Route	Stream volume %		
	2022/23	2023/24	2024/25
Expected to be consigned to the LLW Repository			
Expected to be consigned to a Landfill Facility			
Expected to be consigned to an On-Site Disposal Facility			
Expected to be consigned to an Incineration Facility			
Expected to be consigned to a Metal Treatment Facility			
Expected to be consigned as Out of Scope			
Expected to be recycled / reused			
Disposal route not known			

Opportunities for alternative disposal routing: Yes

Baseline Management Route	Opportunity Management Route	Stream volume (%)	Estimated Date that Opportunity will be realised	Opportunity Confidence	Comment
Disposal at LLWR	Authorised landfill	NE	2027	Medium	There may some waste suitable for re-categorising as VLLW or Out of Scope but this will depend on characterisation and demolition techniques.

Waste Packaging for Disposal:

Container	Stream volume %	Waste loading m ³	Number of packages
1/3 Height IP-1 ISO 2/3 Height IP-2 ISO 1/2 Height WAMAC IP-2 ISO 1/2 Height IP-2 Disposal/Re-usable ISO 2m box (no shielding) 4m box (no shielding) Other	80.0	~10	196

Other information: The use of half height ISO containers will be considered for the denser items e.g. lead/steel in order to achieve an acceptable packing efficiency balanced against container weight limits.

Waste Planned for Disposal at the LLW Repository:

Container voidage: Inaccessible voidage will be <10%.

Waste Characterisation Form (WCH): The waste meets the LLWR's Waste Acceptance Criteria (WAC). The waste does not have a current WCH.

Waste consigned for disposal to LLWR in year of generation: Yes.

Non-Containerised Waste for In-Vault Grouting:

Stream volume (%): -

Waste stream variation: There is no existing waste stream variation for this waste

Bounding cuboidal volume:

Inaccessible voidage: -

Other information: -

RADIOACTIVITY

Source: Overall the waste contains contributions from activated products, e.g Co60, fission products, e.g Cs137 and U and Pu isotopes.

Uncertainty: More detailed information will be available upon characterisation.

Definition of total alpha and total beta/gamma: Activity data based on activity data of waste stream 2A306.

Measurement of radioactivities: Concrete coring has been undertaken in some areas, in other cases significant contamination is known but not yet fully characterised e.g. drains, cell/cave internals & roof areas.

Other information: -

WASTE STREAM

2S311

Other Facilities Decommissioning LLW

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					Gd 153				
Be 10					Ho 163				
C 14					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					Pb 210				
Co 60		6		6	Bi 208				
Ni 59					Bi 210m				
Ni 63					Po 210				
Zn 65					Ra 223				
Se 79					Ra 225				
Kr 81					Ra 226				
Kr 85					Ra 228				
Rb 87					Ac 227				
Sr 90					Th 227				
Zr 93					Th 228				
Nb 91					Th 229				
Nb 92					Th 230				
Nb 93m					Th 232				
Nb 94					Th 234				
Mo 93					Pa 231				
Tc 97					Pa 233				
Tc 99					U 232				
Ru 106		6		6	U 233				
Pd 107					U 234				
Ag 108m					U 235		6		6
Ag 110m					U 236				
Cd 109					U 238		6		6
Cd 113m					Np 237				
Sn 119m					Pu 236				
Sn 121m					Pu 238				
Sn 123					Pu 239		6		6
Sn 126					Pu 240		6		6
Sb 125					Pu 241		6		6
Sb 126					Pu 242		6		6
Te 125m					Am 241		6		6
Te 127m					Am 242m				
I 129					Am 243				
Cs 134		6		6	Cm 242				
Cs 135					Cm 243				
Cs 137		6		6	Cm 244				
Ba 133					Cm 245				
La 137					Cm 246				
La 138					Cm 248				
Ce 144		6		6	Cf 249				
Pm 145					Cf 250				
Pm 147					Cf 251				
Sm 147					Cf 252				
Sm 151					Other a				
Eu 152					Other b/g				
Eu 154		6		6	Total a	NE		NE	
Eu 155					Total b/g	NE		NE	

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