

WASTE STREAM	9F38	PWTP Filters - Sand and Gravel
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SITE Sizewell A

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		
Future arisings:	1.4.2027 - 31.3.2033	9.4		
Total future arisings:		9.4		
Total waste volume:		9.4		

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

Comment on arising rates: All PWTP Sand Pressure Filters are planned to be emptied of filter media in a single campaign.

Additional information on quantities: -

Uncertainty factors on volumes:

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

WASTE SOURCE Sand and gravel from sand pressure filters in the Pond Water Treatment Plant. Sludge and solids are removed by mechanical filtration through a mixed bed of sand and gravel which is then backwashed into sludge tanks. The filters will be emptied of sand and gravel when the ponds are decommissioned.

PHYSICAL CHARACTERISTICS

General description: Mineral sand and gravel.

Changes since waste generated: Filters are expected to be emptied using a combination of pumping and manual removal.

Bulk density (t/m³): ~ 2.6

Comment on density: -

CHEMICAL COMPOSITION

General description and components (%wt): Sand (75%), gravel (25%).

Chemical state: Neutral

Sheet metal proportion / thickness: Any metals will be present as small particles in trace quantities.

Metals and alloys (%wt):

	(%wt)	Type(s) / Grades(s) with proportions	% of total C14 activity
Stainless steel.....	NE	-	
Other ferrous metals.....	TR	There are likely be traces of metals and metallic corrosion products, including magnesium and ferrous metals.	
Iron.....	-	-	
Aluminium.....	NE	-	
Beryllium.....	-	-	
Cobalt.....	-	-	
Copper.....	NE	-	
Lead.....	NE	-	
Magnox/Magnesium.....	TR	There are likely be traces of metals and metallic corrosion products, including magnesium and ferrous metals.	
Nickel.....	-	-	
Titanium.....	-	-	
Uranium.....	-	-	
Zinc.....	NE	-	
Zircaloy/Zirconium.....	NE	-	
Other metals.....	NE	-	

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.....		-	
Oil or grease.....		-	
Fuel.....		-	
Asphalt/Tarmac (cont.coal tar).....		-	
Asphalt/Tarmac (no coal tar).....		-	
Bitumen.....		-	
Others.....		-	
Other organics.....	NE	-	

Other materials (%wt):

	(%wt)	Type(s) and comment	% of total C14 activity
Inorganic ion exchange materials.....	= 0	-	
Inorganic sludges and flocs.....	TR	-	
Soil.....	= 0	-	
Brick/Stone/Rubble.....	= 25.0	graded gravel	
Cementitious material.....		-	
Sand.....	= 75.0	-	
Glass/Ceramics.....	= 0	-	
Graphite.....	= 0	-	
Desiccants/Catalysts.....		-	
Asbestos.....	0	-	
Non/low friable.....		-	
Moderately friable.....		-	
Highly friable.....		-	
Free aqueous liquids.....	TR	-	
Free non-aqueous liquids.....	0	-	
Powder/Ash.....	0	-	

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.....	0	-
Low flash point liquids.....	0	-
Explosive materials.....	0	-
Phosphorus.....	0	-
Hydrides.....	TR	-
Biological etc. materials.....	0	-
Biodegradable materials.....	0	-
Putrescible wastes.....	0	-
Non-putrescible wastes.....		-
Corrosive materials.....	0	-
Pyrophoric materials.....	0	-
Generating toxic gases.....	0	-
Reacting with water.....	0	-
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):

Not yet determined		
	(%wt)	Type(s) and comment
EDTA.....	NE	-
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	On-site	100.0

Comments on planned treatments:

-

Conditioning method:

Sludges and sands will be loaded into the DCICs on a fill/dry cycle to maximise waste volume per container This waste stream will be containerised in Ductile Cast Iron Containers (DCICs) and dried.

Conditioning plants:

Plant Name	Location
SZA AVDS	Sizewell A

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
	3 m³ RS box	100.0	2.4	2.5	4	-

Range in container waste loading: -

Other information on packaging and conditioning: -

Conditioned density (t/m³): ~ 2.6

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)	100.0		
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: Activity from the cleanup of Fuel Storage Pond Water.

Uncertainty: Activity retained on the filter media cannot be known with accuracy until the filters are decommissioned and emptied. Arising activity decayed to 2027.

Measurement of radioactivities: -

Chemical form of radionuclides:

- H-3: Not determined.
- C-14: Not determined.
- Cl-36: -
- Se-79: Not determined.
- Tc-99: Not determined.
- I-129: -
- Ra: Not determined.
- Th: Not determined.
- U: Not determined.
- Np: Not determined.
- Pu: Not determined.

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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			1.68E-03	C C 2	Gd 153				8
Be 10				8	Ho 163				8
C 14			1.61E-03	C C 2	Ho 166m				8
Na 22				8	Tm 170				8
Al 26				8	Tm 171				8
Cl 36			2.21E-06	C C 2	Lu 174				8
Ar 39				8	Lu 176				8
Ar 42				8	Hf 178n				8
K 40				8	Hf 182				8
Ca 41				8	Pt 193				8
Mn 53				8	Ti 204				8
Mn 54				8	Pb 205				8
Fe 55			8.35E-05	C C 2	Pb 210				8
Co 60			1.50E-04	C C 2	Bi 208				8
Ni 59				8	Bi 210m				8
Ni 63			9.21E-04	C C 2	Po 210				8
Zn 65				8	Ra 223				8
Se 79				8	Ra 225				8
Kr 81				8	Ra 226				8
Kr 85				8	Ra 228				8
Rb 87				8	Ac 227				8
Sr 90			1.39E-02	C C 2	Th 227				8
Zr 93				8	Th 228				8
Nb 91				8	Th 229				8
Nb 92				8	Th 230				8
Nb 93m				8	Th 232				8
Nb 94				8	Th 234			3.31E-07	C C 2
Mo 93				8	Pa 231				8
Tc 97				8	Pa 233			3.17E-09	C C 2
Tc 99				8	U 232				8
Ru 106				8	U 233				8
Pd 107				8	U 234			3.73E-07	C C 2
Ag 108m				8	U 235			7.80E-09	C C 2
Ag 110m				8	U 236			3.79E-08	C C 2
Cd 109				8	U 238			3.31E-07	C C 2
Cd 113m				8	Np 237			3.23E-09	C C 2
Sn 119m				8	Pu 236				8
Sn 121m				8	Pu 238			3.61E-04	C C 2
Sn 123				8	Pu 239			5.08E-04	C C 2
Sn 126				8	Pu 240			5.08E-04	C C 2
Sb 125				8	Pu 241			7.18E-03	C C 2
Sb 126				8	Pu 242				8
Te 125m				8	Am 241			1.69E-03	C C 2
Te 127m				8	Am 242m				8
I 129				8	Am 243				8
Cs 134			2.00E-06	C C 2	Cm 242				8
Cs 135				8	Cm 243			1.22E-05	C C 2
Cs 137			1.66E-02	C C 2	Cm 244			1.03E-05	C C 2
Ba 133				8	Cm 245				8
La 137				8	Cm 246				8
La 138				8	Cm 248				8
Ce 144				8	Cf 249				8
Pm 145				8	Cf 250				8
Pm 147			1.22E-05	C C 2	Cf 251				8
Sm 147				8	Cf 252				8
Sm 151			1.16E-04	C C 2	Unsp a				8
Eu 152				8	Unsp b/g				8
Eu 154			4.09E-05	C C 2	Total a	0	*	3.09E-03	*
Eu 155			9.77E-06	C C 2	Total b/g	0	*	4.23E-02	*

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