

| WASTE STREAM | 3J12 | General Reactor LLW |
|--------------|------|---------------------|
|--------------|------|---------------------|

**SITE** Dungeness B

**SITE OWNER** EDF Energy Nuclear Generation Ltd (EDFE NGL)

**WASTE CUSTODIAN** EDF Energy Nuclear Generation Ltd (EDFE NGL)

**WASTE TYPE** LLW

#### WASTE VOLUMES

|                        | Reported (m <sup>3</sup> ) | OR           | Conditioned (m <sup>3</sup> ) | Packaged (m <sup>3</sup> ) |
|------------------------|----------------------------|--------------|-------------------------------|----------------------------|
| Stocks:                | At 1.4.2025                | = 9.1        |                               |                            |
| Future arisings:       | 1.4.2025 - 31.3.2026       | = 20.0       |                               |                            |
|                        | 1.4.2026 - 31.3.2027       | = 20.0       |                               |                            |
|                        | 1.4.2027 - 31.3.2028       | = 20.0       |                               |                            |
|                        | 1.4.2028 - 31.3.2029       | = 20.0       |                               |                            |
|                        | 1.4.2029 - 31.3.2030       | = 20.0       |                               |                            |
|                        | 1.4.2030 - 31.3.2031       | = 20.0       |                               |                            |
|                        | 1.4.2031 - 31.3.2032       | = 20.0       |                               |                            |
| Total future arisings: |                            | <b>140.0</b> |                               |                            |
| Total waste volume:    |                            | <b>149.1</b> |                               |                            |

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

Comment on arising rates: Waste volumes will be variable depending on station operating conditions.

Additional information on quantities: -

Uncertainty factors on volumes:

|                |        |                   |        |
|----------------|--------|-------------------|--------|
| Stock (upper): | x 1.25 | Arisings (upper): | x 1.50 |
| Stock (lower): | x 0.75 | Arisings (lower): | x 0.50 |

**WASTE SOURCE** The wastes included in this stream are from the Gas Circulator Hall, Reactor Basement, Laundry, Laboratories, Decontamination Centre, H & V Filters on the plant.

#### PHYSICAL CHARACTERISTICS

General description: Metals, plastic, rubber, lagging and glass. Redundant laundry machines and decontamination equipment requiring half height ISO containers for disposal.

Changes since waste generated: Wastes not currently conditioned before consigning off-site for treatment and disposal. If conditioning is required, a Variation shall be sought. Volumes of wastes may be reduced by consigning for supercompaction before final disposal at LLWR, low force compaction on-site, or shredded on-site. Free liquid: Removed as far as is practicable, and disposed via liquid effluent route.

Bulk density (t/m<sup>3</sup>): ~ 1.0

Comment on density: Density based on raw volume and weight at arising as provided in WCH.

#### CHEMICAL COMPOSITION

General description and components (%wt): Aluminium (1%), Cobalt (0.4%), Chromium metal/alloy (3%), Iron (44%), Molybdenum (0.4%), Nickel (0.4%), Titanium (0.4%), Cadmium (0.2%), Biodegradable-non putrescibles (20%), Plastics (non-halogenated) (~15%), Plastics (halogenated) (~5%), Rubber (~5%), Wood (~3%), Others (2%).

Chemical state: Neutral

Sheet metal proportion / thickness: This waste stream is variable and may contain some bulk items which will be volume reduced by cutting, proportion of bulk items unknown.

Metals and alloys (%wt):

|                           | (%wt)  | Type(s) / Grades(s) with proportions | % of total C14 activity |
|---------------------------|--------|--------------------------------------|-------------------------|
| Stainless steel.....      | NE     | -                                    |                         |
| Other ferrous metals..... | NE     | -                                    |                         |
| Iron.....                 | ~ 44.0 | -                                    |                         |
| Aluminium.....            | ~ 1.0  | -                                    |                         |
| Beryllium.....            | NE     | -                                    |                         |
| Cobalt.....               | ~ 0.40 | -                                    |                         |
| Copper.....               | NE     | -                                    |                         |
| Lead.....                 | NE     | -                                    |                         |
| Magnox/Magnesium.....     | 0      | -                                    |                         |
| Nickel.....               | ~ 0.40 | -                                    |                         |
| Titanium.....             | ~ 0.40 | -                                    |                         |
| Uranium.....              | NE     | -                                    |                         |
| Zinc.....                 | NE     | -                                    |                         |
| Zircaloy/Zirconium.....   | ~ 0    | -                                    |                         |
| Other metals.....         | ~ 3.8  | Chromium, Molybdenum, Cadmium        |                         |

Organics (%wt):

|                                     | (%wt)  | Type(s) and comment           | % of total C14 activity |
|-------------------------------------|--------|-------------------------------|-------------------------|
| Total cellulosics.....              | ~ 23.0 | -                             |                         |
| Paper, cotton.....                  | ~ 20.0 | Biodegradable non putrescible |                         |
| Wood.....                           | ~ 3.0  |                               |                         |
| Halogenated plastics.....           | ~ 5.0  | -                             |                         |
| Total non-halogenated plastics..... | ~ 15.0 | -                             |                         |
| Condensation polymers.....          | NE     | -                             |                         |
| Others.....                         | NE     | -                             |                         |
| Organic ion exchange materials..... | ~ 0    | -                             |                         |
| Total rubber.....                   | ~ 5.0  | -                             |                         |
| 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.....                 | TR     | -                             |                         |

Other materials (%wt):

|                                       | (%wt) | Type(s) and comment | % of total C14 activity |
|---------------------------------------|-------|---------------------|-------------------------|
| Inorganic ion exchange materials..... | = 0   | -                   |                         |
| Inorganic sludges and flocs.....      | = 0   | -                   |                         |
| Soil.....                             | = 0   | -                   |                         |
| Brick/Stone/Rubble.....               | = 0   | -                   |                         |
| Cementitious material.....            | = 0   | -                   |                         |
| Sand.....                             | = 0   | -                   |                         |
| Glass/Ceramics.....                   | = 2.0 | -                   |                         |
| Graphite.....                         | = 0   | -                   |                         |
| Desiccants/Catalysts.....             | = 0   | -                   |                         |
| Asbestos.....                         | = 0   | -                   |                         |
| Non/low friable.....                  | -     | -                   |                         |
| Moderately friable.....               | -     | -                   |                         |
| Highly friable.....                   | -     | -                   |                         |
| Free aqueous liquids.....             | = 0   | -                   |                         |
| 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.....  | = 0   | -                   |
| Chloride.....  | = 0   | -                   |
| Iodide.....    | = 0   | -                   |
| Cyanide.....   | = 0   | -                   |
| Carbonate..... | = 0   | -                   |
| Nitrate.....   | = 0   | -                   |
| Nitrite.....   | = 0   | -                   |
| Phosphate..... | = 0   | -                   |
| Sulphate.....  | = 0   | -                   |
| Sulphide.....  | = 0   | -                   |

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.....                                  | = 0    | -                   |
| Biological etc. materials.....                 | = 0    | -                   |
| Biodegradable materials.....                   | = 0    | -                   |
| Putrescible wastes.....                        | = 0    | -                   |
| Non-putrescible wastes.....                    | = 20.0 | -                   |
| Corrosive materials.....                       | = 0    | -                   |
| Pyrophoric materials.....                      | = 0    | -                   |
| Generating toxic gases.....                    | = 0    | -                   |
| Reacting with water.....                       | = 0    | -                   |
| Higher activity particles.....                 | = 0    | Not expected        |
| Soluble solids as bulk chemical compounds..... | = 0    | -                   |

Hazardous substances / non hazardous pollutants:

-

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

Complexing agents (%wt):

Yes

|                                | (%wt) | Type(s) and comment                 |
|--------------------------------|-------|-------------------------------------|
| EDTA.....                      | NE    | -                                   |
| DPTA.....                      | NE    | -                                   |
| NTA.....                       | NE    | -                                   |
| Polycarboxylic acids.....      | NE    | -                                   |
| Other organic complexants..... | NE    | May be present in trace quantities. |
| Total complexing agents.....   | TR    | -                                   |

Physical components:

|                                         | Number | Type(s) and comment |
|-----------------------------------------|--------|---------------------|
| Sources.....                            | = 0    | -                   |
| 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                                             | Off-site           | ~ 45.0          |
| Decay storage                                              |                    |                 |
| Low force compaction                                       |                    |                 |
| Supercompaction (HFC)                                      |                    |                 |
| Incineration                                               |                    |                 |
| Drying/dewatering/liquid separation                        | Off-site           | ~ 45.0          |
| Tie down/fixatives/strippable coating/painting application |                    |                 |
| Decontamination                                            |                    |                 |
| Metal treatment                                            |                    |                 |
| Recycling / reuse                                          |                    |                 |
| Thermal treatment, including vitrification                 | Off-site           | ~ 10.0          |
| Encapsulation                                              |                    |                 |
| Polymer encapsulation                                      |                    |                 |
| Other physical treatment                                   |                    |                 |
| Other chemical treatment                                   |                    |                 |
| Containerisation                                           | Off-site           | ~ 10.0          |
| Treatment not yet determined                               |                    |                 |
| None                                                       | Off-site           | ~ 10.0          |

Comments on planned treatments:

In line with the waste hierarchy, wastes will be treated preferentially by incineration, metal decontamination/melting, supercompaction, optimal packaging in HHISOs or immobilisation by encapsulation where necessary, prior to ultimate disposal at the LLW Repository. These treatments will be carried out off-site under contract with companies such as LLWR Ltd, Cyclife, Tradebe Inutec.

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) | 10.0                  | 18.3               | 18.3         | 1                  | -                                  |

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/m³ | Start date |
|------------------------------------------------------------------------------------|-----------------|------------------|------------|
| Expected to be consigned to a Near Site, Near Surface Disposal Facility (Scotland) | ~ 10.0          |                  |            |
| 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                                     | ~ 45.0          |                  |            |
| Expected to be consigned to a Landfill Facility                                    |                 |                  |            |
| Expected to be disposed On-Site                                                    |                 |                  |            |
| Expected to be managed by In-Situ Disposal                                         | ~ 45.0          |                  |            |
| Expected to be consigned to an Incineration Facility                               |                 |                  |            |
| Expected to be consigned to a Metal Treatment Facility                             | ~ 45.0          |                  |            |
| 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: Contamination will be main source of activity with possibly some activation of certain reactor or fuel route components.

Uncertainty: The values quoted are indicative of the activities that would be expected.

Measurement of radioactivities: Activity estimates are based on fingerprint of waste stream and on dose rate measurements of drummed waste.

Chemical form of radionuclides: H-3: Diffused into materials.  
C-14: Graphite.  
Cl-36: Incorporated into steels.  
Se-79: Not expected to be significant.  
Tc-99: Not expected to be significant.  
I-129: Not expected to be significant.  
Ra: Not expected to be significant.  
Th: Not expected to be significant.  
U: Not Assessed.  
Np: Not expected to be significant.  
Pu: Not Assessed.

| WASTE STREAM 3J12 General Reactor LLW |                            |                |                 |                |                  |                            |                |                 |                |
|---------------------------------------|----------------------------|----------------|-----------------|----------------|------------------|----------------------------|----------------|-----------------|----------------|
| 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                                   | 2.67E-04                   | C C 1          | 2.67E-04        | C C 1          | Gd 153           |                            |                |                 |                |
| Be 10                                 |                            |                |                 |                | Ho 163           |                            |                |                 |                |
| C 14                                  | 7.46E-06                   | C C 1          | 7.46E-06        | C C 1          | Ho 166m          |                            |                |                 |                |
| Na 22                                 |                            |                |                 |                | Tm 170           |                            |                |                 |                |
| Al 26                                 |                            |                |                 |                | Tm 171           |                            |                |                 |                |
| Cl 36                                 | 7.27E-06                   | C C 1          | 7.27E-06        | C C 1          | Lu 174           |                            |                |                 |                |
| Ar 39                                 |                            |                |                 |                | Lu 176           |                            |                |                 |                |
| Ar 42                                 |                            |                |                 |                | Hf 178n          |                            |                |                 |                |
| K 40                                  |                            |                |                 |                | Hf 182           |                            |                |                 |                |
| Ca 41                                 |                            |                |                 |                | Pt 193           |                            |                |                 |                |
| Mn 53                                 |                            |                |                 |                | Ti 204           |                            |                |                 |                |
| Mn 54                                 | 4.81E-06                   | C C 1          | 4.81E-06        | C C 1          | Pb 205           |                            |                |                 |                |
| Fe 55                                 | 2.84E-05                   | C C 1          | 2.84E-05        | C C 1          | Pb 210           |                            |                |                 |                |
| Co 60                                 | 1.60E-05                   | C C 1          | 1.60E-05        | C C 1          | Bi 208           |                            |                |                 |                |
| Ni 59                                 |                            |                |                 |                | Bi 210m          |                            |                |                 |                |
| Ni 63                                 | 1.07E-05                   | C C 1          | 1.07E-05        | C C 1          | Po 210           |                            |                |                 |                |
| Zn 65                                 | 6.65E-07                   | C C 1          | 6.65E-07        | C C 1          | Ra 223           |                            |                |                 |                |
| Se 79                                 |                            |                |                 |                | Ra 225           |                            |                |                 |                |
| Kr 81                                 |                            |                |                 |                | Ra 226           |                            |                |                 |                |
| Kr 85                                 |                            |                |                 |                | Ra 228           |                            |                |                 |                |
| Rb 87                                 |                            |                |                 |                | Ac 227           |                            |                |                 |                |
| Sr 90                                 | 4.17E-06                   | C C 1          | 4.17E-06        | C C 1          | Th 227           |                            |                |                 |                |
| Zr 93                                 |                            |                |                 |                | Th 228           |                            |                |                 |                |
| Nb 91                                 |                            |                |                 |                | Th 229           |                            |                |                 |                |
| Nb 92                                 |                            |                |                 |                | Th 230           |                            |                |                 |                |
| Nb 93m                                |                            |                |                 |                | Th 232           |                            |                |                 |                |
| Nb 94                                 | 5.08E-07                   | C C 1          | 5.08E-07        | C C 1          | Th 234           |                            |                |                 |                |
| Mo 93                                 |                            |                |                 |                | Pa 231           |                            |                |                 |                |
| Tc 97                                 |                            |                |                 |                | Pa 233           |                            |                |                 |                |
| Tc 99                                 |                            |                |                 |                | U 232            |                            |                |                 |                |
| Ru 106                                | 8.91E-07                   | C C 1          | 8.91E-07        | C C 1          | U 233            |                            |                |                 |                |
| Pd 107                                |                            |                |                 |                | U 234            | 4.26E-10                   | C C 1          | 4.26E-10        | C C 1          |
| Ag 108m                               | 5.18E-07                   | C C 1          | 5.18E-07        | C C 1          | U 235            |                            |                |                 |                |
| Ag 110m                               | 3.67E-07                   | C C 1          | 3.67E-07        | C C 1          | U 236            | 1.09E-10                   | C C 1          | 1.09E-10        | C C 1          |
| Cd 109                                |                            |                |                 |                | U 238            | 1.27E-10                   | C C 1          | 1.27E-10        | C C 1          |
| Cd 113m                               |                            |                |                 |                | Np 237           |                            |                |                 |                |
| Sn 119m                               |                            |                |                 |                | Pu 236           |                            |                |                 |                |
| Sn 121m                               |                            |                |                 |                | Pu 238           | 1.26E-07                   | C C 1          | 1.26E-07        | C C 1          |
| Sn 123                                |                            |                |                 |                | Pu 239           | 7.60E-08                   | C C 1          | 7.60E-08        | C C 1          |
| Sn 126                                |                            |                |                 |                | Pu 240           | 1.81E-07                   | C C 1          | 1.81E-07        | C C 1          |
| Sb 125                                | 1.21E-06                   | C C 1          | 1.21E-06        | C C 1          | Pu 241           | 9.33E-06                   | C C 1          | 9.33E-06        | C C 1          |
| Sb 126                                |                            |                |                 |                | Pu 242           |                            |                |                 |                |
| Te 125m                               |                            |                |                 |                | Am 241           | 3.39E-07                   | C C 1          | 3.39E-07        | C C 1          |
| Te 127m                               |                            |                |                 |                | Am 242m          |                            |                |                 |                |
| I 129                                 |                            |                |                 |                | Am 243           |                            |                |                 |                |
| Cs 134                                | 4.33E-07                   | C C 1          | 4.33E-07        | C C 1          | Cm 242           | 1.08E-08                   | C C 1          | 1.08E-08        | C C 1          |
| Cs 135                                |                            |                |                 |                | Cm 243           | 1.21E-09                   | C C 1          | 1.21E-09        | C C 1          |
| Cs 137                                | 2.89E-06                   | C C 1          | 2.89E-06        | C C 1          | Cm 244           | 7.81E-08                   | C C 1          | 7.81E-08        | C C 1          |
| Ba 133                                | 6.01E-07                   | C C 1          | 6.01E-07        | C C 1          | Cm 245           |                            |                |                 |                |
| La 137                                |                            |                |                 |                | Cm 246           |                            |                |                 |                |
| La 138                                |                            |                |                 |                | Cm 248           |                            |                |                 |                |
| Ce 144                                | 5.06E-07                   | C C 1          | 5.06E-07        | C C 1          | Cf 249           |                            |                |                 |                |
| Pm 145                                |                            |                |                 |                | Cf 250           |                            |                |                 |                |
| Pm 147                                | 1.66E-06                   | C C 1          | 1.66E-06        | C C 1          | Cf 251           |                            |                |                 |                |
| Sm 147                                |                            |                |                 |                | Cf 252           |                            |                |                 |                |
| Sm 151                                |                            |                |                 |                | Unsp a           |                            |                |                 |                |
| Eu 152                                | 1.14E-06                   | C C 1          | 1.14E-06        | C C 1          | Unsp b/g         | 7.93E-07                   | C C 1          | 7.93E-07        | C C 1          |
| Eu 154                                | 1.29E-06                   | C C 1          | 1.29E-06        | C C 1          | <b>Total a</b>   | <b>8.12E-07</b>            | *              | <b>8.12E-07</b> | *              |
| Eu 155                                | 1.36E-06                   | C C 1          | 1.36E-06        | C C 1          | <b>Total b/g</b> | <b>3.70E-04</b>            | *              | <b>3.70E-04</b> | *              |

#### 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