



Metals and alloys (%wt):

|                           | (%wt)  | Type(s) / Grades(s) with proportions | % of total C14 activity |
|---------------------------|--------|--------------------------------------|-------------------------|
| Stainless steel.....      | = 4.9  | -                                    |                         |
| Other ferrous metals..... | = 20.9 | -                                    |                         |
| Iron.....                 | = 5.3  | -                                    |                         |
| Aluminium.....            | = 1.4  | -                                    |                         |
| Beryllium.....            | -      | -                                    |                         |
| Cobalt.....               | -      | -                                    |                         |
| Copper.....               | = 1.7  | -                                    |                         |
| Lead.....                 | = 2.6  | -                                    |                         |
| Magnox/Magnesium.....     | -      | -                                    |                         |
| Nickel.....               | -      | -                                    |                         |
| Titanium.....             | -      | -                                    |                         |
| Uranium.....              | -      | -                                    |                         |
| Zinc.....                 | = 0.19 | -                                    |                         |
| Zircaloy/Zirconium.....   | -      | -                                    |                         |
| Other metals.....         | = 12.1 | -                                    |                         |

Organics (%wt):

|                                     | (%wt)  | Type(s) and comment | % of total C14 activity |
|-------------------------------------|--------|---------------------|-------------------------|
| Total cellulotics.....              | = 1.0  | -                   |                         |
| Paper, cotton.....                  | -      | -                   |                         |
| Wood.....                           | = 1.0  | -                   |                         |
| Halogenated plastics.....           | = 8.7  | -                   |                         |
| Total non-halogenated plastics..... | = 8.7  | -                   |                         |
| Condensation polymers.....          | -      | -                   |                         |
| Others.....                         | -      | -                   |                         |
| Organic ion exchange materials..... | -      | -                   |                         |
| Total rubber.....                   | = 1.0  | -                   |                         |
| Halogenated rubber.....             | -      | -                   |                         |
| Non-halogenated rubber.....         | -      | -                   |                         |
| Hydrocarbons.....                   | = 1.5  | -                   |                         |
| Oil or grease.....                  | = 0.17 | -                   |                         |
| Fuel.....                           | -      | -                   |                         |
| Asphalt/Tarmac (cont.coal tar)..... | -      | -                   |                         |
| Asphalt/Tarmac (no coal tar).....   | = 0.87 | -                   |                         |
| Bitumen.....                        | = 0.43 | -                   |                         |
| Others.....                         | -      | -                   |                         |
| Other organics.....                 | = 9.3  | -                   |                         |

Other materials (%wt):

|                                       | (%wt)  | Type(s) and comment | % of total C14 activity |
|---------------------------------------|--------|---------------------|-------------------------|
| Inorganic ion exchange materials..... | -      | -                   |                         |
| Inorganic sludges and flocs.....      | -      | -                   |                         |
| Soil.....                             | = 3.0  | -                   |                         |
| Brick/Stone/Rubble.....               | = 17.0 | -                   |                         |
| Cementitious material.....            | -      | -                   |                         |
| Sand.....                             | -      | -                   |                         |
| Glass/Ceramics.....                   | = 0.17 | -                   |                         |
| Graphite.....                         | -      | -                   |                         |
| Desiccants/Catalysts.....             | -      | -                   |                         |
| Asbestos.....                         | = 0.52 | -                   |                         |
| Non/low friable.....                  | = 0.17 | -                   |                         |
| Moderately friable.....               | = 0.17 | -                   |                         |
| Highly friable.....                   | = 0.17 | -                   |                         |
| 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.....  | -     | -                   |
| 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.....                                | < 0.01 | -                   |
| Hydrides.....                                  |        | -                   |
| Biological etc. materials.....                 |        | -                   |
| Biodegradable materials.....                   | = 9.0  | -                   |
| Putrescible wastes.....                        |        | -                   |
| Non-putrescible wastes.....                    | = 9.0  | -                   |
| Corrosive materials.....                       |        | -                   |
| Pyrophoric materials.....                      |        | -                   |
| Generating toxic gases.....                    |        | -                   |
| Reacting with water.....                       | = 1.6  | -                   |
| 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.....                  |        | -                   |
| Boron (in Boral).....       |        | -                   |
| Boron (non-Boral).....      |        | -                   |
| Cadmium.....                |        | -                   |
| Caesium.....                |        | -                   |
| Selenium.....               |        | -                   |
| Chromium.....               | < 0.01 | -                   |
| Molybdenum.....             |        | -                   |
| Thallium.....               |        | -                   |
| Tin.....                    | = 0.43 | -                   |
| Vanadium.....               | < 0.01 | -                   |
| Mercury compounds.....      |        | -                   |
| Others.....                 |        | -                   |

Complexing agents (%wt):

| Yes                            |        |                     |
|--------------------------------|--------|---------------------|
|                                | (%wt)  | Type(s) and comment |
| EDTA.....                      | < 0.01 | -                   |
| DPTA.....                      | 0      | -                   |
| NTA.....                       | 0      | -                   |
| Polycarboxylic acids.....      | 0      | -                   |
| Other organic complexants..... | 0      | -                   |
| Total complexing agents.....   | < 0.01 | -                   |

Physical components:

|                                         | Number | Type(s) and comment     |
|-----------------------------------------|--------|-------------------------|
| Sources.....                            | = 0    | -                       |
| Electronic & Electrical Equipment (EEE) |        | -                       |
| EEE Type 1.....                         |        | 500 items every 5 years |
| EEE Type 2.....                         |        | 500 items every 5 years |
| EEE Type 3.....                         |        | 500 items every 5 years |
| EEE Type 4.....                         |        | 200 items every 5 years |
| EEE Type 5.....                         |        | 50 items every 5 years  |

## 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)                                      | On-site            | = 19.9          |
| Incineration                                               | Off-site           | = 39.8          |
| Drying/dewatering/liquid separation                        |                    |                 |
| Tie down/fixatives/strippable coating/painting application |                    |                 |
| Decontamination                                            |                    |                 |
| Metal treatment                                            | Off-site           | = 12.8          |
| Recycling / reuse                                          |                    |                 |
| Thermal treatment, including vitrification                 |                    |                 |
| Encapsulation                                              |                    |                 |
| Polymer encapsulation                                      |                    |                 |
| Other physical treatment                                   |                    |                 |
| Other chemical treatment                                   |                    |                 |
| Containerisation                                           |                    |                 |
| Treatment not yet determined                               |                    |                 |
| None                                                       |                    | = 27.6          |

Comments on planned treatments:

For Inventory purposes, it is assumed that supercompaction will continue after the closure of WAMAC in 2028. Incineration and Metal treatment will take place off-site. Waste not requiring treatment is mostly 'out of scope' metal, VLLW and non compactable LLW for direct disposal to LLWR

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) | 14.9                  | 10.0               | 18.3         | 7                  | -                                  |
| 1/2 Height WAMAC IP-2 ISO (TC08)                   | 19.9                  | 59.3               | 18.8         | 2                  | -                                  |

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) |                 |                  |            |
| 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                                     | = 34.8          | = 0.59           | 2025       |
| Expected to be consigned to a Landfill Facility                                    | = 1.9           | = 1.5            | 2025       |
| Expected to be disposed On-Site                                                    | = 10.0          | = 1.5            | 2025       |
| Expected to be managed by In-Situ Disposal                                         |                 |                  |            |
| Expected to be consigned to an Incineration Facility                               | = 39.8          | = 0.14           | 2025       |
| Expected to be consigned to a Metal Treatment Facility                             | = 12.8          | = 1.4            | 2025       |
| Expected to be Out of Scope                                                        | = 0.8           | = 1.4            | 2025       |
| Expected to be recycled / reused                                                   |                 |                  |            |
| Disposal route not known                                                           |                 |                  |            |

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

17 01 01, 20 02 01, 17 03 01\*, 17 05 03\*, 17 05 04, 17 09 03\*, 17 09 04

Opportunities for alternative disposal routing: No

| Baseline Management Route | Opportunity Management Route | Stream volume (%) | Opportunity Confidence | Comment |
|---------------------------|------------------------------|-------------------|------------------------|---------|
| -                         | -                            | -                 | -                      | -       |

#### RADIOACTIVITY

Source: The activity originates from AGR fuel stored in the pond. The waste becomes contaminated as a result of routine operations and maintenance.

Uncertainty: The uncertainty associated with the fingerprinting analysis is likely to be low, however the volumes and total activity information (and possibly some other assumptions) are likely to be more notional and thus more uncertain.

Measurement of radioactivities: Specific activity data is based on data in the corresponding WCH, which in turn maps an estimated total activity to an analytically derived radionuclide fingerprint.

Chemical form of radionuclides:

- H-3: -
- C-14: -
- Cl-36: -
- Se-79: -
- Tc-99: -
- I-129: -
- Ra: -
- Th: -
- U: -
- Np: -
- Pu: -

| WASTE STREAM 2X30 AGR Storage Pond |                            |                |                 |                |                  |                            |                |                 |                |
|------------------------------------|----------------------------|----------------|-----------------|----------------|------------------|----------------------------|----------------|-----------------|----------------|
| 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                                |                            |                | = 1.11E-06      | C C 2          | Gd 153           |                            |                |                 |                |
| Be 10                              |                            |                |                 |                | Ho 163           |                            |                |                 |                |
| C 14                               |                            |                | = 7.56E-09      | C C 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                              |                            |                |                 |                | Ti 204           |                            |                |                 |                |
| Mn 54                              |                            |                | = 3.02E-08      | C C 2          | Pb 205           |                            |                |                 |                |
| Fe 55                              |                            |                | = 2.65E-06      | C C 2          | Pb 210           |                            |                |                 |                |
| Co 60                              |                            |                | = 2.17E-07      | C C 2          | Bi 208           |                            |                |                 |                |
| Ni 59                              |                            |                |                 |                | Bi 210m          |                            |                |                 |                |
| Ni 63                              |                            |                | = 1.25E-06      | C C 2          | Po 210           |                            |                |                 |                |
| Zn 65                              |                            |                |                 |                | Ra 223           |                            |                |                 |                |
| Se 79                              |                            |                |                 |                | Ra 225           |                            |                |                 |                |
| Kr 81                              |                            |                |                 |                | Ra 226           |                            |                |                 |                |
| Kr 85                              |                            |                |                 |                | Ra 228           |                            |                |                 |                |
| Rb 87                              |                            |                |                 |                | Ac 227           |                            |                |                 |                |
| Sr 90                              |                            |                | = 1.30E-06      | C C 2          | 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                             |                            |                | = 1.19E-07      | C C 2          | U 233            |                            |                |                 |                |
| Pd 107                             |                            |                |                 |                | U 234            |                            |                |                 |                |
| Ag 108m                            |                            |                |                 |                | U 235            |                            |                |                 |                |
| Ag 110m                            |                            |                |                 |                | U 236            |                            |                |                 |                |
| Cd 109                             |                            |                |                 |                | U 238            |                            |                |                 |                |
| Cd 113m                            |                            |                |                 |                | Np 237           |                            |                |                 |                |
| Sn 119m                            |                            |                |                 |                | Pu 236           |                            |                |                 |                |
| Sn 121m                            |                            |                |                 |                | Pu 238           |                            |                | = 2.00E-07      | C C 2          |
| Sn 123                             |                            |                |                 |                | Pu 239           |                            |                | = 1.25E-07      | C C 2          |
| Sn 126                             |                            |                |                 |                | Pu 240           |                            |                | = 2.29E-07      | C C 2          |
| Sb 125                             |                            |                | = 4.16E-08      | C C 2          | Pu 241           |                            |                | = 6.74E-06      | C C 2          |
| Sb 126                             |                            |                |                 |                | Pu 242           |                            |                |                 |                |
| Te 125m                            |                            |                |                 |                | Am 241           |                            |                | = 5.54E-07      | C C 2          |
| Te 127m                            |                            |                |                 |                | Am 242m          |                            |                |                 |                |
| I 129                              |                            |                |                 |                | Am 243           |                            |                |                 |                |
| Cs 134                             |                            |                | = 1.40E-07      | C C 2          | Cm 242           |                            |                | = 9.45E-09      | C C 2          |
| Cs 135                             |                            |                |                 |                | Cm 243           |                            |                |                 |                |
| Cs 137                             |                            |                | = 3.00E-06      | C C 2          | Cm 244           |                            |                | = 3.40E-08      | C C 2          |
| Ba 133                             |                            |                |                 |                | Cm 245           |                            |                |                 |                |
| La 137                             |                            |                |                 |                | Cm 246           |                            |                |                 |                |
| La 138                             |                            |                |                 |                | Cm 248           |                            |                |                 |                |
| Ce 144                             |                            |                | = 6.80E-08      | C C 2          | Cf 249           |                            |                |                 |                |
| Pm 145                             |                            |                |                 |                | Cf 250           |                            |                |                 |                |
| Pm 147                             |                            |                | = 9.03E-07      | C C 2          | Cf 251           |                            |                |                 |                |
| Sm 147                             |                            |                |                 |                | Cf 252           |                            |                |                 |                |
| Sm 151                             |                            |                |                 |                | Unsp a           |                            |                |                 |                |
| Eu 152                             |                            |                |                 |                | Unsp b/g         |                            |                |                 |                |
| Eu 154                             |                            |                | = 1.02E-07      | C C 2          | <b>Total a</b>   | <b>0</b>                   | <b>*</b>       | <b>1.15E-06</b> | <b>*</b>       |
| Eu 155                             |                            |                | = 5.86E-08      | C C 2          | <b>Total b/g</b> | <b>0</b>                   | <b>*</b>       | <b>1.77E-05</b> | <b>*</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