

LLW(07) S2/261, March 2008, LLW Facilities Stage 2, Environmental
Statement Addendum

Appendix 9b

Land Quality Data

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Summary of Sample Analysis with Comparison to Guideline Values

Determinand		Guideline Value (mg/kg)	Guideline Type	% of samples with detectable results	Average (mg/kg)	Maximum (mg/kg)	% samples exceeding guideline value
Cyanide mg/kg				0	N/A	N/A	0
Aluminium mg/kg				100	7551.00	21000.00	
Ba mg/kg				100	86.40	1500.00	
Beryllium mg/kg				34	2.01	3.80	
Iron mg/kg				100	21559.79	53664.00	
Manganese mg/kg				100	394.48	3238.00	
Vanadium mg/kg				98	44.48	149.00	
Arsenic mg/kg	20		SGV - Residential	100	34.28	160.00	60
Cadmium mg/kg	1		SGV - Residential	31	2.52	6.00	31
Lead mg/kg	300		SGV - Residential	100	44.24	222.00	0
Mercury mg/kg	8		SGV - Residential (with plant up take)	24	0.23	0.90	0
Copper mg/kg	80		Soil Code	100	19.91	56.00	0
Nickel mg/kg	50		SGV - Residential	95	31.13	67.00	21
Zinc mg/kg	200		Soil Code	100	72.57	140.00	0
Chromium mg/kg	130		SGV - Residential	100	44.91	140.00	2
Selenium mg/kg	35		SGV - Residential (with plant up take)	38	0.24	0.60	0
Boron Water Soluble mg/kg				17	1.35	5.00	
Total Petroleum Hydrocarbons mg/kg	50		Dutch List	22	11.38	84.00	2
Gross Alpha Activity Bq/g	1		Dounreay Background	100	0.85	5.75	7
Gross Beta Activity Bq/g	1.5		Dounreay Background	100	1.48	4.36	33
Caesium-137 Bq/g	TBC		SoLA	41	0.03	0.08	0

Discussion and further information

Arsenic concentrations within the superficial tend to exceed the SGV for residential land use of 20mg/kg. It is noted that “elevated” values are considered to be common background levels at Dounreay.

A significant proportion of samples contain nickel and cadmium concentrations which exceed the relevant SGVs. This is consistent with the baseline data presented in the ES.

The only sample to exceed the Dutch Intervention Level for hydrocarbons was a sample from localised peat deposit identified within one of the trenches. These levels are considered to be indicative of natural organics. The absence of notable hydrocarbons in the superficial samples and in the groundwater (see Chapter 10) would suggest that the potential for hydrocarbon contamination associated with the former airfield is not an issue.

Gross alpha and gross beta levels are generally within the background levels previously defined for the Dounreay area. Maximum levels are associated with natural radioactivity within a localised peat sample. Cs-137 is the commonest radiological contaminant within soils at the Dounreay site. The majority of samples analysed from the proposed disposal site are below the limit of detection for Cs-137, however trace levels are observed. These results confirm previous radiometric aerial surveys of the Dounreay area, which identify Cs-137 associated with atmospheric fall-out and also enhanced levels along the runway, associated with surface run-off.

Within the made ground to the north-west of the runway a localised section including a variety of building rubble has been identified. This building rubble included some small sections of asbestos sheeting. No samples were collected for analysis. The potential for further asbestos contamination is possible, however, given the history of the airfield this is not considered to be significant.

The history of land use for the site is agricultural and indicates that a contamination problem is unlikely. Historic fuelling facilities associated with the runway were located at the western end of the old airfield some considerable distance from the LLW site area.