# Appendix A: Tellus Deeper Topsoil (S) Maps

The maps in figures A.1 to A.13 were created by inverse distance weighted interpolation and show the distribution of elements of interest in Tellus 'S' topsoils samples across the northern half of Ireland, with 1:1,000,000 scale bedrock linework (Geological Survey Ireland 2021). Regional samples were collected at a typical density of one per 4 km<sup>2</sup> and periurban samples were collected at a higher density of one per 1 km<sup>2</sup>. The latter were re-sampled 1 per 4 km<sup>2</sup> for mapping purposes so as not to skew the concentration distributions. Elements were analysed by ICP-MS/OES following digestion by *aqua regia*. Further information on the production of these maps may be found in Geological Survey Ireland (2021).

As illustrated in the boxplots in section 3.1 and 3.2, the maps reveal naturally low concentrations of most metals and metalloids in areas of peat, particularly in the blanket peat deposits that predominate across much of west Galway, Mayo and Donegal. The exceptions to this trend are Hg and Se, for which soil organic matter has a strong affinity. Low-to-moderate metal and metalloid concentrations are also observed in the midlands along a NW-SE trending stretch of land between Ballina, County Mayo and Ballinasloe, County Galway that is dominated by limestone tills and raised peat deposits. Arc-like distributions of high Hg and Pb concentrations around Dublin city suggest that anthropogenic activity is at least partially responsible for the presence of these elements. This pattern is also observed for Cu, Zn and Sb but is less distinct due to the naturally high concentrations of these elements in the surrounding limestone. Also enriched in the impure Lower Carboniferous limestones of Dublin and parts of the eastern midlands are As, Ba, Ni, Mo, Pb and most notably Cd. High concentrations of As, Cr, Cu, Ni and V are found in soils overlying the Lower Palaeozoic greywacke of the Longford-Down inlier, and enrichment of Cr and Ni, and to a lesser extent As and V, is observed in the rocks of the South Mayo Trough. High concentrations of Ba found along the boundary between the Lower Palaeozoic greywacke and the Lower Carboniferous limestone between counties Longford and Down as well as north of Lough Ree in east county Roscommon, also appear to be of geogenic origin. Base metal mineralization is evident in east County Monaghan, southeast County Galway and south County Leitrim, where notable Pb and Zn anomalies coincide with known deposits.





Figure A.1 Distribution of As in Tellus deeper topsoil (S) samples.



Figure A.2 Distribution of Ba in Tellus deeper topsoil (S) samples.





Figure A.3 Distribution of Cd in Tellus deeper topsoil (S) samples.



Figure A.4 Distribution of Cr in Tellus deeper topsoil (S) samples.





Figure A.5 Distribution of Cu in Tellus deeper topsoil (S) samples.



Figure A.6 Distribution of Hg in Tellus deeper topsoil (S) samples.





Figure A.7 Distribution of Mo in Tellus deeper topsoil (S) samples.

![](_page_4_Figure_2.jpeg)

Figure A.8 Distribution of Ni in Tellus deeper topsoil (S) samples.

![](_page_4_Picture_4.jpeg)

![](_page_5_Figure_0.jpeg)

Figure A.9 Distribution of Pb in Tellus deeper topsoil (S) samples.

![](_page_5_Figure_2.jpeg)

Figure A.10 Distribution of Sb in Tellus deeper topsoil (S) samples.

![](_page_5_Picture_4.jpeg)

![](_page_6_Figure_0.jpeg)

Figure A.11 Distribution of Se in Tellus deeper topsoil (S) samples.

![](_page_6_Figure_2.jpeg)

Figure A.12 Distribution of V in Tellus deeper topsoil (S) samples.

![](_page_6_Picture_4.jpeg)

![](_page_7_Figure_0.jpeg)

Figure A.13 Distribution of Zn in Tellus deeper topsoil (S) samples.

![](_page_7_Picture_2.jpeg)

### **Appendix B: Supplementary Maps**

![](_page_8_Figure_1.jpeg)

![](_page_8_Picture_2.jpeg)

Figure B.1: Quaternary Sediments of the northern part of Ireland (excluding Northern ireland).

![](_page_9_Figure_0.jpeg)

**Figure B.2:** DBC and Tellus periurban deeper topsoil (S) samples classified by Quaternary sediment type.

![](_page_9_Picture_2.jpeg)

Geochemical characterization of the Dublin Boulder Clay

![](_page_10_Figure_0.jpeg)

Figure B.3: SRF Geochemical Domain map (Glennon et al. 2020).

![](_page_11_Figure_0.jpeg)

Figure B.4: Tellus deeper topsoil (S) regional and periurban survey areas and DBC database coverage.

![](_page_11_Picture_2.jpeg)

# **Appendix C: Boxplots**

Tukey boxplots are used to show the distribution of geochemical data for DBC data (DBC and made ground) and Tellus deeper topsoil (S) samples. Outliers, defined as those values plotting above or below the fence value (=[IQR\*1.5] above the 75<sup>th</sup> percentile or below the 25<sup>th</sup> percentile) are represented by O. Far outliers, defined as those exceeding [3\*IQR] above the 75<sup>th</sup> percentile or below the 25<sup>th</sup> percentile, are represented by  $\Delta$ . The line in the centre of the box is the median value; the black dot is the mean value.

![](_page_12_Figure_2.jpeg)

### C.1. DBC and Made Ground v. Tellus Data for Quaternary Sediment Classes

**Figure C.1:** Tukey boxplots for DBC data (DBC and Made) and Tellus samples classified by Quaternary Sediment lithology showing the distribution of As concentrations.

![](_page_12_Picture_5.jpeg)

![](_page_13_Figure_0.jpeg)

**Figure C.2:** Tukey boxplots for DBC data (DBC and Made) and Tellus samples classified by Quaternary Sediment lithology showing the distribution of Ba concentrations.

![](_page_13_Figure_2.jpeg)

**Figure C.3:** Tukey boxplots for DBC data (DBC and Made) and Tellus samples classified by Quaternary Sediment lithology showing the distribution of Cd concentrations.

![](_page_13_Picture_4.jpeg)

![](_page_14_Figure_0.jpeg)

**Figure C.4:** Tukey boxplots for DBC data (DBC and Made) and Tellus samples classified by Quaternary Sediment lithology showing the distribution of Cr concentrations.

![](_page_14_Figure_2.jpeg)

**Figure C.5:** Tukey boxplots for DBC data (DBC and Made) and Tellus samples classified by Quaternary Sediment lithology showing the distribution of Cu concentrations.

![](_page_14_Picture_4.jpeg)

![](_page_15_Figure_0.jpeg)

**Figure C.6:** Tukey boxplots for DBC data (DBC and Made) and Tellus samples classified by Quaternary Sediment lithology showing the distribution of Hg concentrations.

![](_page_15_Figure_2.jpeg)

**Figure C.7:** Tukey boxplots for DBC data (DBC and Made) and Tellus samples classified by Quaternary Sediment lithology showing the distribution of Mo concentrations.

![](_page_15_Picture_4.jpeg)

![](_page_16_Figure_0.jpeg)

**Figure C.8:** Tukey boxplots for DBC data (DBC and Made) and Tellus samples classified by Quaternary Sediment lithology showing the distribution of Ni concentrations.

![](_page_16_Figure_2.jpeg)

**Figure C.9:** Tukey boxplots for DBC data (DBC and Made) and Tellus samples classified by Quaternary Sediment lithology showing the distribution of Pb concentrations.

![](_page_16_Picture_4.jpeg)

![](_page_17_Figure_0.jpeg)

**Figure C.10:** Tukey boxplots for DBC data (DBC and Made) and Tellus samples classified by Quaternary Sediment lithology showing the distribution of Sb concentrations.

![](_page_17_Figure_2.jpeg)

**Figure C.11:** Tukey boxplots for DBC data (DBC and Made) and Tellus samples classified by Quaternary Sediment lithology showing the distribution of Se concentrations.

![](_page_17_Picture_4.jpeg)

![](_page_18_Figure_0.jpeg)

**Figure C.12:** Tukey boxplots for DBC data (DBC and Made) and Tellus samples classified by Quaternary Sediment lithology showing the distribution of V concentrations.

![](_page_18_Figure_2.jpeg)

**Figure C.13:** Tukey boxplots for DBC data (DBC and Made) and Tellus samples classified by Quaternary Sediment lithology showing the distribution of Zn concentrations.

![](_page_18_Picture_4.jpeg)

DDC	As (mg/kg)	Ba (mg/kg)	Cd (mg/kg)	Cr (mg/kg)	Cu (mg/kg)	Hg (mg/kg)	Mo (mg/kg)	Ni (mg/kg)	Pb (mg/kg)	Sb (mg/kg)	Se (mg/kg)	V (mg/kg)	Zn (mg/kg)
DBC	014	477	214	014	214	014	200	214	014	100	014	40	014
n Minimum	0.005	20	0.29	214	. 214	0.002	0.005	12 7	214	0.0025	0.0015	40	214
Maulaum	0.003	50	0.33	2.3	100	0.002	0.005	12. (	3.3	0.0025	0.0015	3	23
Madian	17		1.1	29.05	25	0.002	11.2	40.1	22 5	2	14	40	941
2E e e e e e e e e e e e e e e e e e e e	10.29	52	14	20.03	1 20	0.002	3.0	24 99	22.0	0.0025	0.66	20.25	67
25 percentile	10.20	1 32	2 225	42.02	20	0.002	2.0	J4.J0 47.6	21.25	0.0023	0.00	20.23	111 E
Made	22		2.323	42.03	, JZ	0.002	4.4	41.0	31.23	4	4	30	11.5
naue	210	161	210	210	205	205	197	205	210	195	205	75	210
Minimum	0.005	19.0	0.0005	5.06	. 200	0.002	0.005	2 920	0.0025	0.0025	0.0015	92	27.9
Maximum	115 4	413.0	6.09	113.4	534	2 14	9.2	99.7	2229	16.23	9.00.0	150	930
Median	15.2	91.0	13	24.51	3165	0.002	3.2	36.6	45	152	1	30.2	90
25 perceptile	91	68.0	0.670	18	21	0.002	16924	24	24	0.25	0.363	25	70.0
75 percentile	23	128 5	2 025	40.53	47	0.002	4 45	48	89.25	2.6	2	38.1	122.3
Irish Sea Ti		120.0	2.020	40.00	1. S.	0.104	4.45		00.20	2.0	2	50.1	122.0
n	- 89	89	89	89	89	89	89	89	89	89	89	89	89
Minimum	4 83	49 17	0 142	17.66	10.04	0.026	0.275	16.68	12.0	0.227	0.299	20.1	33.5
Masimum	46 48	1000	2 973	63.83	75.54	0.180	9 435	83.49	169	1622	4 190	78.1	145.2
Median	15.35	124.4	1045	32.59	27.44	0.076	2 429	39.98	29.4	1020	0.894	42.3	76.1
25 percentile	12.62	99.3	0.543	28.98	21.55	0.060	1.443	31.83	23.8	0.725	0.609	37.6	66.1
75 percentile	18.83	160.9	1.570	41.37	34,58	0.094	3.365	48.66	33.0	1.178	1,183	52.1	88.8
Gravel													
n	374	372	374	374	374	374	373	374	374	373	374	359	374
Minimum	0.175	6.35	0.009	0.892	0.489	0.002	0.005	0.471	3.098	0.003	0.002	1.125	1,722
Maximum	107.4	921	5.676	105.7	66	0.546	11.1	163.7	81.7	2.45	21.7	79.2	399
Median	9.51	74.92	1.016	23.7	17.6	0.079	1.18	33.17	22.62	0.534	0.648	31.7	86.2
25 percentile	6.85	46.80	0.523	18.7	12.0	0.058	0.781	21.7	16.1	0.343	0.491	25.0	56.3
75 percentile	12.43	100.66	1.540	29.8	23.3	0.103	1.725	44.2	28.8	0.792	0.925	39.8	118.4
Till													
n	5608	5608	5608	5608	5608	5608	5608	5608	5608	5608	5608	5608	5608
Minimum	0.058	3,195	0.007	0.365	0.314	0.002	0.034	0.432	0.923	0.009	0.035	1.003	1.129
Maximum	326	4850	9.2451	364	243	6.4488	45.9125	307	452	6.84601	63.3	176.65	2960
Median	8.24	67.05	0.521	23.8	18.4	0.078	1.011	29.62	19.40	0.346	0.763	33.1	65.9
25 percentile	5.48	41.23	0.191	15.8	12.0	0.059	0.606	15.91	14.21	0.205	0.541	23.1	40.7
75 percentile	11.91	102.77	1.19	32.0	26.7	0.101	1.628	42.74	26.32	0.579	1.120	43.1	94.3
Peat													
n	2577	2577	2577	2577	2577	2577	2577	2577	2577	2577	2577	2576	2577
Minimum	0.02	1.20	0.005	0.156	0.331	0.002	0.044	0.162	0.086	0.003	0.102	0.182	1.23
Maximum	475	3050	60.4	275	6280	0.754	39.94	218.8	485	10.02	30.30	173.9	2100
Median	1.67	15.12	0.16	1.77	3.04	0.08	0.42	1.69	12.07	0.17	1.80	3.14	19.91
25 percentile	0.98	7.04	0.10	0.86	1.98	0.06	0.28	0.95	7.91	0.11	1.01	1.54	11.38
75 percentile	4.61	45.18	0.30	9.13	8.77	0.11	0.73	8.15	19.05	0.27	2.82	15.00	34.86

**Table C.1** Summary statistics for DBC data (DBC and Made) and Tellus samples classified by
 Quaternary Sediment lithology.

### C.2. DBC and Made Ground v. Tellus Data for Selected Tills and Peat

![](_page_19_Figure_3.jpeg)

**Figure C.14:** Tukey boxplots for DBC data (DBC and Made) and Tellus samples classified by selected Quaternary Sediment lithologies showing the distribution of As concentrations.

![](_page_19_Picture_5.jpeg)

![](_page_20_Figure_0.jpeg)

**Figure C.15:** Tukey boxplots for DBC data (DBC and Made) and Tellus samples classified by selected Quaternary Sediment lithologies showing the distribution of Ba concentrations.

![](_page_20_Figure_2.jpeg)

**Figure C.16:** Tukey boxplots for DBC data (DBC and Made) and Tellus samples classified by selected Quaternary Sediment lithologies showing the distribution of Cd concentrations.

![](_page_20_Picture_4.jpeg)

![](_page_21_Figure_0.jpeg)

**Figure C.17:** Tukey boxplots for DBC data (DBC and Made) and Tellus samples classified by selected Quaternary Sediment lithologies showing the distribution of Cr concentrations.

![](_page_21_Figure_2.jpeg)

**Figure C.18:** Tukey boxplots for DBC data (DBC and Made) and Tellus samples classified by selected Quaternary Sediment lithologies showing the distribution of Cu concentrations.

![](_page_21_Picture_4.jpeg)

![](_page_22_Figure_0.jpeg)

**Figure C.19:** Tukey boxplots for DBC data (DBC and Made) and Tellus samples classified by selected Quaternary Sediment lithologies showing the distribution of Hg concentrations.

![](_page_22_Figure_2.jpeg)

**Figure C.20:** Tukey boxplots for DBC data (DBC and Made) and Tellus samples classified by selected Quaternary Sediment lithologies showing the distribution of Mo concentrations.

![](_page_22_Picture_4.jpeg)

![](_page_23_Figure_0.jpeg)

**Figure C.21:** Tukey boxplots for DBC data (DBC and Made) and Tellus samples classified by selected Quaternary Sediment lithologies showing the distribution of Ni concentrations.

![](_page_23_Figure_2.jpeg)

**Figure C.22:** Tukey boxplots for DBC data (DBC and Made) and Tellus samples classified by selected Quaternary Sediment lithologies showing the distribution of Pb concentrations.

![](_page_23_Picture_4.jpeg)

![](_page_24_Figure_0.jpeg)

**Figure C.23:** Tukey boxplots for DBC data (DBC and Made) and Tellus samples classified by selected Quaternary Sediment lithologies showing the distribution of Sb concentrations.

![](_page_24_Figure_2.jpeg)

**Figure C.24:** Tukey boxplots for DBC data (DBC and Made) and Tellus samples classified by selected Quaternary Sediment lithologies showing the distribution of Se concentrations.

![](_page_24_Picture_4.jpeg)

![](_page_25_Figure_0.jpeg)

**Figure C.25:** Tukey boxplots for DBC data (DBC and Made) and Tellus samples classified by selected Quaternary Sediment lithologies showing the distribution of V concentrations.

![](_page_25_Figure_2.jpeg)

**Figure C.26:** Tukey boxplots for DBC data (DBC and Made) and Tellus samples classified by selected Quaternary Sediment lithologies showing the distribution of Zn concentrations.

### C.3. DBC v. Tellus Regional and Tellus Periurban Data

![](_page_25_Picture_5.jpeg)

![](_page_26_Figure_0.jpeg)

**Figure C.27:** Tukey boxplots for DBC data (DBC only) and Tellus deeper topsoil (S) data (Regional and Periurban), classified by database, showing the distribution of As concentrations.

![](_page_26_Figure_2.jpeg)

**Figure C.28:** Tukey boxplots for DBC data (DBC only) and Tellus deeper topsoil (S) data (Regional and Periurban), classified by database, showing the distribution of Ba concentrations.

![](_page_26_Picture_4.jpeg)

![](_page_27_Figure_0.jpeg)

**Figure C.29:** Tukey boxplots for DBC data (DBC only) and Tellus deeper topsoil (S) data (Regional and Periurban), classified by database, showing the distribution of Cd concentrations.

![](_page_27_Figure_2.jpeg)

**Figure C.30:** Tukey boxplots for DBC data (DBC only) and Tellus deeper topsoil (S) data (Regional and Periurban), classified by database, showing the distribution of Cr concentrations.

![](_page_27_Picture_4.jpeg)

![](_page_28_Figure_0.jpeg)

**Figure C.31:** Tukey boxplots for DBC data (DBC only) and Tellus deeper topsoil (S) data (Regional and Periurban), classified by database, showing the distribution of Cu concentrations.

![](_page_28_Figure_2.jpeg)

**Figure C.32:** Tukey boxplots for DBC data (DBC only) and Tellus deeper topsoil (S) data (Regional and Periurban), classified by database, showing the distribution of Hg concentrations.

![](_page_28_Picture_4.jpeg)

![](_page_29_Figure_0.jpeg)

**Figure C.33:** Tukey boxplots for DBC data (DBC only) and Tellus deeper topsoil (S) data (Regional and Periurban), classified by database, showing the distribution of Mo concentrations.

![](_page_29_Figure_2.jpeg)

**Figure C.34:** Tukey boxplots for DBC data (DBC only) and Tellus deeper topsoil (S) data (Regional and Periurban), classified by database, showing the distribution of Ni concentrations.

![](_page_29_Picture_4.jpeg)

![](_page_30_Figure_0.jpeg)

**Figure C.35:** Tukey boxplots for DBC data (DBC only) and Tellus deeper topsoil (S) data (Regional and Periurban), classified by database, showing the distribution of Pb concentrations.

![](_page_30_Figure_2.jpeg)

**Figure C.36:** Tukey boxplots for DBC data (DBC only) and Tellus deeper topsoil (S) data (Regional and Periurban), classified by database, showing the distribution of Sb concentrations.

![](_page_30_Picture_4.jpeg)

![](_page_31_Figure_0.jpeg)

**Figure C.37:** Tukey boxplots for DBC data (DBC only) and Tellus deeper topsoil (S) data (Regional and Periurban), classified by database, showing the distribution of Se concentrations.

![](_page_31_Figure_2.jpeg)

**Figure C.38:** Tukey boxplots for DBC data (DBC only) and Tellus deeper topsoil (S) data (Regional and Periurban), classified by database, showing the distribution of V concentrations.

![](_page_31_Picture_4.jpeg)

![](_page_32_Figure_0.jpeg)

**Figure C.39:** Tukey boxplots for DBC data (DBC only) and Tellus deeper topsoil (S) data (Regional and Periurban), classified by database, showing the distribution of Zn concentrations.

![](_page_32_Figure_2.jpeg)

#### C.4. DBC and Made Ground v. Tellus Data Classified by SRF Domain

**Figure C.40:** Tukey boxplots for DBC data (DBC and Made) and Tellus samples classified by SRF Domain showing the distribution of As concentrations. Geochemically Appropriate Levels (GALs) for soil recovery facilities Glennon *et al.* 2020) are given for each domain.

![](_page_32_Picture_5.jpeg)

![](_page_33_Figure_0.jpeg)

**Figure C.41:** Tukey boxplots for DBC data (DBC and Made) and Tellus samples classified by SRF Geochemical Domain showing the distribution of Ba concentrations.

![](_page_33_Figure_2.jpeg)

**Figure C.42:** Tukey boxplots for DBC data (DBC and Made) and Tellus samples classified by SRF Domain showing the distribution of Cd concentrations. Geochemically Appropriate Levels (GALs) for soil recovery facilities Glennon *et al.* 2020) are given for each domain.

![](_page_33_Picture_4.jpeg)

![](_page_34_Figure_0.jpeg)

**Figure C.43:** Tukey boxplots for DBC data (DBC and Made) and Tellus samples classified by SRF Domain showing the distribution of Cr concentrations. Geochemically Appropriate Levels (GALs) for soil recovery facilities Glennon *et al.* 2020) are given for each domain.

![](_page_34_Figure_2.jpeg)

**Figure C.44:** Tukey boxplots for DBC data (DBC and Made) and Tellus samples classified by SRF Domain showing the distribution of Cu concentrations. Geochemically Appropriate Levels (GALs) for soil recovery facilities Glennon *et al.* 2020) are given for each domain.

![](_page_34_Picture_4.jpeg)

![](_page_35_Figure_0.jpeg)

**Figure C.45:** Tukey boxplots for DBC data (DBC and Made) and Tellus samples classified by SRF Domain showing the distribution of Hg concentrations. Geochemically Appropriate Levels (GALs) for soil recovery facilities Glennon *et al.* 2020) are given for each domain.

![](_page_35_Figure_2.jpeg)

**Figure C.46:** Tukey boxplots for DBC data (DBC and Made) and Tellus samples classified by SRF Domain showing the distribution of Mo concentrations.

![](_page_35_Picture_4.jpeg)

![](_page_36_Figure_0.jpeg)

**Figure C.47:** Tukey boxplots for DBC data (DBC and Made) and Tellus samples classified by SRF Domain showing the distribution of Ni concentrations. Geochemically Appropriate Levels (GALs) for soil recovery facilities Glennon *et al.* 2020) are given for each domain.

![](_page_36_Figure_2.jpeg)

**Figure C.48:** Tukey boxplots for DBC data (DBC and Made) and Tellus samples classified by SRF Domain showing the distribution of Pb concentrations. Geochemically Appropriate Levels (GALs) for soil recovery facilities Glennon *et al.* 2020) are given for each domain.

![](_page_36_Picture_4.jpeg)

![](_page_37_Figure_0.jpeg)

**Figure C.49:** Tukey boxplots for DBC data (DBC and Made) and Tellus samples classified by SRF Domain showing the distribution of Sb concentrations.

![](_page_37_Figure_2.jpeg)

**Figure C.50:** Tukey boxplots for DBC data (DBC and Made) and Tellus samples classified by SRF Domain showing the distribution of Se concentrations.

![](_page_37_Picture_4.jpeg)

![](_page_38_Figure_0.jpeg)

**Figure C.51:** Tukey boxplots for DBC data (DBC and Made) and Tellus samples classified by SRF Domain showing the distribution of V concentrations.

![](_page_38_Figure_2.jpeg)

**Figure C.52:** Tukey boxplots for DBC data (DBC and Made) and Tellus samples classified by SRF Domain showing the distribution of Zn concentrations. Geochemically Appropriate Levels (GALs) for soil recovery facilities Glennon *et al.* 2020) are given for each domain.

### C.5. DBC Database Classified by Laboratory

![](_page_38_Picture_5.jpeg)

![](_page_39_Figure_0.jpeg)

**Figure C.53:** Tukey boxplots for DBC data (DBC and Made), classified by the laboratory at which the sample was analysed, showing the distribution of As concentrations.

![](_page_39_Figure_2.jpeg)

**Figure C.54:** Tukey boxplots for DBC data (DBC and Made), classified by the laboratory at which the sample was analysed, showing the distribution of Ba concentrations.

![](_page_39_Picture_4.jpeg)

![](_page_40_Figure_0.jpeg)

**Figure C.55:** Tukey boxplots for DBC data (DBC and Made), classified by the laboratory at which the sample was analysed, showing the distribution of Cd concentrations.

![](_page_40_Figure_2.jpeg)

**Figure C.56:** Tukey boxplots for DBC data (DBC and Made), classified by the laboratory at which the sample was analysed, showing the distribution of Cr concentrations.

![](_page_40_Picture_4.jpeg)

![](_page_41_Figure_0.jpeg)

**Figure C.57:** Tukey boxplots for DBC data (DBC and Made), classified by the laboratory at which the sample was analysed, showing the distribution of Cu concentrations.

![](_page_41_Figure_2.jpeg)

**Figure C.58:** Tukey boxplots for DBC data (DBC and Made), classified by the laboratory at which the sample was analysed, showing the distribution of Hg concentrations.

![](_page_41_Picture_4.jpeg)

![](_page_42_Figure_0.jpeg)

**Figure C.59:** Tukey boxplots for DBC data (DBC and Made), classified by the laboratory at which the sample was analysed, showing the distribution of Mo concentrations.

![](_page_42_Figure_2.jpeg)

**Figure C.60:** Tukey boxplots for DBC data (DBC and Made), classified by the laboratory at which the sample was analysed, showing the distribution of Ni concentrations.

![](_page_42_Picture_4.jpeg)

![](_page_43_Figure_0.jpeg)

**Figure C.61:** Tukey boxplots for DBC data (DBC and Made), classified by the laboratory at which the sample was analysed, showing the distribution of Pb concentrations.

![](_page_43_Figure_2.jpeg)

**Figure C.62:** Tukey boxplots for DBC data (DBC and Made), classified by the laboratory at which the sample was analysed, showing the distribution of Sb concentrations.

![](_page_43_Picture_4.jpeg)

![](_page_44_Figure_0.jpeg)

**Figure C.63:** Tukey boxplots for DBC data (DBC and Made), classified by the laboratory at which the sample was analysed, showing the distribution of Se concentrations.

![](_page_44_Figure_2.jpeg)

**Figure C.64:** Tukey boxplots for DBC data (DBC and Made), classified by the laboratory at which the sample was analysed, showing the distribution of V concentrations.

![](_page_44_Picture_4.jpeg)

![](_page_45_Figure_0.jpeg)

**Figure C.65:** Tukey boxplots for DBC data (DBC and Made), classified by the laboratory at which the sample was analysed, showing the distribution of Zn concentrations.

#### As\_mgkg Colour Δ top\_depth\_range\_m 90 0 - 0.5 80 0.5 - 1 01 - 1.5 70 1.5 - 2 2 - 2.5 60 1 2.5 - 3 50 03-5 8 65-7 0 Δ 40 07 - 10 30 20 10 0

C.6. DBC Classified by Sample Depth

**Figure C.66:** Tukey boxplots for DBC data (DBC only), classified by depth from which the sample was collected, showing the distribution of As concentrations.

![](_page_45_Picture_5.jpeg)

![](_page_46_Figure_0.jpeg)

**Figure C.67:** Tukey boxplots for DBC data (DBC only), classified by depth from which the sample was collected, showing the distribution of Ba concentrations.

![](_page_46_Figure_2.jpeg)

**Figure C.68:** Tukey boxplots for DBC data (DBC only), classified by depth from which the sample was collected, showing the distribution of Cd concentrations.

![](_page_46_Picture_4.jpeg)

![](_page_47_Figure_0.jpeg)

**Figure C.69:** Tukey boxplots for DBC data (DBC only), classified by depth from which the sample was collected, showing the distribution of Cr concentrations.

![](_page_47_Figure_2.jpeg)

**Figure C.70:** Tukey boxplots for DBC data (DBC only), classified by depth from which the sample was collected, showing the distribution of Cu concentrations.

![](_page_47_Picture_4.jpeg)

![](_page_48_Figure_0.jpeg)

![](_page_48_Figure_1.jpeg)

![](_page_48_Figure_2.jpeg)

**Figure C.72:** Tukey boxplots for DBC data (DBC only), classified by depth from which the sample was collected, showing the distribution of Mo concentrations.

![](_page_48_Figure_4.jpeg)

![](_page_48_Picture_5.jpeg)

**Figure C.73:** Tukey boxplots for DBC data (DBC only), classified by depth from which the sample was collected, showing the distribution of Ni concentrations.

![](_page_49_Figure_1.jpeg)

**Figure C.74:** Tukey boxplots for DBC data (DBC only), classified by depth from which the sample was collected, showing the distribution of Pb concentrations.

![](_page_49_Figure_3.jpeg)

**Figure C.75:** Tukey boxplots for DBC data (DBC only), classified by depth from which the sample was collected, showing the distribution of Sb concentrations.

![](_page_49_Picture_5.jpeg)

![](_page_50_Figure_0.jpeg)

**Figure C.76:** Tukey boxplots for DBC data (DBC only), classified by depth from which the sample was collected, showing the distribution of Se concentrations.

![](_page_50_Figure_2.jpeg)

**Figure C.77:** Tukey boxplots for DBC data (DBC only), classified by depth from which the sample was collected, showing the distribution of V concentrations.

![](_page_50_Picture_4.jpeg)

![](_page_51_Figure_0.jpeg)

**Figure C.78:** Tukey boxplots for DBC data (DBC only), classified by depth from which the sample was collected, showing the distribution of Zn concentrations.

![](_page_51_Figure_2.jpeg)

**Figure C.79:** Tukey boxplots for DBC data (DBC only), classified by depth from which the sample was collected, showing the pH distribution.

![](_page_51_Picture_4.jpeg)

### Appendix D: Maps

#### 700000 705000 710000 720000 715000 745000 As\_mgkg N 45000 2 A ≤3.860 0 st Margaret's Kinsaley 3.860 - 6.525 ¢Ò 6.525 - 7.600 Dunb oyn e 0 Clonee. 7.600 - 10.275 0 N-3 740000 Q Cor du ff Darndale 40000 Santry 0 10.275 - 17.000 Ballymun Coolock Kilbar 17.000 - 22.000 0 Blanchardstown Artane Glasnevin 22.000 - 27.500 0 Donnycarn Ashtown 27.500 - 30.000 Clon tar f 30.000 - 75.805 Leixlip 735000 Palmerston 735000 Lucan 75.805 - 94.000 Dublin Chapelizod Ballyfermot Irishtown Ronanstown ns Ba **coymount** Fox & Gees 8 Clondalkin 80 agh onsk Greenhills 730000 730000 Booterstown Blackrock Rathfarnham stle Tymon Monks Churchtown N11 North Tallaght boden Saggart Jobstown Foxrock Ballinteer Cabinte 25000 725000 Rockbrook C Ordnance Survey Ireland - km 3 4 0 2 1 700000 705000 715000 720000 710000

#### D.1. DBC data maps

**Figure D.1:** Distribution of As concentrations in DBC samples. Note: Markers are dispersed to show values at multiple sample depths within a single borehole.

![](_page_52_Picture_4.jpeg)

![](_page_53_Figure_0.jpeg)

**Figure D.2:** Distribution of Ba concentrations in DBC samples. Note: Markers are dispersed to show values at multiple sample depths within a single borehole.

![](_page_53_Figure_2.jpeg)

![](_page_53_Picture_3.jpeg)

![](_page_54_Figure_0.jpeg)

**Figure D.3:** Distribution of Cd concentrations in DBC samples. Note: Markers are dispersed to show values at multiple sample depths within a single borehole.

**Figure D.4:** Distribution of Cr concentrations in DBC samples. Note: Markers are dispersed to show values at multiple sample depths within a single borehole.

![](_page_54_Picture_3.jpeg)

![](_page_55_Figure_0.jpeg)

**Figure D.5:** Distribution of Cu concentrations in DBC samples. Note: Markers are dispersed to show values at multiple sample depths within a single borehole.

NOTE: Hg map not included as most values censored to 0.002 mg/kg.

![](_page_55_Picture_3.jpeg)

![](_page_56_Figure_0.jpeg)

**Figure D.6:** Distribution of Mo concentrations in DBC samples. Note: Markers are dispersed to show values at multiple sample depths within a single borehole.

![](_page_56_Figure_2.jpeg)

![](_page_56_Picture_3.jpeg)

![](_page_57_Figure_0.jpeg)

**Figure D.7:** Distribution of Ni concentrations in DBC samples. Note: Markers are dispersed to show values at multiple sample depths within a single borehole.

**Figure D.8:** Distribution of Pb concentrations in DBC samples. Note: Markers are dispersed to show values at multiple sample depths within a single borehole.

![](_page_57_Picture_3.jpeg)

![](_page_58_Figure_0.jpeg)

**Figure D.9:** Distribution of Sb concentrations in DBC samples. Markers are dispersed to show values at multiple sample depths within a single borehole. NOTE: Large proportion of Sb values <LLD and censored to 0.0025 mg/kg.

![](_page_58_Figure_2.jpeg)

![](_page_58_Picture_3.jpeg)

**Figure D.10:** Distribution of Se concentrations in DBC samples. Note: Markers are dispersed to show values at multiple sample depths within a single borehole.

![](_page_59_Figure_1.jpeg)

**NOTE:** V map excluded due to small sample size.

**Figure D.11:** Distribution of Zn concentrations in DBC samples. Note: Markers are dispersed to show values at multiple sample depths within a single borehole.

![](_page_59_Picture_4.jpeg)