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Data Article

Data for assessment of sediment, soil, and water quality at Ashfield flats reserve, Western Australia

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A B S T R A C T

Sediment and water samples were collected using transects and grids within sampling strata, in 2019, 2020, and 2021 from a riparian reserve adjoining the Swan River estuary in Western Australia. Different sampling designs were used each year, with transects and/or grids designed to assess changes in sediment and water quality across assumed environmental gradients such as salinity or distance from possible contaminant sources. Sediments were from 0-10cm; pH and electrical conductivity were measured on suspensions, 32 elements measured by ICP-OES on HNO_3/HCl digests, and microplastics counted microscopically after Fenton digestion and density separation. Surface water was from wetland ponds and stormwater drains, with pH, EC measured in-situ. Filtered acidified water subsamples used to measure nitrate + nitrite and dissolved phosphate spectrophotometrically and 26 elements using ICP-OES. Reported data include metadata and are for 231 sediment/soil samples and 172 water samples, including sampling strata categories and UTM and Longitude-Latitude coordinates. Elemental concentrations have been censored based on blank subtraction and

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calculated lower detection limits, with censored data presented with missing value codes.

Specifications Table

Subject	Environmental science
Specific subject area	Environmental geochemistry of urban environments
Type of data	Table Map
How the data were acquired	Samples were surface sediments (0-10cm, composites of 3 cores), soils (profile sampling to ≤100cm), and surface water grab samples. pH and EC of water and sediment suspensions by potentiometry [1]. Elemental content of filtered then acidified water, and conc. HNO_3/HCl digests of sediments [2], used ICP-OES (Perkin-Elmer Optima 7300DV). Dissolved phosphate [3] and nitrate + nitrite in water [4] by spectrophotometry (BMG FluoStar Optima). Microplastics in sediment by Fenton digestion [5], density separation in 40% KI solution, and counting using optical microscopy. Data analysis in R [6] and packages.
Data format	Raw
Description of data collection	Sediments (manual cores) and surface water (grab samples) were collected from wetland ponds and stormwater drains on 15/03/2019, 13/03/2020, 05/03/2021. Sediments were air dried at 40°C before analysis; water samples were acidified and filtered (0.45 µm membrane) for analyses other than pH and EC. Analyses were excluded if concentration was less than method blank or lower limit of detection (Table S1, Supplementary Information).
Data source location	Institution: The University of Western Australia: City/Town/Region: Crawley, Western Australia 6009 Country: Australia Latitude and longitude (and GPS coordinates, if possible) for collected samples/data: min max Longitude (°E) 115.94128 115.94937 (WGS84) Latitude (°S) -31.92018 -31.91476 (WGS84) UTM Zone 50J (EPSG 32750) GPS coordinates (m) min max Easting 399908 400668 (WGS84) Northing 6467925 6468531 (WGS84)
Data accessibility	Sediment data Repository: Mendeley Data doi:10.17632/d7m3746byk.1 Link: https://data.mendeley.com/datasets/d7m3746byk/1 Water data: Repository: Mendeley Data doi: 10.17632/vphzgjshgm.1 Link: https://data.mendeley.com/datasets/vphzgjshgm/1 Supplement Repository: Mendeley Data doi: 10.17632/sz7rwg5p4n.1 Link: https://data.mendeley.com/datasets/sz7rwg5p4n/1

Value of the Data

- The data reported provide useful information to characterize the current state of an important nature reserve in metropolitan Perth, Western Australia, which represents (i) the largest minimally disturbed alluvial flat in the coastal part of the river catchment; (ii) the location of a threatened ecological community of temperate saltmarsh vegetation.
- These data can benefit managers of this and analogous sites in that they characterize the ecological suitability and inform extent and risk of contamination. The data also represent useful comparative data for researchers.

- The data are in suitable form to allow comparisons between sub-environments, examining potential source-sink-effects, assessment of relationships between variables, and spatial analyses.

1. Data Description

The location of the study site is shown in Figure S1 in the Supplementary Information, with the locations of sediment and soil samples presented in Figure S2(a).

The data files accessible on Mendeley Data (see Specifications Table) are designed to be self-contained records. The two files (for sediment and soil data, and for surface water data) are Excel workbooks each with five sheets. The first sheet in each workbook contains a data table with identifying, categorical, spatial, and measured (numeric) variables in columns with observations (samples) in rows below a single header row with column names, suitable for importing into software such as R [6]. The remaining four sheets in each workbook contain the metadata: (1) a thorough description of the sampling site and procedures; (2) a description of each sheet in the workbook; (3) an explanation of the columns in the data table including a description of each variable, data type, units of measurement, and lower detection limit where relevant; (4) an explanation of the codes in each categorical variable and the missing value code.

Summary statistics for sediment properties and composition based on the data hosted at Mendeley are presented in Table 1–3, and Table 4, and show high variability in some parameters across the Ashfield Flats Reserve site. Based on relative standard deviations and relative ranges of values, the greatest variability in sediment/soil properties is shown by microplastics, manganese, zinc, lead, sulfur, calcium, and phosphorus. The least variability is shown by pH, chromium, and aluminium.

Few sediment/soil quality variables were normally distributed. Distributions of numeric variables were most commonly positively skewed, with some variables able to be normalized by $\log_{10}$- or power-transformation (Table 5). The remainder of variables did not have normal distributions even when transformed using $\log_{10}$- or power functions. Similar distribution properties were observed when the data were analysed separately by year (Tables S2-S4, Supplementary Information).

The locations of surface water samples presented in Figure S2(b). Few surface water quality variables were normally distributed. As with sediment data, distributions of numeric variables were most commonly positively skewed, with some variables able to be normalized by $\log_{10}$- or power-transformation (Table 9). The remainder of water quality variables did not have normal distributions even when transformed using $\log_{10}$- or power functions, which may be in part re-

Table 1
Summary of descriptive statistics for pH, EC and major elements in sediments and soils across all sampling years (2019-2021) at Ashfield Flats Reserve.

		EC	Major elements (mg/kg)							
Statistic	pH	(mS/cm)	Al	Ca	Fe	K	Mg	Na	P	S
Mean	5.97	9.39	30269	3601	41499	2494	3932	11719	634	5547
SD	0.88	19.8	13030	4699	20582	1305	2362	11193	720	9337
Minimum	3.16	0.01	888	470	1562	59	106	61	26	230
Lower quartile	5.50	2.06	20456	1487	32975	1432	2350	4027	299	1575
Median	6.00	6.41	32539	2245	38689	2721	3814	10497	457	2981
Upper quartile	6.55	12.4	40484	4440	47870	3626	5407	15150	641	5159
Maximum	8.36	280	54517	48460	135488	5265	20745	95761	7020	76633
N	221	221	231	231	231	231	231	231	231	231
Missing[a]	10	10	0	0	0	0	0	0	0	0

[a] 'Missing' for pH and EC refers to samples for which measurement was omitted or incorrect.

Table 2
Summary of descriptive statistics for potential pollutant elements in sediments and soils across all sampling years (2019-2021) at Ashfield Flats Reserve.

	Potential pollutant elements (mg/kg)										
Statistic	As	Cd	Co	Cr	Cu	Mn	Mo	Ni	Pb	V	Zn
mean	8.29	0.21	14.67	50.2	124	161	2.74	20.0	58.5	64.3	530
Sd	8.50	0.24	13.04	20.6	124	366	2.11	7.9	90.2	24.4	1134
Minimum	0.40	0.02	1.80	1.8	2.0	6.0	0.10	2.0	3.3	2.3	11
Lower quartile	3.44	0.08	8.00	33.9	31.8	61.9	1.20	14.6	26.1	50.4	115
Median	6.20	0.12	12.00	55.5	85.5	83.0	2.00	20.0	40.0	71.8	248
Upper quartile	9.00	0.23	16	66.0	185	124	3.55	26.0	58.5	81.0	411
Maximum	62.0	1.60	110	84.0	1008	3503	13.0	50.0	831	118	7556
N	219	158	231	231	224	231	231	225	231	231	227
Missing[a]	12	73	0	0	7	0	0	6	0	0	4

[a] 'Missing' refers to concentrations below the detection limit which were removed from the data.

Table 3
Summary of descriptive statistics for trace elements in sediments and soils across all sampling years (2019-2021) at Ashfield Flats Reserve.

	Trace elements (mg/kg)								
Statistic	Ba	Ce	Gd	La	Li	Nd	Sr	Th	Y
Mean	59.6	93.3	6.8	46.2	27.6	35.7	59.9	13.5	21.7
Sd	29.9	62.0	3.6	28.9	14.6	21.8	49.2	6.5	15.1
Minimum	4.6	2.2	0.2	1.2	0.5	0.8	2.3	0.4	0.4
Lower quartile	38.0	41.5	4.0	22.1	15.9	17.0	29.0	9.2	9.5
Median	57.0	86.9	6.7	42.0	30.0	35.0	52.0	14.9	20.0
Upper quartile	77.0	136.3	9.0	66.3	38.1	49.5	73.0	18.0	30.5
Maximum	191	271	18.0	126	54.7	98.0	512	26.9	67.0
N	231	231	226	231	231	231	231	229	231
Missing[a]	0	0	5	0	0	0	0	2	0

[a] 'Missing' refers to concentrations below the detection limit which were removed from the data.

Table 4
Summary of descriptive statistics for microplastics in sediments and soils across sampling years 2019 and 2021 (not 2020) at Ashfield Flats Reserve.

	Microplastics (particle counts/kg)				
Statistic	Fragments	Fibres	Other	Microbeads	Total
Mean	2637	1992	111	489	4944
Sd	7727	3244	402	1546	8153
Minimum	0	0	0	0	0
Lower quartile	0	0	0	0	500
Median	493	997	0	0	2500
Upper quartile	1500	2500	0	0	5125
Maximum	59113	22908	2002	8500	59613
N	156	156	156	65	156
Missing[a]	0	0	0	91	0

[a] 'Missing' refers to blank-corrected microplastic counts ≤ 0.

lated to the non-unimodality of their distributions (Table 9 and Figure S3, Supp. Material). Similar distribution properties were observed when the water quality data were analysed separately by year (Tables S5-S7, Supplementary Information).

The summary statistics for water composition and properties (Table 6, Table 7, and Table 8) based on the Mendeley-hosted dataset also show high variability in several parameters at Ash-

Table 5
Distribution statistics for sediment/soil variables across the whole dataset. W is Shapiro-Wilk statistic; p(W) is probability that distribution is normal (H_0; asterisked p(W) means H_0 can not be rejected); 'Power term' is value to which variable is raised estimated using the Box-Cox method; 'Best transformation' is first for which H_0 for the Shapiro-Wilk test cannot be rejected (shaded cells), in the order Untransformed > $\log_{10}$ > Power (– means neither $\log_{10}$ nor power transformation yields a normally distributed variable). D is Hartigan dip-test statistic; p(D) is probability that distribution is unimodal ($H_{altern.}$), so asterisked values indicate multi-modality.

	Untransformed		$\log_{10}$-transformed		Power-transformed				Multimodality	
Variable	W	p(W)	W	p(W)	W	p(W)	Power term	Best transf.	D	p(D)
Ph	0.992	0.255*	0.964	<0.001	0.994	0.588*	1.442	none	0.015	0.991
EC	0.283	<0.001	0.931	<0.001	0.964	<0.001	0.196	–	0.021	0.807
MP_frag[a]	0.476	<0.001	0.957	0.006	0.958	0.007	0.013	–	0.065	0.007*
MP_fibre[a]	0.657	<0.001	0.817	<0.001	0.950	<0.001	0.231	–	0.065	0.001*
MP_other[a]	0.869	0.021	0.801	0.002	0.899	0.064*	0.524	power	0.145	0.002*
microbeads[a]	0.743	0.002	0.943	0.490*	0.942	0.489*	-0.017	log	0.115	0.114
MP_total[a]	0.588	<0.001	0.974	0.011	0.983	0.088*	0.082	power	0.041	0.106
Al	0.961	<0.001	0.812	<0.001	0.965	<0.001	1.127	–	0.017	0.966
As	0.684	<0.001	0.987	0.049	0.988	0.061*	0.041	power	0.030	0.193
Ba	0.960	<0.001	0.940	<0.001	0.994	0.427*	0.533	power	0.024	0.521
Ca	0.489	<0.001	0.980	0.002	0.994	0.527*	-0.208	power	0.014	0.994
Cd	0.644	<0.001	0.988	0.186*	0.990	0.314*	-0.071	log	0.015	0.997
Ce	0.959	<0.001	0.902	<0.001	0.982	0.005	0.517	–	0.020	0.817
Co	0.633	<0.001	0.972	<0.001	0.972	<0.001	-0.030	–	0.023	0.550
Cr	0.942	<0.001	0.766	<0.001	0.953	<0.001	1.259	–	0.019	0.836
Cu	0.778	<0.001	0.972	<0.001	0.977	0.001	0.121	–	0.019	0.886
Fe	0.868	<0.001	0.825	<0.001	0.932	<0.001	0.553	–	0.013	0.996
Gd	0.979	0.002	0.914	<0.001	0.991	0.197*	0.627	power	0.026	0.334
K	0.967	<0.001	0.820	<0.001	0.963	<0.001	0.851	–	0.024	0.456
La	0.964	<0.001	0.905	<0.001	0.987	0.032	0.540	–	0.017	0.944
Li	0.957	<0.001	0.799	<0.001	0.952	<0.001	0.899	–	0.024	0.496
Mg	0.896	<0.001	0.879	<0.001	0.971	<0.001	0.543	–	0.027	0.306
Mn	0.287	<0.001	0.901	<0.001	0.924	<0.001	-0.170	–	0.012	0.996
Mo	0.845	<0.001	0.965	<0.001	0.989	0.083*	0.235	power	0.047	0.001*
Na	0.771	<0.001	0.881	<0.001	0.971	<0.001	0.362	–	0.037	0.025*
Nd	0.970	<0.001	0.882	<0.001	0.983	0.006	0.597	–	0.023	0.604
Ni	0.981	0.004	0.893	<0.001	0.981	0.004	0.950	–	0.031	0.122
P	0.583	<0.001	0.961	<0.001	0.963	<0.001	0.049	–	0.012	0.996
Pb	0.394	<0.001	0.947	<0.001	0.951	<0.001	-0.067	–	0.019	0.862
S	0.475	<0.001	0.983	0.006	0.987	0.038	-0.084	–	0.026	0.358
Sr	0.713	<0.001	0.967	<0.001	0.985	0.013	0.217	–	0.021	0.745
Th	0.965	<0.001	0.788	<0.001	0.966	<0.001	1.013	–	0.023	0.584
V	0.913	<0.001	0.723	<0.001	0.943	<0.001	1.471	–	0.020	0.818
Y	0.947	<0.001	0.917	<0.001	0.986	0.027	0.460	–	0.021	0.763
Zn	0.402	<0.001	0.958	<0.001	0.958	<0.001	-0.002	–	0.028	0.253

[a] MP_frag = microplastic fragments; MP_fibre = microplastic fibres; MP_other = microplastics other than fragments, fibres, or beads; microbeads = microplastic spheroids; MP_total = total microplastic particles.

field Flats Reserve. The greatest variability based on relative standard deviations and relative ranges of values is shown by Fe, Zn, S, P, and FRP; in contrast, lower variability is shown by pH, a range of trace elements, and Si.

2. Experimental Design, Materials and Methods

Ashfield Flats Reserve (approx. 40 ha; Figure S1 in the Supplementary Information) is listed as a Western Australian Bush Forever Site (No. 214) [7] and fringes the Swan-Canning Estuary. It is also listed in the Directory of Important Wetlands in Australia [8]. It is the largest remaining salt marsh in the Swan-Canning Estuary, but is impacted by altered hydrology, several stormwater drains, and poor water quality from historical groundwater contamination. Two

Table 6
Summary of descriptive statistics for pH, EC, and dissolved major ions/elements in 0.45 μm-filtered water at Ashfield Flats Reserve across all sampling years (2019-2021).

Statistic	pH	EC (μS/cm)	Concentrations on element mass basis (mg/L)								
			Ca	K	Mg	Na	NOx[a]	P	FRP[b]	S	Si
Mean	7.18	13507	152	108	393	2731	0.274	0.213	0.145	210	3.79
s.d.	0.67	18328	161	127	503	3352	0.389	0.322	0.272	308	2.38
Minimum	3.46	31	9.4	0.76	1.12	3.70	0.001	0.002	0.001	0.43	0.32
Lower quartile	6.88	912	45.4	10.6	17.9	108	0.010	0.034	0.011	13.3	2.32
Median	7.12	3340	53.8	26.7	87.6	591	0.050	0.090	0.064	57.3	2.67
Upper quartile	7.49	25600	283	236	841	6282	0.498	0.226	0.155	341	5.59
Maximum	8.73	122300	1247	692	3323	19344	1.70	2.05	1.67	2661	15.7
N	169	169	169	169	169	169	94	160	88	167	169
Missing[c]	3	3	3	3	3	3	78	12	84	5	3

[a] NOx = nitrate + nitrite as mgN/L;
[b] FRP = filterable reactive phosphate as mgP/L
[c] 'Missing' for pH and EC refers to samples for which measurement was omitted or incorrect, and for other variables refers to concentrations below the detection limit which were removed from the data.

Table 7
Summary of descriptive statistics for dissolved potential pollutant elements in 0.45 μm-filtered water at Ashfield Flats Reserve across all sampling years (2019-2021).

Statistic	Element concentrations (mg/L)									
	Al	As	Co	Cr	Cu	Mn	Mo	Ni	V	Zn
Mean	0.071	0.014	0.026	0.0048	0.0067	0.293	0.0021	0.0091	0.0153	0.248
SD	0.090	0.013	0.036	0.0033	0.0092	0.379	0.0013	0.0105	0.0095	0.848
Minimum	0.009	0.0022	0.0071	0.0004	0.0019	0.0064	0.0008	0.0034	0.0037	0.005
Lower quartile	0.021	0.0045	0.0081	0.0014	0.0025	0.090	0.0012	0.0050	0.0069	0.008
Median	0.040	0.010	0.0093	0.0053	0.0035	0.193	0.0016	0.0057	0.011	0.010
Upper quartile	0.070	0.018	0.049	0.0072	0.0061	0.385	0.0024	0.0082	0.021	0.013
Maximum	0.616	0.058	0.190	0.010	0.050	2.99	0.0052	0.040	0.041	4.09
N	107	88	31	107	52	169	92	11	138	139
Missing[a]	65	84	141	65	120	3	80	161	34	33

[a] 'Missing' refers to concentrations below the detection limit which were removed from the data.

Table 8
Summary of descriptive statistics for dissolved trace and rare-earth elements in 0.45 μm-filtered water at Ashfield Flats Reserve across all sampling years (2019-2021).

Statistic	Element concentrations (mg/L)								
	B	Ba	Fe	Gd	La	Li	Nd	Rb	Sr
Mean	1.03	0.058	2.73	0.0022	0.0027	0.0523	0.0064	0.109	2.12
s.d.	1.04	0.032	8.60	0.0004	0.0016	0.0586	0.0024	0.130	2.65
Minimum	0.031	0.0086	0.05	0.0016	0.0003	0.0130	0.0021	0.0008	0.026
Lower quartile	0.19	0.033	0.21	0.0019	0.0012	0.0184	0.0047	0.0158	0.226
Median	0.34	0.048	0.47	0.0022	0.0023	0.0454	0.0059	0.0325	0.55
Upper quartile	1.94	0.080	1.91	0.0025	0.0044	0.0674	0.0081	0.221	4.31
Maximum	5.28	0.172	97.9	0.0029	0.0055	0.560	0.0126	0.940	22.1
N	164	168	153	17	68	110	69	169	167
Missing[a]	8	4	19	155	104	62	103	3	5

[a] 'Missing' refers to concentrations below the detection limit which were removed from the data.

main drains that flow through Ashfield Flats Reserve are Chapman Street drain which has a 129 hectare catchment, and Kitchener Street drain has a 9 hectare catchment. Both drains flow directly into, and affect the water quality of, the Swan River. While groundwater comprises 45% of their annual discharge, they have little interaction directly with the wetland's groundwater [9]. A third drain, the Woolcock Court drain, with a catchment area of 17 ha, discharges perennially

Table 9
Distribution statistics for water variables across all sampling years (2019-2021). W is Shapiro-Wilk statistic; p(W) is probability that distribution is normal (H_0; asterisked p(W) means H_0 can not be rejected); 'Power term' is value to which variable is raised estimated using the Box-Cox method; 'Best transformation' is first for which H_0 for the Shapiro-Wilk test cannot be rejected, in the order Untransformed > $\log_{10}$ > Power (– means neither $\log_{10}$ nor power transformation yields a normally distributed variable). D is Hartigan dip-test statistic; p(D) is probability that distribution is unimodal ($H_{altern.}$), so asterisked values indicate multi-modality.

	Untransformed		$\log_{10}$-transformed		Power-transformed				Multimodality	
Variable	W	p(W)	W	p(W)	W	p(W)	Power term	Best transf.	D	p(D)
pH	0.929	<0.001	0.850	<0.001	0.965	<0.001	2.536	–	0.018	0.990
EC	0.725	<0.001	0.933	<0.001	0.938	<0.001	0.085	–	0.024	0.731
NOx_N	0.733	<0.001	0.943	<0.001	0.942	<0.001	0.020	–	0.037	0.457
PO4_P	0.530	<0.001	0.964	0.015	0.964	0.015	0.008	–	0.040	0.382
Al	0.632	<0.001	0.973	0.026	0.986	0.308*	-0.196	power	0.041	0.204
As	0.771	<0.001	0.958	0.005	0.962	0.010	-0.151	–	0.070	0.002*
B	0.821	<0.001	0.893	<0.001	0.893	<0.001	-0.011	–	0.051	0.005*
Ba	0.932	<0.001	0.980	0.014	0.985	0.073*	0.227	power	0.032	0.253
Ca	0.723	<0.001	0.898	<0.001	0.912	<0.001	-0.198	–	0.064	<0.001*
Co	0.505	<0.001	0.739	<0.001	0.856	<0.001	-1.112	–	0.093	0.008*
Cr	0.898	<0.001	0.856	<0.001	0.892	<0.001	0.653	–	0.090	<0.001*
Cu	0.701	<0.001	0.855	0.013	0.924	0.175*	-0.889	power	0.091	0.257
Fe	0.275	<0.001	0.939	<0.001	0.975	0.007	-0.226	–	0.016	0.994
K	0.779	<0.001	0.911	<0.001	0.912	<0.001	-0.012	–	0.059	<0.001*
Li	0.500	<0.001	0.900	<0.001	0.901	<0.001	-0.253	–	0.065	0.001*
Mg	0.752	<0.001	0.920	<0.001	0.918	<0.001	0.056	–	0.061	<0.001*
Mn	0.557	<0.001	0.965	<0.001	0.976	0.005	0.135	–	0.035	0.141
Mo	0.808	<0.001	0.960	0.003	0.970	0.019	-0.193	–	0.037	0.417
Na	0.750	<0.001	0.914	<0.001	0.909	<0.001	0.081	–	0.075	<0.001*
Ni	0.527	<0.001	0.800	0.009	0.952	0.667*	-0.984	power	0.091	0.588
P	0.628	<0.001	0.992	0.520*	0.992	0.526*	0.011	log	0.021	0.939
S	0.658	<0.001	0.948	<0.001	0.959	<0.001	0.119	–	0.047	0.008*
Si	0.854	<0.001	0.947	<0.001	0.960	<0.001	0.212	–	0.033	0.222
Sr	0.687	<0.001	0.910	<0.001	0.910	<0.001	0.000	–	0.067	<0.001*
V	0.894	<0.001	0.949	<0.001	0.949	<0.001	0.172	–	0.044	0.034*
Zn	0.293	<0.001	0.607	<0.001	0.931	<0.001	-0.713	–	0.030	0.466
La	0.899	<0.001	0.922	<0.001	0.931	0.001	0.417	–	0.075	0.004*
Gd	0.956	0.733*	0.958	0.759	0.958	0.761	-0.279	none	0.097	0.529

and delivers an estimated 56 ML/y of water into the western area of the wetland. The reserve therefore conducts and potentially receives a large proportion of the Ashfield and Bassendean storm water from urban residential, transport, and industrial land uses, including a large containment cell for landfill storage of pyritic waste from historical fertiliser production [10]. The hydrology and quality of groundwater of the area has likely been altered due to groundwater use and contamination up-hydraulic gradient in the catchment. The site has a history of agriculture, with sheep and cattle farming across much of the area in the early 1800s, and a dairy farm occupying some of the area up to the 1950s [11]. Potential acid sulfate soils are known to occur naturally in the estuarine soil deposits present across Ashfield Flats Reserve [9].

Sampling was conducted on three occasions approximately 1 year apart, on 15 March 2019, 13 March 2020, and 5 March 2021. Sampling design was systematic within pre-identified strata, achieved with transects across anticipated contamination gradients, or regular or irregular grids within strata, depending on sampling year (Figure S2, Supplementary Information). Soils and wetland sediments were sampled in cylindrical cores from 0-5 cm depth using a trowel. Triplicate cores at each location were bulked to achieve a sample mass of *ca*. 500 g, and stored at *ca*. 4°C in zip-lock plastic bags prior to transport back to the laboratory. All bulk soil and sediment samples were air dried at 40°C in a convection dryer prior to chemical analyses.

Water sampling protocols followed Clesceri et al [3]. Acid-washed plastic bottles were used to sample water from wetland ponds and drains at approximately mid-depth (and mid-stream for the drain samples). A portion (*ca*. 50 mL) of the water sampled was immediately removed, filtered through a 0.45 μm membrane into a separate clean plastic bottle, and acidified with $^{1}/_{100}$ volume of 5 mol/L HNO_3. The acidified samples were stored in insulated containers prior to transporting to the laboratory within 4 hours and were subsequently stored at 4°C until analysis. Powder-free nitrile gloves were worn at all times while handling samples.

Ethics Statements

No ethical guidelines or consents were relevant for the research reported on in this article.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

CRediT Author Statement

Andrew W. Rate: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Supervision, Writing – original draft, Writing – review & editing; **Gavan S. McGrath:** Conceptualization, Funding acquisition, Investigation, Methodology, Writing – review & editing.

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Supplementary Materials

Supplementary material associated with this article can be found in the online version at doi:10.1016/j.dib.2022.107970.

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