



APPENDIX A

GEOTECHNICAL PROPERTIES

Table A1 Summary of geotechnical properties

SAMPLE DESCRIPTION			GRADING ANALYSES						ATTERBERG LIMITS					IN SITU PROPERTIES	
TEST PIT and Sample No.	DEPTH (m)	UNIFIED SOIL CLASSIFICATION	% Clay	% Silt	% Sand	% Gravel	GM	FM	LL	LS	PI	PI ws	Exp	pH	Conductivity (mS/m)
ALLUVIAL SOILS															
Soil unit TA (redistributed tailings overlying alluvial soils)															
MT1/1	0.10	ML Silt with sand	35.42	49.18	15.40	0.00	0.18	0.21	35.19	7.16	10.90	10.66	low	3.97	27.25
MT2/1	0.10	ML Silt	37.45	53.95	8.60	0.00	0.10	0.12	37.54	7.23	9.65	9.50	low	3.70	21.70
MT3/1	0.10	ML Silt	38.44	50.16	11.40	0.00	0.13	0.15	38.23	7.81	11.85	11.65	low	3.63	24.60
MT4/1	0.10	CL Lean clay with sand	34.42	36.68	28.90	0.00	0.34	0.45	34.42	7.61	11.45	10.90	low	3.50	25.05
MT5/1	0.10	CL Lean clay	31.74	59.56	8.70	0.00	0.10	0.07	31.11	4.77	8.34	8.27	low	3.29	26.94
MT6/1	0.15	ML Silt	14.49	75.01	10.50	0.00	0.11	0.03	-	-	-	-	-	3.33	22.76
MT7/1	0.25	ML Silt with sand	3.54	60.46	36.00	0.00	0.36	0.07	-	-	-	-	-	3.71	11.22
MT8/1	0.10	SM Silty sand	1.54	38.76	59.70	0.00	0.60	0.12	-	-	-	-	-	4.61	76.70
MT9/1	0.25	ML Silt with sand	1.99	59.11	38.90	0.00	0.40	0.15	-	-	-	-	-	3.32	2.60
MT10/1	0.30	ML Silt with sand	2.52	56.68	40.80	0.00	0.42	0.20	-	-	-	-	-	3.29	158.93
MT11/1	0.30	ML Silt with sand	11.97	49.83	38.20	0.00	0.41	0.28	-	-	-	-	-	3.52	62.77
MT12/1	0.05	ML Sandy silt	12.57	37.63	48.80	1.00	0.56	0.47	21.69	1.30	3.10	2.94	low	4.21	56.60
MT13/1	0.15	SM Silty sand	0.89	44.51	54.30	0.30	0.67	0.72	-	-	-	-	-	3.37	171.10
MT14/1	0.05	ML Silt	22.49	73.91	3.60	0.00	0.04	0.03	41.58	3.88	11.61	11.58	low	3.48	3.88
MT15/1	0.10	ML Silt with sand	10.74	62.96	26.30	0.00	0.26	0.05	-	-	-	-	-	3.33	168.50
Soil unit AU (upper alluvial soil)															
MT1/2	0.30	CL Sandy clay of low plasticity	37.66	26.84	35.50	0.00	0.41	0.58	46.00	12.78	24.19	22.95	med	6.65	90.25
MT1/3	0.60	CL Sandy clay of low plasticity	40.57	24.03	35.40	0.00	0.42	0.66	47.41	13.21	22.90	21.45	med	7.73	107.94
MT2/2	0.30	CH Sandy clay of high plasticity	38.45	18.95	30.00	12.60	0.80	0.85	53.02	14.57	26.79	20.71	med	7.43	121.24
MT3/2	0.20	CL Sandy clay of low plasticity	35.38	27.92	36.70	0.00	0.46	0.77	43.86	12.59	19.83	18.12	med	6.33	97.40
MT4/2	0.20	CH Sandy clay of high plasticity	42.28	25.92	31.70	0.10	0.39	0.62	50.88	14.92	27.17	25.43	high	7.46	144.02
MT5/2	0.20	CL Sandy clay of low plasticity	34.88	33.12	32.00	0.00	0.38	0.51	43.93	11.91	17.58	16.62	low	3.76	75.29
MT6/2	0.30	CL Sandy clay of low plasticity	35.28	33.92	30.80	0.00	0.38	0.57	42.02	12.48	19.03	17.71	med	3.60	47.17
MT7/2	0.45	CL Sandy clay of low plasticity	31.92	27.78	40.30	0.00	0.52	0.89	37.86	11.70	15.88	14.01	low	4.31	81.80
MT8/2	0.35	CL Low plastic clay with sand	40.05	32.55	27.40	0.00	0.34	0.55	48.40	14.57	23.70	22.13	med	4.21	71.10
MT9/2	0.50	CH High plastic clay with sand	45.19	30.21	24.60	0.00	0.28	0.37	54.72	15.20	27.04	26.25	med	3.21	2.38
MT9/3	1.10	CH High plastic clay with sand	51.35	26.95	21.70	0.00	0.25	0.35	64.01	13.84	35.73	34.47	high	4.49	3.28
MT10/2	0.40	CL Sandy clay of low plasticity	31.75	32.85	35.20	0.20	0.41	0.55	45.20	11.67	21.22	20.20	med	3.17	149.03
MT11/2	0.45	CL Sandy clay of low plasticity	23.06	36.94	39.80	0.20	0.51	0.74	42.85	11.93	17.88	16.40	med	4.35	133.30
MT12/2	0.20	CL Sandy clay of low plasticity	33.70	29.60	36.70	0.00	0.44	0.69	42.87	10.59	18.81	17.52	med	3.85	137.66
MT14/2	0.35	CL Sandy clay of low plasticity	28.09	35.71	36.20	0.00	0.43	0.67	36.39	8.77	15.75	14.62	med	3.53	1.03
MT15/2	0.20	CL Sandy clay of low plasticity	26.75	31.35	41.90	0.00	0.54	0.89	30.28	8.16	12.18	10.76	low	3.60	56.00

GM: Grading Modulus, FM: Fineness Modulus, LL: Liquid limit, LS: Linear shrinkage, PI: Plasticity Index, PI ws: Plasticity index of whole sample, Exp: Expansiveness

Table A1 Summary of geotechnical properties

SAMPLE DESCRIPTION			GRADING ANALYSES						ATTERBERG LIMITS					IN SITU PROPERTIES	
TEST PIT and Sample No.	DEPTH (m)	UNIFIED SOIL CLASSIFICATION	% Clay	% Silt	% Sand	% Gravel	GM	FM	LL	LS	PI	PI ws	Exp	pH	Conductivity (mS/m)
ALLUVIAL SOILS (CONTINUED)															
Soil unit AL (Lower alluvial soil)															
MT1/4	1.20	CL Sandy clay of low plasticity	36.83	23.87	38.20	1.10	0.52	0.85	44.85	12.72	23.39	21.30	med	7.67	165.99
MT3/3	0.70	CH Sandy clay of high plasticity	38.81	24.49	34.80	1.90	0.54	0.93	52.99	11.19	26.69	23.33	med	7.78	124.50
MT3/4	1.50	CH High plastic clay with sand	56.16	17.84	25.50	0.50	0.34	0.59	72.50	15.74	39.10	36.59	high	7.66	2.90
MT5/3	0.70	CL Sandy clay of low plasticity	39.32	27.38	32.60	0.70	0.45	0.79	49.64	12.28	26.31	23.80	med	7.71	138.11
MT7/3	1.00	CH Sandy clay of high plasticity	38.28	24.82	36.30	0.60	0.51	0.95	54.50	14.07	29.12	25.64	high	7.62	128.60
MT1/5	1.70	CL Sandy clay of low plasticity	46.35	20.85	32.70	0.10	0.38	0.54	49.09	11.38	27.35	26.05	med	7.65	200.61
MT5/4	1.40	CH High plastic clay with sand	45.38	24.92	28.40	1.30	0.46	0.82	58.45	13.52	31.61	28.10	high	8.00	162.08
MT7/4	1.60	CH Sandy clay of high plasticity	43.47	26.23	29.50	0.80	0.41	0.67	55.33	14.07	31.50	28.73	high	7.51	3.82
MT9/4	1.50	CH High plastic clay with sand	61.73	14.97	19.90	3.40	0.38	0.57	65.21	14.19	35.64	32.53	med	6.90	2.86
MT11/3	0.60	CL Sandy clay of low plasticity	48.07	8.63	38.50	4.80	0.55	0.82	-	-	-	-	-	7.25	173.63
MT11/4	1.10	CL Sandy clay of low plasticity	52.69	17.71	26.60	3.00	0.43	0.62	-	-	-	-	-	7.60	158.68
MT13/2	0.30	CL Sandy clay of low plasticity	44.90	20.50	33.40	1.20	0.52	0.89	47.79	13.70	21.62	19.02	low	4.67	190.94
MT13/3	0.70	CH Sandy clay of high plasticity	51.54	17.96	30.40	0.10	0.36	0.51	53.45	13.64	28.03	26.59	med	7.06	174.73
MT15/3	0.50	CL Sandy clay of low plasticity	32.77	25.33	41.60	0.30	0.62	1.20	44.70	8.52	23.77	19.66	med	3.85	150.99
MT15/4	1.10	CL Sandy clay of low plasticity	31.73	25.07	39.60	3.60	0.71	1.25	43.39	12.20	22.63	18.13	med	7.68	133.79
MT5/5	2.00	SC Clayey sand with gravel	27.95	12.65	35.80	23.60	1.20	0.96	42.46	13.21	21.94	14.36	med	6.91	3.02
COLLUVIAL SOILS															
Soil unit TC (Paddocked and redistributed tailings)															
MT16/1	0.30	SM Silty sand	0.99	34.91	64.10	0.00	0.65	0.33	-	-	-	-	-	4.63	19.29
MT17/1	0.05	SM Silty sand	0.99	21.71	77.30	0.00	0.79	0.46	-	-	-	-	-	3.20	2.27
MT18/1	0.01	SM Silty sand with gravel	0.88	23.62	74.10	1.40	2.95	1.05	-	-	-	-	-	3.06	3.06
MT19/1	0.05	SM Silty sand with gravel	2.56	28.04	66.40	3.00	1.05	1.77	-	-	-	-	-	3.40	31.30
MT21/1	0.30	SM Silty sand	1.01	38.89	60.10	0.00	0.61	0.18	-	-	-	-	-	3.13	7.13
MT22/1	0.05	SM Silty sand	3.01	46.19	50.30	0.50	0.54	0.30	-	-	-	-	-	3.41	27.13
MT23/1	0.10	SM Silty sand	1.53	24.77	73.70	0.00	0.75	0.25	-	-	-	-	-	3.76	10.24
MT24/1	0.30	ML Silt with sand	4.99	66.11	28.90	0.00	0.29	0.06	-	-	-	-	-	3.39	1.15
MT25/1	0.20	ML Silt with sand	8.75	64.85	26.40	0.00	0.27	0.05	-	-	-	-	-	2.50	2.01
MT25/2	0.60	ML Silt with sand	9.20	71.70	19.10	0.00	0.20	0.04	-	-	-	-	-	2.78	1.78
MT26/1	0.30	SM Silty sand	4.55	47.65	47.80	0.00	0.48	0.07	-	-	-	-	-	3.04	109.28
MT26/2	1.20	ML Silt with sand	9.21	62.39	28.40	0.00	0.29	0.06	-	-	-	-	-	2.82	5.69

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TEST PIT and Sample No.	DEPTH (m)	UNIFIED SOIL CLASSIFICATION	% Clay	% Silt	% Sand	% Gravel	GM	FM	LL	LS	PI	PI ws	Exp	pH	Conductivity (mS/m)
COLLUVIAL SOILS (CONTINUED)															
Soil unit CT (Paddocked and redistributed tailings) (continued)															
MT27/1	0.30	ML Silty sand	9.22	62.58	28.20	0.00	0.29	0.04	-	-	-	-	-	3.11	1.50
MT28/1	0.25	ML Silt	26.61	60.09	13.30	0.00	0.14	0.11	30.80	3.36	7.76	7.69	low	3.16	2.03
MT28/2	0.75	SM Silty sand	5.04	31.16	60.10	3.70	0.89	1.16	-	-	-	-	-	3.33	121.22
Soil unit CU (Upper colluvial soil)															
MT16/2	0.70	SC Clayey sand	22.45	26.55	51.00	0.00	0.69	1.24	25.49	5.86	9.23	7.62	low	3.26	63.73
MT17/2	0.15	SC-SM Silty, clayey sand	10.43	23.07	61.00	5.50	1.03	1.70	19.55	2.72	5.24	3.81	low	3.42	25.65
MT18/2	0.20	SM Silty sand	8.86	24.04	61.20	5.90	1.07	1.71	17.62	1.90	3.46	2.41	low	3.36	24.70
MT19/2	0.20	SM Silty sand	7.19	21.31	67.00	4.50	1.19	2.24	17.70	1.50	2.53	1.64	low	3.61	10.55
MT21/2	0.70	SM Silty sand	6.28	22.42	69.40	1.90	1.09	2.05	17.27	1.37	2.17	1.50	low	3.96	16.34
MT23/2	0.50	SM Silty sand	6.89	25.41	63.60	4.10	1.05	1.89	17.22	1.21	3.13	2.23	low	3.98	30.46
MT24/2	0.60	SM Silty sand	4.45	23.05	71.70	0.80	1.61	2.03	15.47	1.62	2.24	1.61	low	3.68	125.13
MT24/3	1.20	SM Silty sand	7.49	24.91	65.70	1.90	1.01	1.83	16.83	1.71	3.16	2.22	low	3.71	112.77
MT25/4	0.85	SM Silty sand	4.73	24.47	70.50	0.30	1.03	2.01	-	-	-	-	-	4.70	69.69
MT25/5	1.10	SM Silty sand	4.73	24.47	70.50	0.30	0.99	1.85	-	-	-	-	-	5.71	37.74
MT26/3	1.50	SM Silty sand	7.61	28.19	63.60	0.60	0.89	1.60	17.79	2.33	3.57	2.81	low	3.92	44.78
MT27/2	0.65	SC-SM Silty, clayey sand	6.79	30.91	62.20	0.10	0.86	1.54	17.76	2.33	4.14	3.24	low	3.34	107.41
Soil unit CF (Ferruginised colluvium)															
MT18/3	0.50	SM Silty sand with gravel	4.82	11.98	54.80	28.40	1.94	3.07	18.27	2.01	3.19	1.21	low	3.25	4.49
MT19/3	0.50	SC-SM Silty, clayey sand with gravel	4.32	10.18	52.90	32.60	2.09	3.38	19.82	1.71	5.13	1.69	low	3.83	64.90
MT21/3	1.20	SM Silty sand with gravel	3.90	10.00	60.30	25.80	2.08	3.75	-	-	-	-	-	3.70	30.60
MT21/4	1.80	SM Silty sand with gravel	5.18	12.02	61.90	20.90	2.02	3.95	-	-	-	-	-	3.81	38.30
MT22/2	0.10	SM Silty sand with gravel	4.53	15.77	42.00	37.70	1.79	1.52	17.73	1.38	3.06	1.35	low	3.72	41.41
MT22/3	0.70	SC-SM Silty, clayey sand with gravel	5.22	10.68	66.70	17.40	1.98	4.17	23.25	3.09	5.59	1.83	low	3.76	34.78
MT23/3	0.90	SC-SM Silty, clayey sand with gravel	5.61	11.89	61.90	20.60	1.92	3.68	19.86	1.91	4.25	1.56	low	3.80	45.97
MT23/4	1.50	SC Clayey sand with gravel	8.40	12.70	61.40	17.50	1.88	3.80	24.34	4.57	7.93	2.88	low	3.77	59.20
MT23/5	1.90	SC Clayey sand	13.50	23.50	54.30	8.70	1.16	2.00	19.63	4.36	7.74	5.06	low	6.21	94.87
MT24/4	1.60	SC-SM Silty, clayey sand	7.23	18.97	73.00	0.80	1.35	3.06	18.58	1.71	4.10	2.16	low	6.30	75.65
MT25/6	1.55	SM Silty sand	3.69	11.71	72.50	12.10	1.96	4.39	17.30	1.33	2.55	0.93	low	5.61	35.19
MT26/4	2.30	SC-SM Silty, clayey sand with gravel	6.09	11.91	62.70	19.30	1.91	3.74	19.01	2.58	4.13	1.59	low	4.16	1.13
MT27/3	0.90	SC-SM Silty, clayey sand	8.69	23.41	67.70	0.20	0.92	1.70	17.35	2.20	4.24	3.32	low	4.13	1.12
MT28/3	0.95	SC-SM Silty, clayey sand with gravel	5.04	12.36	55.40	27.20	1.96	3.24	18.21	1.77	4.09	1.50	low	3.13	0.88

GM: Grading Modulus, FM: Fineness Modulus, LL: Liquid limit, LS: Linear shrinkage, PI: Plasticity Index, PI ws: Plasticity index of whole sample, Exp: Expansiveness



APPENDIX B

MINERALOGY OF THE TAILINGS AND SOILS



Table B.1 Mineralogical composition of some colluvial and alluvial soils (all results reported as percentages)

Sample number	Calcite	Dolomite	Siderite	Hematite / Goethite	Jarosite	Gypsum	Todorokite	Microcline	Plagioclase	Quartz	Mica	Chlorite	Smectite	Il/Sm Inter stratifications
MT1/1								2		79	2		8	9
MT1/2		3							2	84			11	
MT1/3									2	75			22	
MT1/4									2	82	2		14	
MT1/5										73			27	
MT2/1										85	3		3	9
MT2/2								3		79			18	
MT3/1										78		5	5	12
MT3/2										89			11	
MT3/3										77			23	
MT3/4			3							81			16	
MT4/1										90	1		4	5
MT4/2										73			27	
MT5/1					6					77	6	3	3	6
MT5/2										89			11	
MT5/3										77			23	
MT5/4										72			28	
MT5/5										84			16	
MT6/1					13				1	68	6	3		9
MT6/2									2	80			17	
MT7/1		2			2					87	2			7
MT7/2										82			16	2
MT7/3										82			15	3
MT7/4	5									77			18	
MT8/1										96	4		-	
MT8/2										87			6	7
MT9/1					5			1		90	4			
MT9/2						2		1		83	2		10	3
MT9/3						3				76	2		17	2
MT9/4	4					2				76			18	
MT10/1					6					85	4			5
MT10/2						2				84			10	3
MT11/1					7	2				80	5			7
MT11/2						22				64			12	2
MT11/3	3									83			14	
MT11/4	3									79			18	
MT12/1								2		89	2			6
MT12/2						4		2		79			10	5
MT13/1					3					91	3			4
MT13/2						21		3		57			18	
MT13/3										83			17	
MT14/1					7					70	14	2		7
MT14/2								3		85				12
MT15/1					15			2		69	13	2		
MT15/2								2		83			10	5
MT15/3										87				13
MT15/4										91			4	6
MT16/1								1		94	3			1
MT16/2								3		84	3			10
MT17/1					3					93	5			
MT17/2								2		92				6
MT18/1	1				3			2		89	3			1
MT18/2				2				1		90				7
MT18/3							6			82				12
MT19/1					2					94	3			1
MT19/2				3			3			90				5
MT19/3				7			20			55				18
MT21/1										93	3			4
MT21/2				1			3			91				6
MT21/3				5			17			66				11
MT21/4				9			13			78				



APPENDIX C

TOTAL ELEMENT XRF ANALYSES

Table C.1 XRF analyses of tailings and the alluvial soils (all results reported in mg/kg unless indicated).

	TiO ₂ %	MnO%	Fe ₂ O ₃ %	Sc	V	Cr	Co	Ni	Cu	Zn	As	Rb	Sr	Y	Zr	Nb	Mo	Sn	Sb	Ba	W	Pb	Th	U
MT1/1	0.67	0.06	6.26	15	97	224	24	74	65	110	42	62	26	18	229	13	2	0	0	190	7	0	8	16
MT1/2	0.54	0.19	4.85	11	76	162	20	59	31	28	18	38	40	15	232	15	11	0	0	195	9	0	12	0
MT1/3	0.57	0.25	4.99	12	83	167	21	61	30	28	21	37	59	16	224	15	10	1	0	261	8	3	13	0
MT1/4	0.56	0.26	4.42	13	84	146	23	58	27	23	25	31	82	19	212	15	9	2	4	262	10	2	13	0
MT1/5	0.62	0.26	5.01	11	92	170	23	61	31	27	14	34	43	19	214	16	10	2	0	298	9	2	12	0
MT2/1	0.64	0.04	6.78	15	95	247	15	65	65	85	69	66	19	11	202	7	0	0	0	182	6	0	0	0
MT2/2	0.60	0.20	5.54	14	96	190	20	66	35	31	27	37	47	18	205	15	9	3	0	218	8	1	12	0
MT3/1	0.69	0.03	6.75	15	103	244	15	65	69	91	57	68	20	14	207	10	0	0	0	185	8	1	2	8
MT3/2	0.51	0.20	4.23	9	69	140	19	79	27	31	24	36	33	16	224	15	10	4	0	162	11	1	12	0
MT3/3	0.56	0.21	4.36	13	80	145	19	52	27	28	19	37	65	19	217	15	10	0	0	216	8	1	13	0
MT3/4	0.68	0.22	5.68	14	86	199	23	64	35	36	23	41	42	20	215	17	10	4	0	277	10	7	14	0
MT4/1	0.57	0.05	4.90	11	76	182	19	41	56	86	47	43	21	9	252	11	4	3	0	148	9	0	6	8
MT4/2	0.58	0.19	4.81	11	81	167	18	91	30	35	25	39	42	17	230	15	11	4	0	185	8	0	12	0
MT5/1	0.57	0.03	6.44	13	87	269	13	51	66	69	88	64	14	2	218	3	0	0	0	177	7	0	0	0
MT5/2	0.53	0.19	4.09	10	69	148	37	71	28	88	20	36	26	21	269	16	14	2	0	137	9	0	12	0
MT5/3	0.57	0.20	4.25	13	79	147	19	54	25	28	26	35	64	18	227	16	11	2	0	196	9	4	14	0
MT5/4	0.61	0.19	4.65	12	77	164	18	52	27	28	20	36	58	19	215	15	9	6	6	192	7	2	13	0
MT5/5	0.47	0.13	5.55	11	95	175	16	52	25	18	25	23	29	13	144	14	7	7	16	125	10	0	10	0
MT6/1	0.39	0.02	5.51	8	65	248	5	24	43	30	121	51	7	0	192	0	0	0	0	118	7	0	0	0
MT6/2	0.59	0.22	4.64	10	73	160	73	57	37	171	20	43	26	20	223	16	11	2	0	170	10	2	12	8
MT7/1	0.33	0.01	2.63	3	48	140	6	19	24	18	56	39	18	4	148	8	0	3	0	25	10	0	1	0
MT7/2	0.54	0.25	4.05	9	72	145	35	102	27	66	24	39	29	18	213	15	10	5	4	149	11	0	12	0
MT7/3	0.59	0.26	4.56	12	85	161	20	57	29	32	29	46	64	19	202	15	9	2	0	229	10	4	13	0
MT7/4	0.58	0.18	4.38	12	88	157	20	59	29	26	21	32	46	18	216	16	11	2	0	197	8	3	14	0
MT8/1	0.22	0.01	1.42	1	33	112	5	9	13	9	68	30	19	3	129	8	0	0	0	0	12	0	2	0
MT8/2	0.60	0.29	4.88	12	74	179	39	64	35	75	27	46	29	17	226	15	10	0	0	225	10	0	11	1
MT9/1	0.32	0.03	3.27	4	48	207	27	60	31	73	87	47	10	5	213	5	0	0	0	53	11	0	0	0
MT9/2	0.67	0.07	5.81	13	81	210	51	75	75	251	31	58	24	14	228	16	10	5	3	153	9	0	16	37
MT9/3	0.66	0.29	5.20	12	78	180	31	96	36	61	22	53	34	23	217	16	8	0	0	213	8	5	13	1
MT9/4	0.74	0.27	5.71	16	85	202	18	62	34	39	20	50	40	24	216	17	9	5	0	236	8	6	14	0
MT10/1	0.34	0.05	4.13	5	57	221	27	65	26	63	96	52	8	0	210	0	0	1	0	89	9	0	0	0
MT10/2	0.61	0.11	4.66	11	80	176	41	63	48	166	39	42	23	15	249	15	10	6	8	156	12	0	12	46
MT11/1	0.37	0.03	4.68	7	59	203	11	30	42	55	158	31	9	0	170	0	0	4	3	93	10	0	0	0
MT11/2	0.62	0.31	4.97	15	83	206	116	233	83	297	26	40	39	24	222	18	11	0	0	132	9	2	17	91
MT11/3	0.65	0.17	5.04	15	89	200	18	57	31	33	22	39	63	22	228	16	9	1	0	154	8	6	13	0
MT11/4	0.65	0.10	5.17	13	92	207	17	54	32	33	22	37	42	22	228	17	10	0	0	146	10	5	13	0
MT12/1	0.41	0.09	3.07	7	64	153	28	54	42	75	53	32	20	9	196	12	3	5	4	83	14	0	6	23
MT12/2	0.60	0.19	4.96	11	94	184	41	66	54	147	25	40	26	17	233	17	12	0	0	176	9	1	14	59
MT13/1	0.23	0.28	2.68	2	44	164	30	74	21	59	104	28	14	0	130	2	0	0	0	137	13	0	0	0
MT13/2	0.70	0.42	5.73	15	110	223	69	202	43	243	24	39	38	31	208	18	11	0	0	286	10	5	13	79
MT13/3	0.63	0.14	5.01	11	84	197	15	56	34	29	20	37	28	19	239	17	12	1	0	127	10	6	14	0
MT14/1	0.43	0.44	4.77	9	87	401	79	207	72	206	330	45	0	0	153	0	0	0	0	265	0	0	0	49
MT14/2	0.65	0.08	4.11	9	78	202	18	57	53	88	28	56	23	21	223	16	10	1	0	137	10	4	12	25
MT15/1	0.30	0.16	7.38	11	62	255	42	128	41	107	269	28	0	0	116	0	0	0	0	130	8	0	0	0
MT15/2	0.52	0.06	4.14	9	72	197	13	48	68	61	37	50	19	12	236	15	10	1	0	92	11	0	9	64
MT15/3	0.60	1.02	6.63	14	137	266	52	118	35	119	13	50	32	23	203	14	7	0	0	588	11	3	11	0
MT15/4	0.64	0.31	4.85	13	112	251	14	60	31	22	20	42	47	20	208	15	8	3	0	249	11	5	13	0

Table C.2 XRF analyses of tailings and the colluvial soils (all results reported in mg/kg unless indicated).

	TiO ₂ %	MnO%	Fe ₂ O ₃ t%	Sc	V	Cr	Co	Ni	Cu	Zn	As	Rb	Sr	Y	Zr	Nb	Mo	Sn	Sb	Ba	W	Pb	Th	U
MT16/1	0.27	0.05	1.99	2	44	179	6	17	14	12	58	39	16	5	169	8	0	5	0	41	12	0	0	0
MT16/2	0.55	0.04	4.72	11	80	287	9	49	63	52	43	55	17	8	204	14	8	4	0	137	10	0	9	50
MT17/1	0.22	0.08	2.07	2	40	141	29	63	15	69	81	31	16	3	137	6	0	2	0	14	13	0	0	0
MT17/2	0.41	0.47	6.45	10	90	290	9	43	54	26	32	39	19	5	183	12	5	3	2	730	11	0	15	22
MT18/1	0.25	0.21	4.60	6	55	213	20	49	30	60	211	15	0	0	149	0	0	4	11	173	12	0	0	0
MT18/2	0.50	1.38	6.45	11	105	298	24	62	45	22	22	39	24	7	201	13	8	0	5	1253	11	0	21	14
MT18/3	0.73	6.23	13.02	26	318	563	106	240	122	56	16	43	47	13	198	11	3	0	0	3881	12	36	24	7
MT19/1	0.31	0.83	4.91	6	83	374	9	33	35	18	159	22	12	0	161	0	0	0	0	671	11	0	0	0
MT19/2	0.54	3.32	7.71	17	148	314	49	98	73	24	45	37	37	7	182	11	4	0	0	1743	13	2	23	24
MT19/3	0.88	10.51	14.04	36	333	427	30	291	131	79	6	50	98	30	222	13	4	0	0	3549	13	46	5	19
MT21/1	0.22	0.03	1.40	1	38	136	5	11	12	8	60	31	19	4	145	8	0	0	0	13	13	0	2	0
MT21/2	0.45	1.90	5.29	10	102	274	69	81	57	18	18	35	25	8	197	13	9	0	11	1080	13	5	8	21
MT21/3	0.74	7.31	13.40	29	331	700	29	300	106	33	6	38	44	15	221	11	3	0	0	5123	14	45	1	14
MT21/4	0.86	9.07	12.97	35	275	415	21	234	105	102	4	51	84	38	242	12	4	0	0	3418	14	33	6	0
MT22/1	0.74	1.40	9.33	20	165	516	16	100	50	7	21	65	46	19	269	15	10	0	0	701	9	11	11	0
MT22/2	0.59	0.76	4.97	12	87	206	13	61	26	8	23	55	23	15	256	14	13	1	0	400	8	5	12	0
MT22/3	0.77	0.84	8.64	19	153	463	12	96	34	6	23	56	25	17	307	15	14	0	0	653	7	9	11	0
MT23/1	0.54	0.53	4.33	8	73	147	11	46	21	8	20	51	20	15	261	14	14	0	0	188	6	1	13	0
MT23/2	0.76	1.84	10.50	22	205	409	24	153	48	6	17	60	35	24	263	14	8	0	0	949	8	24	8	0
MT23/3	0.47	0.34	3.94	8	84	176	22	51	24	11	27	31	33	14	212	13	12	0	0	351	6	2	12	0
MT23/4	0.65	0.27	5.75	13	73	216	20	59	34	24	22	55	41	19	214	15	10	0	0	339	6	5	13	0
MT23/5	0.57	0.18	4.14	9	74	133	20	51	30	18	25	41	48	18	207	15	11	0	0	165	6	2	13	0
MT24/1	0.68	0.16	5.59	14	79	198	19	67	38	30	21	71	63	20	219	16	10	0	0	169	5	2	13	0
MT24/2	0.58	0.03	6.42	13	89	226	13	51	55	52	92	59	17	4	169	1	0	0	0	160	5	3	0	0
MT24/3	0.56	0.22	4.87	12	80	155	23	60	30	19	28	35	73	16	192	14	9	0	0	185	6	1	13	0
MT24/4	0.54	0.29	5.53	14	94	179	23	72	31	20	29	45	60	18	182	15	8	0	0	295	6	2	13	0
MT25/1	0.63	0.27	5.91	13	88	200	24	79	35	26	25	49	51	21	198	15	8	0	0	280	6	2	12	0
MT25/2	0.56	0.21	5.05	13	115	143	30	68	35	17	28	29	66	16	173	14	8	0	0	221	6	1	12	0
MT25/3	0.62	0.15	5.34	16	69	149	22	64	38	29	33	47	122	17	185	15	8	0	0	189	3	3	14	0
MT25/4	1.02	0.22	9.87	21	152	239	42	110	84	33	25	72	58	23	177	16	8	0	0	417	5	10	13	0
MT25/5	0.44	1.08	4.02	8	73	201	11	66	39	4	20	36	22	11	232	13	11	2	2	599	9	5	10	0
MT25/6	0.44	0.94	3.80	7	71	280	11	60	23	3	21	34	22	12	245	13	12	0	0	691	8	1	10	0
MT26/1	0.26	0.01	1.08	0	40	176	6	10	11	7	50	44	19	4	188	6	0	6	9	6	7	41	0	0
MT26/2	0.30	0.09	2.96	3	51	218	26	64	28	107	94	49	14	0	166	0	0	0	0	64	6	8	0	0
MT26/3	0.47	1.47	4.72	9	83	219	25	77	42	33	23	44	24	11	226	14	11	0	0	664	9	11	10	12
MT26/4	0.51	1.48	5.09	11	89	231	11	69	29	14	18	45	25	14	237	14	11	0	0	731	8	12	10	0
MT27/1	0.29	0.03	3.62	5	55	215	8	22	14	13	111	44	12	0	167	0	0	0	0	55	6	0	0	0
MT27/2	0.43	0.40	5.81	10	76	254	6	41	50	21	26	42	24	8	207	13	9	0	0	695	8	7	20	28
MT27/3	0.48	1.25	4.44	9	85	207	35	70	40	23	22	42	23	10	231	14	11	0	0	682	8	10	10	18
MT28/1	0.40	0.05	9.14	13	88	338	10	43	56	42	211	55	0	0	157	0	0	0	0	260	1	32	0	0
MT28/2	0.27	0.02	3.77	7	47	210	7	16	24	21	129	27	6	0	172	0	0	0	0	91	4	0	0	0
MT28/3	0.49	0.76	5.40	8	86	281	12	60	28	13	22	42	23	8	239	14	11	0	0	715	7	6	10	0



APPENDIX D

NH₄NO₃ EXTRACTABLE TRACE ELEMENT CONCENTRATIONS, EXCEEDANCE RATIOS AND TRACE ELEMENT MOBILITIES

Table D.1 NH₄NO₃ extractable trace element concentrations of the tailings and soils of the investigated transect (results reported in mg/l)

ALLUVIAL SOILS							
Sample no.	As	Co	Cr	Cu	Ni	Pb	Zn
MT1/1	0.00	1.85	0.05	1.75	5.50	0.15	11.20
MT1/2	0.00	0.00	0.00	0.00	0.38	0.00	0.45
MT1/3	0.00	0.00	0.00	0.00	0.03	0.00	0.30
MT1/4	0.00	0.00	0.00	0.00	0.00	0.00	0.30
MT1/5	0.00	0.00	0.03	0.00	0.00	0.00	0.35
MT2/1	0.00	0.98	0.03	1.18	3.33	0.18	6.58
MT2/2	0.00	0.00	0.03	0.08	0.03	0.00	0.15
MT3/1	0.00	0.85	0.03	1.08	2.45	0.55	4.87
MT3/2	0.00	0.00	0.00	0.00	1.95	0.00	0.55
MT3/3	0.00	0.00	0.00	0.00	0.00	0.00	0.55
MT3/4	0.00	0.00	0.00	0.00	0.00	0.00	0.68
MT4/1	0.00	0.68	0.10	1.68	1.70	0.28	5.82
MT4/2	0.00	0.00	0.00	0.00	0.30	0.00	0.45
MT5/1	0.00	0.43	0.08	2.30	1.35	0.00	4.42
MT5/2	0.00	1.75	0.08	0.83	13.10	0.13	11.95
MT5/3	0.00	0.00	0.00	0.03	0.03	0.00	0.23
MT5/4	0.00	0.00	0.00	0.00	0.00	0.00	0.55
MT5/5	0.00	0.00	0.00	0.00	0.00	0.00	0.48
MT6/1	0.00	0.15	0.25	1.58	0.50	0.13	1.58
MT6/2	0.00	1.86	0.10	2.30	7.18	0.05	21.94
MT7/1	0.00	0.05	0.00	0.50	0.23	0.00	0.23
MT7/2	0.00	1.13	0.00	0.50	7.70	0.00	11.43
MT7/3	0.00	0.00	0.00	0.00	0.00	0.00	0.33
MT7/4	0.00	0.00	0.00	0.03	0.00	0.00	0.65
MT8/1	0.00	0.05	0.00	0.03	0.20	0.00	0.28
MT8/2	0.00	0.55	0.00	0.38	5.98	0.00	5.60
MT9/1	0.00	1.66	0.30	4.93	10.25	0.00	10.32
MT9/2	0.00	1.73	0.63	8.63	13.53	0.08	16.15
MT9/3	0.00	0.08	0.03	0.00	7.25	0.00	1.45
MT9/4	0.00	0.00	0.00	0.00	0.03	0.00	0.55
MT10/1	0.00	2.25	0.08	0.90	7.00	0.00	6.13
MT10/2	0.00	1.53	0.35	3.48	7.04	0.03	12.95
MT11/1	0.00	0.18	0.00	0.38	0.78	0.00	0.98
MT11/2	0.00	1.23	0.05	2.73	7.15	0.00	18.56
MT11/3	0.00	0.00	0.00	0.00	0.03	0.00	0.53
MT11/4	0.00	0.00	0.00	0.00	0.00	0.00	0.60
MT12/1	0.00	0.78	0.00	1.53	2.35	0.00	4.00
MT12/2	0.00	1.13	0.08	3.05	4.75	0.23	11.52
MT13/1	0.00	1.50	0.58	1.88	10.08	0.00	9.41
MT13/2	0.00	1.30	0.05	1.63	8.67	0.03	25.90
MT13/3	0.00	0.00	0.03	0.00	0.03	0.00	1.03
MT14/1	0.00	3.71	0.35	4.60	16.04	0.00	18.33
MT14/2	0.00	2.53	0.15	1.70	10.70	0.45	8.47
MT15/1	0.00	1.83	0.10	2.73	7.55	0.00	8.47
MT15/2	0.00	1.00	0.45	5.63	4.63	0.20	11.98
MT15/3	0.00	0.20	0.03	0.18	5.64	0.03	11.43
MT15/4	0.00	0.00	0.00	0.00	0.03	0.00	0.23

COLLUVIAL SOILS							
Sample no.	As	Co	Cr	Cu	Ni	Pb	Zn
MT16/1	0.00	0.00	0.00	0.10	0.08	0.00	0.00
MT16/2	0.00	0.95	0.33	4.88	3.90	0.20	7.48
MT17/1	0.00	2.55	0.73	2.08	11.00	0.00	24.23
MT17/2	0.00	0.28	0.08	1.38	1.10	0.00	4.46
MT18/1	0.00	2.08	0.55	2.08	6.43	0.00	7.61
MT18/2	0.00	0.33	0.10	1.75	0.95	0.00	3.32
MT18/3	0.00	0.53	0.10	2.05	1.95	0.00	4.73
MT19/1	0.00	0.25	0.08	1.33	1.08	0.00	2.03
MT19/2	0.00	0.13	0.05	1.33	0.33	0.00	0.93
MT19/3	0.00	0.00	0.00	0.23	1.38	0.00	3.78
MT21/1	0.00	0.03	0.00	0.13	0.20	0.00	0.25
MT21/2	0.00	0.23	0.00	1.58	0.58	0.00	1.13
MT21/3	0.00	0.00	0.00	0.18	1.15	0.00	3.18
MT21/4	0.00	0.00	0.00	0.15	2.90	0.00	5.18
MT 22/1	0.00	0.13	0.10	0.67	0.29	0.18	0.84
MT 22/2	0.00	1.13	0.26	2.95	1.85	0.00	3.00
MT 22/3	0.00	0.04	0.00	0.29	1.75	0.92	4.30
MT 23/1	0.00	0.00	0.07	0.26	0.00	0.16	0.29
MT 23/2	0.00	0.89	0.05	1.05	2.99	0.16	2.64
MT 23/3	0.60	0.05	0.00	0.24	2.41	0.15	4.88
MT 23/4	0.00	0.07	0.00	0.24	2.58	1.98	5.18
MT 23/5	0.00	0.12	0.00	0.00	0.26	1.43	0.00
MT 24/1	0.00	1.22	0.44	1.08	3.25	0.44	5.77
MT 24/2	0.00	1.93	0.03	2.18	4.63	0.34	8.60
MT 24/3	0.00	0.05	0.04	0.26	6.33	4.12	9.34
MT 24/4	0.00	0.05	0.03	0.01	0.23	1.12	0.00
MT 25/1	0.00	1.56	0.77	1.97	6.42	0.65	11.39
MT 25/2	0.00	1.55	0.76	2.04	7.99	0.84	14.96
MT 25/3	0.00	1.26	0.18	2.41	4.31	0.78	14.98
MT 25/4	0.00	0.08	0.07	1.28	3.97	1.94	14.47
MT 25/5	0.00	0.10	0.03	0.00	0.46	0.00	0.00
MT 25/6	0.00	0.04	0.00	0.00	0.27	0.00	0.00
MT 26/1	0.00	0.52	0.18	0.44	1.68	0.42	2.87
MT 26/2	0.00	11.52	3.62	8.36	36.58	5.33	63.33
MT 26/3	0.00	0.78	0.07	1.68	8.25	6.36	9.95
MT 26/4	0.00	0.09	0.00	0.15	2.38	0.38	2.21
MT 27/1	0.00	1.12	0.19	0.92	3.68	1.34	4.86
MT 27/2	0.00	1.08	0.35	2.74	3.57	2.21	5.35
MT 27/3	0.00	0.65	0.02	1.23	3.47	0.23	3.32
MT 28/1	0.00	1.84	0.55	2.48	5.46	1.10	7.82
MT 28/2	0.00	0.41	0.12	0.81	1.56	0.12	2.76
MT 28/3	0.00	0.77	0.57	1.28	3.44	2.09	3.20

Table D.2 Trace element exceedance ratios in the tailings and soils of the investigated transect

ALLUVIAL SOILS							
Sample no.	As	Co	Cr	Cu	Ni	Pb	Zn
MT1/1	0.00	3.70	0.50	0.88	5.50	0.08	1.12
MT1/2	0.00	0.00	0.00	0.00	0.38	0.00	0.05
MT1/3	0.00	0.00	0.00	0.00	0.03	0.00	0.03
MT1/4	0.00	0.00	0.00	0.00	0.00	0.00	0.03
MT1/5	0.00	0.00	0.25	0.00	0.00	0.00	0.04
MT2/1	0.00	1.95	0.25	0.59	3.33	0.09	0.66
MT2/2	0.00	0.00	0.25	0.04	0.03	0.00	0.02
MT3/1	0.00	1.70	0.25	0.54	2.45	0.28	0.49
MT3/2	0.00	0.00	0.00	0.00	1.95	0.00	0.06
MT3/3	0.00	0.00	0.00	0.00	0.00	0.00	0.06
MT3/4	0.00	0.00	0.00	0.00	0.00	0.00	0.07
MT4/1	0.00	1.36	1.00	0.84	1.70	0.14	0.58
MT4/2	0.00	0.00	0.00	0.00	0.30	0.00	0.05
MT5/1	0.00	0.85	0.75	1.15	1.35	0.00	0.44
MT5/2	0.00	3.49	0.75	0.41	13.10	0.06	1.20
MT5/3	0.00	0.00	0.00	0.01	0.03	0.00	0.02
MT5/4	0.00	0.00	0.00	0.00	0.00	0.00	0.06
MT5/5	0.00	0.00	0.00	0.00	0.00	0.00	0.05
MT6/1	0.00	0.30	2.50	0.79	0.50	0.06	0.16
MT6/2	0.00	3.71	1.00	1.15	7.18	0.03	2.19
MT7/1	0.00	0.10	0.00	0.25	0.23	0.00	0.02
MT7/2	0.00	2.25	0.00	0.25	7.70	0.00	1.14
MT7/3	0.00	0.00	0.00	0.00	0.00	0.00	0.03
MT7/4	0.00	0.00	0.00	0.01	0.00	0.00	0.07
MT8/1	0.00	0.10	0.00	0.01	0.20	0.00	0.03
MT8/2	0.00	1.10	0.00	0.19	5.98	0.00	0.56
MT9/1	0.00	3.31	3.00	2.46	10.25	0.00	1.03
MT9/2	0.00	3.47	6.25	4.31	13.53	0.04	1.62
MT9/3	0.00	0.15	0.25	0.00	7.25	0.00	0.15
MT9/4	0.00	0.00	0.00	0.00	0.03	0.00	0.06
MT10/1	0.00	4.50	0.75	0.45	7.00	0.00	0.61
MT10/2	0.00	3.06	3.50	1.74	7.04	0.01	1.30
MT11/1	0.00	0.35	0.00	0.19	0.78	0.00	0.10
MT11/2	0.00	2.45	0.50	1.36	7.15	0.00	1.86
MT11/3	0.00	0.00	0.00	0.00	0.03	0.00	0.05
MT11/4	0.00	0.00	0.00	0.00	0.00	0.00	0.06
MT12/1	0.00	1.55	0.00	0.76	2.35	0.00	0.40
MT12/2	0.00	2.25	0.75	1.53	4.75	0.11	1.15
MT13/1	0.00	3.01	5.75	0.94	10.08	0.00	0.94
MT13/2	0.00	2.60	0.50	0.81	8.67	0.01	2.59
MT13/3	0.00	0.00	0.25	0.00	0.03	0.00	0.10
MT14/1	0.00	7.42	3.50	2.30	16.04	0.00	1.83
MT14/2	0.00	5.05	1.50	0.85	10.70	0.23	0.85
MT15/1	0.00	3.65	1.00	1.36	7.55	0.00	0.85
MT15/2	0.00	2.00	4.50	2.81	4.63	0.10	1.20
MT15/3	0.00	0.40	0.25	0.09	5.64	0.01	1.14
MT15/4	0.00	0.00	0.00	0.00	0.03	0.00	0.02

COLLUVIAL SOILS							
Sample no.	As	Co	Cr	Cu	Ni	Pb	Zn
MT16/1	0.00	0.00	0.00	0.05	0.08	0.00	0.00
MT16/2	0.00	1.90	3.25	2.44	3.90	0.10	0.75
MT17/1	0.00	5.10	7.25	1.04	11.00	0.00	2.42
MT17/2	0.00	0.55	0.75	0.69	1.10	0.00	0.45
MT18/1	0.00	4.15	5.50	1.04	6.43	0.00	0.76
MT18/2	0.00	0.65	1.00	0.88	0.95	0.00	0.33
MT18/3	0.00	1.05	1.00	1.03	1.95	0.00	0.47
MT19/1	0.00	0.50	0.75	0.66	1.08	0.00	0.20
MT19/2	0.00	0.25	0.50	0.66	0.33	0.00	0.09
MT19/3	0.00	0.00	0.00	0.11	1.38	0.00	0.38
MT21/1	0.00	0.05	0.00	0.06	0.20	0.00	0.03
MT21/2	0.00	0.45	0.00	0.79	0.58	0.00	0.11
MT21/3	0.00	0.00	0.00	0.09	1.15	0.00	0.32
MT21/4	0.00	0.00	0.00	0.08	2.90	0.00	0.52
MT 22/1	0.00	0.27	0.99	0.33	0.29	0.09	0.08
MT 22/2	0.00	2.26	2.56	1.48	1.85	0.00	0.30
MT 22/3	0.00	0.07	0.00	0.15	1.75	0.46	0.43
MT 23/1	0.00	0.00	0.68	0.13	0.00	0.08	0.03
MT 23/2	0.00	1.77	0.46	0.52	2.99	0.08	0.26
MT 23/3	0.60	0.09	0.00	0.12	2.41	0.07	0.49
MT 23/4	0.00	0.14	0.00	0.12	2.58	0.99	0.52
MT 23/5	0.00	0.24	0.00	0.00	0.26	0.72	0.00
MT 24/1	0.00	2.44	4.39	0.54	3.25	0.22	0.58
MT 24/2	0.00	3.87	0.29	1.09	4.63	0.17	0.86
MT 24/3	0.00	0.09	0.40	0.13	6.33	2.06	0.93
MT 24/4	0.00	0.10	0.35	0.01	0.23	0.56	0.00
MT 25/1	0.00	3.13	7.73	0.98	6.42	0.32	1.14
MT 25/2	0.00	3.10	7.57	1.02	7.99	0.42	1.50
MT 25/3	0.00	2.52	1.84	1.21	4.31	0.39	1.50
MT 25/4	0.00	0.16	0.67	0.64	3.97	0.97	1.45
MT 25/5	0.00	0.20	0.28	0.00	0.46	0.00	0.00
MT 25/6	0.00	0.07	0.00	0.00	0.27	0.00	0.00
MT 26/1	0.00	1.04	1.82	0.22	1.68	0.21	0.29
MT 26/2	0.00	23.04	36.15	4.18	36.58	2.67	6.33
MT 26/3	0.00	1.56	0.66	0.84	8.25	3.18	0.99
MT 26/4	0.00	0.17	0.00	0.07	2.38	0.19	0.22
MT 27/1	0.00	2.23	1.95	0.46	3.68	0.67	0.49
MT 27/2	0.00	2.16	3.52	1.37	3.57	1.10	0.54
MT 27/3	0.00	1.31	0.19	0.62	3.47	0.12	0.33
MT 28/1	0.00	3.68	5.53	1.24	5.46	0.55	0.78
MT 28/2	0.00	0.82	1.18	0.41	1.56	0.06	0.28
MT 28/3	0.00	1.54	5.71	0.64	3.44	1.05	0.32

Table D.3 Trace element mobility (%) in the tailings and soils of the investigated transect

ALLUVIAL SOILS							
Sample no.	As	Co	Cr	Cu	Ni	Pb	Zn
MT1/1	0.00	7.71	0.02	2.69	7.43	0.00	10.18
MT1/2	0.00	0.00	0.00	0.00	0.64	0.00	1.61
MT1/3	0.00	0.00	0.00	0.00	0.04	0.00	1.07
MT1/4	0.00	0.00	0.00	0.00	0.00	0.00	1.30
MT1/5	0.00	0.00	0.01	0.00	0.00	0.00	1.30
MT2/1	0.00	6.50	0.01	1.81	5.12	0.00	7.75
MT2/2	0.00	0.00	0.01	0.21	0.04	0.00	0.48
MT3/1	0.00	5.67	0.01	1.56	3.77	55.00	5.35
MT3/2	0.00	0.00	0.00	0.00	2.47	0.00	1.77
MT3/3	0.00	0.00	0.00	0.00	0.00	0.00	1.96
MT3/4	0.00	0.00	0.00	0.00	0.00	0.00	1.88
MT4/1	0.00	3.55	0.05	2.99	4.15	0.00	6.76
MT4/2	0.00	0.00	0.00	0.00	0.33	0.00	1.29
MT5/1	0.00	3.27	0.03	3.48	2.65	0.00	6.41
MT5/2	0.00	4.72	0.05	2.95	18.45	0.00	13.58
MT5/3	0.00	0.00	0.00	0.10	0.05	0.00	0.80
MT5/4	0.00	0.00	0.00	0.00	0.00	0.00	1.96
MT5/5	0.00	0.00	0.00	0.00	0.00	0.00	2.64
MT6/1	0.00	3.00	0.10	3.66	2.08	0.00	5.25
MT6/2	0.00	2.54	0.06	6.22	12.59	2.50	12.83
MT7/1	0.00	0.83	0.00	2.08	1.18	0.00	1.25
MT7/2	0.00	3.21	0.00	1.85	7.55	0.00	17.31
MT7/3	0.00	0.00	0.00	0.00	0.00	0.00	1.02
MT7/4	0.00	0.00	0.00	0.09	0.00	0.00	2.50
MT8/1	0.00	1.00	0.00	0.19	2.22	0.00	3.06
MT8/2	0.00	1.41	0.00	1.07	9.34	0.00	7.47
MT9/1	0.00	6.13	0.14	15.89	17.08	0.00	14.13
MT9/2	0.00	3.40	0.30	11.50	18.03	0.00	6.43
MT9/3	0.00	0.24	0.01	0.00	7.55	0.00	2.38
MT9/4	0.00	0.00	0.00	0.00	0.04	0.00	1.41
MT10/1	0.00	8.33	0.03	3.46	10.77	0.00	9.72
MT10/2	0.00	3.73	0.20	7.24	11.17	0.00	7.80
MT11/1	0.00	1.59	0.00	0.89	2.58	0.00	1.77
MT11/2	0.00	1.06	0.02	3.28	3.07	0.00	6.25
MT11/3	0.00	0.00	0.00	0.00	0.04	0.00	1.59
MT11/4	0.00	0.00	0.00	0.00	0.00	0.00	1.82
MT12/1	0.00	2.77	0.00	3.63	4.35	0.00	5.33
MT12/2	0.00	2.74	0.04	5.65	7.20	22.50	7.84
MT13/1	0.00	5.01	0.35	8.93	13.61	0.00	15.95
MT13/2	0.00	1.88	0.02	3.78	4.29	0.50	10.66
MT13/3	0.00	0.00	0.01	0.00	0.04	0.00	3.53
MT14/1	0.00	4.69	0.09	6.39	7.75	0.00	8.90
MT14/2	0.00	14.03	0.07	3.21	18.77	11.25	9.62
MT15/1	0.00	4.35	0.04	6.65	5.90	0.00	7.91
MT15/2	0.00	7.69	0.23	8.27	9.64	0.00	19.63
MT15/3	0.00	0.38	0.01	0.50	4.78	0.83	9.60
MT15/4	0.00	0.00	0.00	0.00	0.00	0.00	0.01

COLLUVIAL SOILS							
Sample no.	As	Co	Cr	Cu	Ni	Pb	Zn
MT16/1	0.00	0.00	0.00	0.71	0.44	0.00	0.00
MT16/2	0.00	10.56	0.11	7.74	7.96	0.00	14.38
MT17/1	0.00	8.79	0.51	13.83	17.45	0.00	35.12
MT17/2	0.00	3.06	0.03	2.55	2.56	0.00	17.14
MT18/1	0.00	10.38	0.26	6.92	13.11	0.00	12.68
MT18/2	0.00	1.35	0.03	3.89	1.53	0.00	15.10
MT18/3	0.00	0.50	0.02	1.68	0.81	0.00	8.44
MT19/1	0.00	2.78	0.02	3.79	3.26	0.00	11.25
MT19/2	0.00	0.26	0.02	1.82	0.33	0.00	3.85
MT19/3	0.00	0.00	0.00	0.17	0.47	0.00	4.78
MT21/1	0.00	0.50	0.00	1.04	1.82	0.00	3.13
MT21/2	0.00	0.33	0.00	2.76	0.71	0.00	6.25
MT21/3	0.00	0.00	0.00	0.17	0.38	0.00	9.62
MT21/4	0.00	0.00	0.00	0.14	1.24	0.00	5.07
MT 22/1	0.00	0.84	0.02	1.34	0.29	1.67	12.04
MT 22/2	0.00	8.70	0.12	11.35	3.03	0.00	37.53
MT 22/3	0.00	0.31	0.00	0.87	1.82	10.27	71.71
MT 23/1	0.00	0.00	0.05	1.22	0.00	15.89	3.62
MT 23/2	0.00	3.69	0.01	2.18	1.95	0.68	43.92
MT 23/3	0.00	0.21	0.00	1.01	4.72	7.36	44.39
MT 23/4	0.00	0.34	0.00	0.71	4.38	39.67	21.57
MT 23/5	0.00	0.60	0.00	0.00	0.51	71.71	0.00
MT 24/1	0.00	6.42	0.22	2.84	4.85	21.75	19.22
MT 24/2	0.00	14.88	0.01	3.96	9.07	11.18	16.54
MT 24/3	0.00	0.21	0.03	0.88	10.55	412.25	49.16
MT 24/4	0.00	0.22	0.02	0.04	0.32	55.86	0.00
MT 25/1	0.00	6.51	0.39	5.62	8.12	32.26	43.82
MT 25/2	0.00	5.17	0.53	5.82	11.75	83.50	88.01
MT 25/3	0.00	125.87	73.04	96.64	69.11	38.64	49.78
MT 25/4	0.00	0.20	0.03	1.52	3.61	19.40	43.86
MT 25/5	0.00	0.92	0.01	0.00	0.70	0.00	0.00
MT 25/6	0.00	0.34	0.00	0.00	0.45	0.00	0.00
MT 26/1	0.00	8.69	0.10	4.00	16.83	1.01	41.04
MT 26/2	0.00	44.30	1.66	29.84	57.15	66.63	59.18
MT 26/3	0.00	3.12	0.03	3.99	10.71	57.84	30.14
MT 26/4	0.00	0.79	0.00	0.50	3.44	3.17	15.78
MT 27/1	0.00	13.95	0.09	6.57	16.74	0.00	37.35
MT 27/2	0.00	18.01	0.14	5.48	8.71	31.56	25.48
MT 27/3	0.00	1.87	0.01	3.09	4.96	2.32	14.43
MT 28/1	0.00	18.42	0.16	4.42	12.70	3.43	18.62
MT 28/2	0.00	5.85	0.06	3.38	9.72	0.00	13.15
MT 28/3	0.00	6.42	0.20	4.58	5.74	34.90	24.60



APPENDIX E

CATION EXCHANGE CAPACITIES
OF SOME SOIL AND TAILINGS
SAMPLES



Table E.1 Cation exchange capacities of some of the soil and tailings samples in the investigated transect

Soil unit	Sample number	CEC (cmol/kg)
TC & TA	MT2/1	0.17
	MT6/1	0.342
	MT12/1	0.077
	MT14/1	0.083
	MT 26/2	0.047
AU	MT2/2	0.25
	MT10/2	0.076
	MT14/2	0.142
AL	MT3/4	0.344
	MT9/4	0.218
	MT15/3	0.296
CU	MT21/2	0.031
	MT 27/2	0.03
	MT 25/3	0.026
CF	MT19/3	0.056
	MT 27/3	0.06
	MT 23/3	0.04