



Australian Laboratory Services Pty. Ltd.

32 Shand Street
Stafford
Brisbane QLD 4053
Phone: +61 (7) 3243 7222 Fax: +61 (7) 3243 7218
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ALS Perth is a NATA Accredited Testing Laboratory. Corporate Accreditation
No: 825, Corporate Site No: 23001.

CERTIFICATE AD17077125

Project: MH01

P.O. No.: 338151

This report is for 133 Percussion samples submitted to our lab in Adelaide, SA,
Australia on 21-APR-2017.

The following have access to data associated with this certificate:

KIM GREY

To: TODD RIVER METALS
ATTN: KIM GREY
LEVEL 1
282 ROKEBY ROAD
SUBIACO WA 6008

This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

***** See Appendix Page for comments regarding this certificate *****

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Finalized Date: 10-MAY-2017

Account: TODRIV

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
PUL-23	Pulv Sample - Split/Retain
BAG-01	Bulk Master for Storage
SPL-21	Split sample - riffle splitter
LOG-22	Sample login - Rcd w/o BarCode
PUL-QC	Pulverizing QC Test

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
Zn-OG62	Ore Grade Zn - Four Acid	ICP-AES
ME-ICP61	33 element four acid ICP-AES	ICP-AES
Au-ICP22	Au 50g FA ICP-AES finish	ICP-AES
ME-OG62	Ore Grade Elements - Four Acid	ICP-AES
Cu-OG62	Ore Grade Cu - Four Acid	ICP-AES

Signature:

Cameron Brosnan, Laboratory Manager, Perth



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CERTIFICATE OF ANALYSIS AD17077125

Sample Description	Method Analyte Units LOR	WEI-21 Recvd Wt. kg 0.02	Au-ICP22 Au ppm 0.001	ME-ICP61 Ag ppm 0.5	ME-ICP61 Al % 0.01	ME-ICP61 As ppm 5	ME-ICP61 Ba ppm 10	ME-ICP61 Be ppm 0.5	ME-ICP61 Bi ppm 2	ME-ICP61 Ca % 0.01	ME-ICP61 Cd ppm 0.5	ME-ICP61 Co ppm 1	ME-ICP61 Cr ppm 1	ME-ICP61 Cu ppm 1	ME-ICP61 Fe % 0.01	ME-ICP61 Ga ppm 10
MH20000		2.06	0.001	<0.5	5.79	6	610	11.3	3	0.06	<0.5	8	39	42	2.14	10
MH20005		3.13	<0.001	0.6	6.35	<5	730	2.2	<2	8.39	<0.5	9	34	31	2.54	20
MH20010		2.73	<0.001	<0.5	8.23	<5	770	3.4	3	0.27	<0.5	10	54	15	3.14	20
MH20015		1.80	<0.001	<0.5	8.04	<5	790	3.3	<2	0.23	<0.5	8	49	3	2.66	20
MH20020		2.01	<0.001	<0.5	5.16	<5	570	2.2	3	0.32	0.9	5	30	14	1.91	10
MH20026		1.52	<0.001	<0.5	5.38	<5	350	2.3	4	0.20	<0.5	7	35	24	2.24	10
MH20031		Not Recvd														
MH20036		1.73	<0.001	0.5	5.84	<5	450	2.4	<2	0.43	2.1	8	43	18	2.62	20
MH20041		3.07	<0.001	<0.5	5.08	<5	720	2.3	3	0.33	<0.5	6	30	2	1.91	10
MH20046		3.03	<0.001	<0.5	7.35	<5	990	2.8	2	0.41	<0.5	9	45	2	2.83	20
MH20050		0.06	<0.001	<0.5	15.35	21	50	<0.5	7	0.01	<0.5	1	142	8	13.50	50
MH20052		2.92	<0.001	<0.5	8.34	<5	830	3.7	4	0.32	<0.5	11	54	1	3.36	20
MH20057		2.72	<0.001	<0.5	9.55	<5	700	4.6	3	0.24	<0.5	14	63	1	4.00	30
MH20062		2.29	<0.001	<0.5	5.14	<5	750	1.8	<2	0.31	<0.5	6	35	3	2.21	10
MH20067		1.61	<0.001	<0.5	5.54	<5	900	1.8	4	0.30	<0.5	8	37	4	2.67	10
MH20072		1.93	<0.001	<0.5	5.00	<5	700	1.7	<2	0.28	<0.5	5	32	4	2.23	10
MH20073		1.67	<0.001	<0.5	7.23	7	850	2.7	3	0.27	1.1	11	48	103	3.10	20
MH20074		1.86	<0.001	1.8	5.68	12	500	2.0	4	0.25	3.3	9	58	198	3.22	20
MH20075		0.05	0.017	0.5	5.87	13	30	1.1	<2	1.73	<0.5	29	48	40	2.71	20
MH20076		3.23	<0.001	1.0	11.15	10	880	4.3	6	0.25	0.6	16	70	467	4.49	30
MH20077		3.72	<0.001	0.5	9.30	<5	710	3.8	4	0.21	1.2	13	58	89	3.96	30
MH20078		2.89	<0.001	<0.5	6.03	<5	440	2.6	4	0.25	<0.5	7	39	17	2.67	20
MH20079		3.87	<0.001	<0.5	4.03	<5	300	1.5	<2	0.22	<0.5	9	30	25	2.89	10
MH20080		4.50	<0.001	2.3	9.48	19	720	3.7	7	0.29	7.5	21	64	457	4.59	30
MH20081		3.15	<0.001	1.5	10.15	16	780	4.1	7	0.24	2.0	16	68	45	4.23	30
MH20082		3.49	<0.001	0.6	10.60	6	780	4.1	5	0.29	0.8	15	69	43	4.55	30
MH20083		3.70	<0.001	2.0	10.65	12	760	3.9	6	0.40	1.8	20	69	656	4.82	30
MH20084		3.58	<0.001	0.7	8.13	<5	220	3.3	3	0.23	0.5	3	27	71	1.61	20
MH20085		3.74	0.001	0.5	3.50	<5	260	5.3	4	0.14	0.7	6	32	93	1.72	10
MH20086		3.50	0.004	2.3	5.17	13	430	1.8	16	0.30	2.5	16	40	188	2.37	10
MH20087		1.55	0.005	0.5	6.16	<5	650	2.2	6	0.31	0.6	10	43	58	3.17	20
MH20088		4.78	0.012	4.8	6.73	5	740	2.4	41	0.31	1.6	13	48	331	3.44	20
MH20089		4.21	0.005	1.3	6.27	11	750	2.0	10	0.31	<0.5	12	45	118	3.32	20
MH20090		3.89	0.028	0.5	4.48	10	610	1.5	16	0.25	2.3	12	43	228	2.93	10
MH20091		3.34	0.113	11.7	4.07	25	440	1.4	107	0.25	43.8	44	30	4240	3.45	10
MH20092		4.01	0.004	5.6	9.68	13	1150	3.4	25	0.32	18.3	28	68	1290	5.17	30
MH20093		2.87	<0.001	<0.5	5.33	8	700	1.7	2	0.30	<0.5	10	40	23	2.73	10
MH20094		3.42	<0.001	<0.5	5.20	<5	750	1.6	2	0.29	<0.5	8	39	28	2.62	10
MH20095		3.17	<0.001	<0.5	5.20	<5	700	1.6	2	0.27	<0.5	6	43	11	2.55	20
MH20096		3.79	<0.001	0.7	4.95	6	560	1.7	7	0.26	2.6	8	39	206	2.64	10



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CERTIFICATE OF ANALYSIS AD17077125

Sample Description	Method Analyte Units LOR	ME-ICP61 K %	ME-ICP61 La ppm	ME-ICP61 Mg %	ME-ICP61 Mn ppm	ME-ICP61 Mo ppm	ME-ICP61 Na %	ME-ICP61 Ni ppm	ME-ICP61 P ppm	ME-ICP61 Pb ppm	ME-ICP61 S %	ME-ICP61 Sb ppm	ME-ICP61 Sc ppm	ME-ICP61 Sr ppm	ME-ICP61 Th ppm	ME-ICP61 Ti %
		0.01	10	0.01	5	1	0.01	1	10	2	0.01	5	1	1	20	0.01
MH20000		2.38	30	0.32	397	2	0.47	16	240	47	0.01	<5	6	25	20	0.21
MH20005		1.93	30	5.64	799	<1	0.49	22	170	34	0.02	<5	8	607	20	0.21
MH20010		3.25	40	0.83	475	1	0.82	26	470	78	<0.01	<5	10	49	20	0.28
MH20015		3.26	50	0.63	572	1	0.74	24	500	57	<0.01	<5	10	45	30	0.27
MH20020		1.92	40	0.45	425	1	0.83	13	410	63	<0.01	<5	5	48	20	0.20
MH20026		2.12	40	0.49	334	1	0.72	16	380	50	<0.01	<5	6	35	20	0.20
MH20031																
MH20036		1.90	40	0.61	523	1	1.22	20	440	88	<0.01	<5	7	70	20	0.25
MH20041		1.73	40	0.42	351	1	1.08	15	420	68	<0.01	<5	5	57	20	0.21
MH20046		2.74	40	0.74	470	<1	1.28	21	530	51	<0.01	<5	9	64	20	0.29
MH20050		0.13	<10	0.02	302	17	0.01	7	100	12	0.05	<5	10	4	50	0.79
MH20052		3.42	40	0.83	576	1	0.79	27	520	62	<0.01	<5	11	44	20	0.29
MH20057		4.42	40	0.98	781	<1	0.65	33	540	88	<0.01	<5	13	30	20	0.33
MH20062		2.04	40	0.44	523	2	0.73	14	410	47	<0.01	<5	5	42	20	0.21
MH20067		2.09	30	0.50	560	1	0.98	15	390	47	0.01	<5	6	50	20	0.21
MH20072		1.92	40	0.43	516	1	0.79	14	400	136	0.01	<5	5	41	20	0.20
MH20073		3.06	40	0.65	597	1	0.74	23	490	346	0.06	<5	9	38	20	0.27
MH20074		2.22	40	0.51	492	7	0.70	19	410	536	0.18	<5	6	33	20	0.20
MH20075		3.96	<10	0.81	365	8	1.51	34	620	64	0.02	<5	9	78	<20	0.33
MH20076		4.59	30	1.07	691	1	0.89	38	600	508	0.09	<5	15	36	20	0.34
MH20077		4.26	40	0.90	718	1	0.72	28	480	325	0.04	<5	12	31	20	0.28
MH20078		2.57	30	0.54	520	1	0.69	17	400	206	0.01	<5	7	35	20	0.22
MH20079		1.69	30	0.50	636	1	0.52	13	310	238	0.01	<5	4	27	20	0.15
MH20080		3.79	40	0.96	741	<1	0.90	31	530	921	0.32	<5	12	38	20	0.30
MH20081		4.71	40	0.94	710	<1	0.85	34	560	735	0.09	<5	13	33	20	0.33
MH20082		3.85	50	0.99	739	1	0.89	35	570	638	0.06	<5	14	37	20	0.33
MH20083		4.23	50	1.00	803	3	1.16	36	600	1075	0.15	<5	14	47	30	0.35
MH20084		2.86	10	0.24	675	11	2.43	13	1270	522	0.03	<5	4	13	<20	0.09
MH20085		1.21	20	0.25	341	6	0.60	10	480	231	0.03	<5	3	12	<20	0.10
MH20086		1.54	30	0.40	428	4	0.67	15	780	669	0.10	<5	4	35	<20	0.16
MH20087		2.38	40	0.59	612	1	0.93	18	420	336	0.03	<5	7	46	20	0.23
MH20088		2.64	40	0.67	618	1	0.91	22	430	1155	0.11	<5	8	44	20	0.25
MH20089		2.52	40	0.63	683	1	0.89	21	420	385	0.04	<5	8	44	20	0.24
MH20090		1.76	30	0.49	604	3	0.69	16	320	173	0.11	<5	6	39	<20	0.19
MH20091		1.57	30	0.46	565	2	0.70	18	290	1935	2.04	<5	4	38	20	0.16
MH20092		3.60	50	1.02	858	<1	1.26	34	530	1725	0.82	<5	13	52	20	0.33
MH20093		1.90	40	0.47	532	2	0.97	17	360	171	0.01	<5	6	51	20	0.19
MH20094		1.80	40	0.45	546	3	1.01	15	390	96	0.01	<5	5	52	20	0.20
MH20095		1.89	40	0.45	487	3	0.90	15	380	123	0.01	<5	6	46	20	0.20
MH20096		1.93	40	0.46	520	2	0.76	17	360	554	0.13	<5	5	39	20	0.19



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CERTIFICATE OF ANALYSIS AD17077125

Sample Description	Method Analyte Units LOR	ME-ICP61 Ti ppm 10	ME-ICP61 U ppm 10	ME-ICP61 V ppm 1	ME-ICP61 W ppm 10	ME-ICP61 Zn ppm 2	Cu-OG62 Cu % 0.001	Zn-OG62 Zn % 0.001	PUL-QC Pass75um % 0.01
MH20000		<10	<10	38	<10	140			
MH20005		<10	<10	50	<10	57			
MH20010		<10	<10	54	<10	87			
MH20015		<10	<10	52	<10	70			
MH20020		10	<10	28	<10	188			89.0
MH20026		<10	<10	30	<10	98			
MH20031									
MH20036		10	<10	37	<10	548			
MH20041		<10	<10	28	<10	42			
MH20046		10	<10	44	<10	54			
MH20050		10	<10	392	<10	9			
MH20052		<10	<10	56	10	74			
MH20057		10	<10	66	10	98			
MH20062		<10	<10	28	<10	72			
MH20067		10	<10	33	10	106			
MH20072		<10	<10	27	<10	90			
MH20073		<10	<10	47	<10	950			
MH20074		10	<10	33	<10	2910			
MH20075		10	<10	71	<10	61			
MH20076		10	<10	75	<10	1165			
MH20077		10	<10	61	<10	741			
MH20078		<10	<10	37	<10	207			
MH20079		<10	<10	22	10	145			
MH20080		10	<10	64	<10	4240			
MH20081		10	<10	71	<10	1305			
MH20082		<10	<10	71	<10	783			
MH20083		<10	<10	71	<10	1355			
MH20084		<10	<10	18	10	324			
MH20085		10	<10	16	<10	2280			
MH20086		<10	<10	24	<10	1690			
MH20087		10	<10	38	10	359			
MH20088		10	<10	43	<10	1040			
MH20089		10	<10	40	<10	371			
MH20090		10	<10	29	<10	1365			
MH20091		10	<10	24	<10	>10000		2.36	
MH20092		<10	<10	67	<10	>10000		0.961	
MH20093		<10	<10	31	<10	163			
MH20094		<10	<10	28	10	165			
MH20095		<10	<10	28	<10	121			
MH20096		10	<10	28	<10	1585			



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Sample Description	Method Analyte Units LOR	WEI-21 Recvd Wt. kg 0.02	Au-ICP22 Au ppm 0.001	ME-ICP61 Ag ppm 0.5	ME-ICP61 Al % 0.01	ME-ICP61 As ppm 5	ME-ICP61 Ba ppm 10	ME-ICP61 Be ppm 0.5	ME-ICP61 Bi ppm 2	ME-ICP61 Ca % 0.01	ME-ICP61 Cd ppm 0.5	ME-ICP61 Co ppm 1	ME-ICP61 Cr ppm 1	ME-ICP61 Cu ppm 1	ME-ICP61 Fe % 0.01	ME-ICP61 Ga ppm 10
MH20097		2.33	<0.001	<0.5	9.57	5	1080	4.5	3	0.26	<0.5	12	66	6	4.26	30
MH20098		3.11	<0.001	<0.5	6.14	<5	680	2.2	2	0.29	<0.5	9	48	5	3.20	20
MH20099		2.16	<0.001	<0.5	4.87	<5	550	1.6	2	0.27	<0.5	6	39	29	2.62	10
MH20100		0.05	0.357	0.6	5.32	<5	10	1.3	<2	0.14	0.7	1	14	210	0.23	20
MH20101		3.60	<0.001	<0.5	8.62	9	880	3.9	5	0.31	<0.5	10	55	9	3.56	20
MH20102		3.57	<0.001	<0.5	6.85	6	660	2.7	3	0.26	<0.5	9	50	8	3.33	20
MH20103		3.98	<0.001	0.8	6.51	<5	730	2.1	6	0.29	2.7	11	49	141	3.30	20
MH20104		3.55	0.001	2.2	5.15	<5	680	1.7	13	0.30	3.1	10	40	100	2.70	10
MH20105		3.51	0.003	0.6	6.36	<5	770	2.5	7	0.28	8.4	13	51	64	3.17	20
MH20106		3.02	<0.001	<0.5	5.85	<5	710	1.8	<2	0.49	<0.5	7	46	5	2.91	10
MH20107		3.78	<0.001	<0.5	6.14	<5	800	1.9	<2	0.35	<0.5	9	49	5	3.32	20
MH20108		3.82	<0.001	<0.5	6.71	<5	690	2.2	<2	0.26	<0.5	11	49	9	3.98	20
MH20109		4.31	<0.001	<0.5	4.81	<5	630	1.5	<2	0.25	<0.5	8	44	4	2.93	10
MH20110		3.11	<0.001	<0.5	4.96	<5	660	1.5	2	0.26	<0.5	9	42	4	3.22	10
MH20111		3.11	0.011	5.0	4.04	7	580	1.2	24	0.88	14.6	18	35	1270	2.95	10
MH20112		1.90	<0.001	<0.5	2.77	108	290	4.6	<2	0.16	1.1	12	31	88	3.26	10
MH20113		4.30	0.003	0.9	5.69	18	620	2.7	5	0.21	2.7	12	51	151	4.23	20
MH20114		3.34	0.007	<0.5	5.17	10	520	2.1	4	0.16	<0.5	10	49	32	4.14	20
MH20115		2.69	0.002	<0.5	4.29	5	380	1.4	2	0.15	<0.5	12	48	226	3.70	10
MH20116		3.37	0.004	4.4	3.29	5	210	0.9	<2	0.11	2.3	21	35	6050	4.43	10
MH20117		3.56	<0.001	<0.5	2.90	<5	210	0.8	<2	0.30	<0.5	7	36	172	3.54	10
MH20118		2.12	0.043	0.9	3.49	6	270	0.8	34	0.20	2.2	15	38	459	4.76	10
MH20119		3.61	0.035	3.0	5.24	15	120	1.2	19	0.29	1.9	20	19	3150	2.78	20
MH20120		1.48	0.004	1.8	6.90	<5	110	1.5	6	0.71	1.0	6	10	1790	1.33	20
MH20121		1.63	0.003	0.6	7.20	<5	70	1.5	10	0.43	0.5	3	7	636	0.73	20
MH20122		1.38	0.002	<0.5	7.18	<5	30	1.2	3	0.38	0.6	2	5	310	1.03	20
MH20123		1.50	0.002	0.6	7.29	<5	150	2.5	9	0.35	<0.5	2	15	242	1.59	20
MH20124		1.17	0.001	<0.5	5.59	<5	510	2.4	<2	1.23	<0.5	7	34	64	2.53	10
MH20125		0.05	0.467	3.5	7.93	66	1290	1.6	7	4.13	1.8	29	156	4030	6.12	20
MH20126		1.12	0.001	3.0	7.86	8	990	3.2	24	0.54	6.7	18	50	673	3.54	20
MH20127		1.05	<0.001	<0.5	5.25	<5	630	2.1	<2	0.41	<0.5	7	35	30	2.45	10
MH20128		1.00	0.015	3.1	4.75	<5	610	2.0	27	0.39	<0.5	6	33	242	2.18	10
MH20130		0.63	0.001	<0.5	7.93	6	740	3.2	2	0.05	<0.5	10	52	45	3.51	20
MH20135		4.58	<0.001	<0.5	9.03	<5	880	3.5	3	0.97	<0.5	11	53	72	3.37	20
MH20140		4.28	<0.001	<0.5	7.32	<5	660	2.9	4	0.35	<0.5	11	49	43	3.08	20
MH20145		4.41	<0.001	<0.5	9.91	6	640	4.3	4	0.25	<0.5	14	67	6	4.34	30
MH20151		3.41	<0.001	<0.5	4.99	<5	710	1.8	3	0.31	<0.5	5	36	11	2.23	10
MH20156		3.29	<0.001	<0.5	5.87	<5	680	1.7	<2	0.31	<0.5	8	37	10	2.45	10
MH20161		2.76	<0.001	<0.5	7.63	5	700	3.1	2	0.28	<0.5	11	54	3	3.13	20
MH20166		4.50	0.033	3.6	4.96	<5	480	1.6	38	0.31	<0.5	6	29	493	2.08	10



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 Stafford
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Sample Description	Method Analyte Units LOR	ME-ICP61 K %	ME-ICP61 La ppm	ME-ICP61 Mg %	ME-ICP61 Mn ppm	ME-ICP61 Mo ppm	ME-ICP61 Na %	ME-ICP61 Ni ppm	ME-ICP61 P ppm	ME-ICP61 Pb ppm	ME-ICP61 S %	ME-ICP61 Sb ppm	ME-ICP61 Sc ppm	ME-ICP61 Sr ppm	ME-ICP61 Th ppm	ME-ICP61 Ti %
		0.01	10	0.01	5	1	0.01	1	10	2	0.01	5	1	1	20	0.01
MH20097		3.59	40	0.97	789	1	1.00	35	560	213	0.01	<5	12	42	20	0.30
MH20098		2.39	40	0.59	656	2	0.83	20	400	178	0.01	<5	7	41	20	0.23
MH20099		1.95	30	0.47	621	2	0.66	15	350	226	0.01	<5	5	33	20	0.19
MH20100		4.12	<10	0.04	50	<1	1.25	11	500	30	0.07	<5	<1	23	<20	0.02
MH20101		3.58	50	0.78	723	1	1.02	26	520	325	0.01	<5	11	44	20	0.27
MH20102		2.98	40	0.68	663	1	0.82	23	430	225	0.01	<5	9	33	20	0.24
MH20103		2.67	40	0.62	645	1	0.84	21	450	571	0.12	<5	8	38	20	0.25
MH20104		1.97	40	0.46	555	2	0.74	17	490	1080	0.14	<5	6	35	20	0.21
MH20105		2.41	30	0.58	637	2	0.92	21	430	507	0.31	<5	8	42	20	0.23
MH20106		2.07	40	0.62	636	2	1.01	17	420	81	0.01	<5	7	56	20	0.23
MH20107		2.29	40	0.61	678	2	0.95	20	430	78	0.01	<5	7	47	20	0.23
MH20108		2.26	40	0.70	1050	2	1.16	20	450	73	0.01	<5	8	36	20	0.24
MH20109		1.80	30	0.49	603	3	0.79	16	340	70	<0.01	<5	6	37	20	0.19
MH20110		1.87	30	0.52	735	3	0.73	19	430	190	0.01	<5	6	36	20	0.19
MH20111		1.44	30	0.76	600	2	0.55	14	290	1135	0.56	<5	4	66	20	0.15
MH20112		0.99	20	0.46	792	3	0.34	9	160	89	0.05	<5	3	17	<20	0.10
MH20113		2.35	30	0.70	865	3	0.56	17	300	354	0.12	<5	7	27	<20	0.17
MH20114		2.14	30	0.69	878	3	0.43	18	270	114	0.02	<5	7	22	<20	0.16
MH20115		1.75	20	0.52	601	4	0.42	15	240	74	0.04	<5	5	23	<20	0.14
MH20116		1.34	20	0.40	763	3	0.26	12	270	56	0.98	<5	3	16	<20	0.11
MH20117		1.07	30	0.45	661	4	0.22	10	250	41	0.04	<5	3	25	20	0.12
MH20118		1.51	30	0.47	1010	3	0.23	12	300	139	0.14	<5	4	18	20	0.14
MH20119		1.46	10	0.24	896	5	1.69	8	650	51	0.50	<5	2	19	<20	0.04
MH20120		1.53	<10	0.34	782	<1	2.93	3	810	32	0.29	<5	4	46	<20	0.02
MH20121		1.47	<10	0.14	332	<1	3.54	2	720	17	0.12	<5	6	32	<20	0.01
MH20122		1.07	<10	0.09	1940	1	4.04	2	710	22	0.10	<5	6	27	<20	0.01
MH20123		2.12	10	0.20	2910	1	2.84	5	980	126	0.06	<5	4	35	<20	0.05
MH20124		1.99	30	0.99	566	<1	1.11	16	410	132	0.02	<5	6	109	20	0.21
MH20125		2.33	60	2.02	896	72	2.33	2660	1070	2290	0.43	<5	21	335	20	0.74
MH20126		3.09	40	0.88	670	1	1.25	27	500	892	0.33	<5	10	75	20	0.27
MH20127		1.85	40	0.54	484	1	1.10	13	390	117	0.01	<5	6	64	20	0.21
MH20128		1.56	30	0.47	430	1	1.22	13	380	683	0.05	<5	5	67	20	0.19
MH20130		3.45	30	0.50	364	1	0.18	21	160	56	0.01	<5	9	30	20	0.25
MH20135		3.12	30	1.26	444	<1	0.74	28	510	75	0.01	<5	11	82	20	0.30
MH20140		2.76	40	0.95	530	1	1.00	26	460	66	<0.01	<5	10	49	20	0.30
MH20145		4.51	40	1.04	695	<1	0.76	35	550	59	<0.01	<5	14	36	20	0.35
MH20151		1.75	30	0.44	419	1	0.96	15	380	79	<0.01	<5	5	52	20	0.19
MH20156		2.33	40	0.51	487	1	0.91	18	440	82	0.01	<5	7	43	20	0.24
MH20161		3.35	40	0.74	571	1	0.97	25	510	51	<0.01	<5	10	40	20	0.29
MH20166		1.80	40	0.46	427	1	0.89	15	390	603	0.05	<5	5	54	20	0.20



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 Brisbane QLD 4053
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Sample Description	Method Analyte Units LOR	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	Cu-OG62	Zn-OG62	PUL-QC
		Ti	U	V	W	Zn	Cu	Zn	Pass75um
		ppm 10	ppm 10	ppm 1	ppm 10	ppm 2	% 0.001	% 0.001	% 0.01
MH20097		10	<10	66	10	243			
MH20098		10	<10	38	<10	109			
MH20099		<10	<10	28	<10	126			
MH20100		10	<10	3	<10	333			
MH20101		<10	<10	54	<10	237			89.0
MH20102		<10	<10	45	10	177			
MH20103		<10	<10	42	<10	1570			
MH20104		<10	<10	31	<10	1775			
MH20105		<10	<10	41	<10	4870			
MH20106		<10	<10	35	10	106			
MH20107		<10	<10	36	<10	111			
MH20108		10	<10	42	<10	127			
MH20109		<10	<10	30	<10	82			
MH20110		10	<10	30	<10	116			
MH20111		<10	<10	24	<10	5390			
MH20112		<10	<10	15	<10	523			
MH20113		<10	<10	40	<10	1610			
MH20114		<10	<10	36	10	371			
MH20115		10	<10	26	<10	259			
MH20116		10	<10	16	<10	566			
MH20117		10	<10	14	20	225			
MH20118		10	<10	19	<10	1215			
MH20119		<10	<10	7	<10	453			
MH20120		<10	<10	4	10	230			
MH20121		<10	10	1	10	84			
MH20122		<10	10	1	10	83			
MH20123		<10	10	8	10	134			
MH20124		10	<10	33	10	116			
MH20125		<10	<10	163	<10	1140			
MH20126		10	<10	50	<10	3740			
MH20127		<10	<10	29	10	94			
MH20128		<10	<10	27	10	136			
MH20130		<10	<10	69	<10	165			
MH20135		<10	<10	60	10	218			
MH20140		<10	<10	53	<10	116			
MH20145		<10	<10	72	<10	139			
MH20151		10	<10	29	<10	116			
MH20156		<10	<10	34	<10	118			
MH20161		<10	<10	51	<10	173			
MH20166		<10	<10	27	<10	168			



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32 Shand Street

Stafford

Brisbane QLD 4053

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CERTIFICATE OF ANALYSIS AD17077125

Sample Description	Method Analyte Units LOR	WEI-21 Recvd Wt. kg 0.02	Au-ICP22 Au ppm 0.001	ME-ICP61 Ag ppm 0.5	ME-ICP61 Al % 0.01	ME-ICP61 As ppm 5	ME-ICP61 Ba ppm 10	ME-ICP61 Be ppm 0.5	ME-ICP61 Bi ppm 2	ME-ICP61 Ca % 0.01	ME-ICP61 Cd ppm 0.5	ME-ICP61 Co ppm 1	ME-ICP61 Cr ppm 1	ME-ICP61 Cu ppm 1	ME-ICP61 Fe % 0.01	ME-ICP61 Ga ppm 10
MH20171		3.40	<0.001	<0.5	5.23	<5	470	1.6	<2	0.28	<0.5	5	34	8	2.23	20
MH20175		0.09	<0.001	<0.5	14.85	16	50	<0.5	6	0.01	<0.5	<1	150	10	13.95	50
MH20177		3.77	<0.001	<0.5	5.07	5	410	1.9	<2	0.27	<0.5	6	31	4	2.40	10
MH20182		4.01	<0.001	0.5	5.74	<5	600	2.4	3	0.31	<0.5	7	39	40	2.86	20
MH20183		4.15	<0.001	<0.5	6.84	5	770	2.6	<2	0.30	<0.5	9	44	10	3.00	20
MH20184		3.85	<0.001	<0.5	6.63	<5	770	2.6	<2	0.28	<0.5	8	42	8	2.84	20
MH20185		3.74	<0.001	<0.5	5.09	<5	560	1.9	3	0.29	<0.5	6	33	6	2.24	10
MH20186		1.80	<0.001	<0.5	5.36	<5	580	2.1	<2	0.32	<0.5	6	34	6	2.29	10
MH20187		5.42	<0.001	<0.5	4.55	<5	490	1.9	<2	0.26	<0.5	5	34	25	2.02	10
MH20188		6.44	<0.001	<0.5	5.97	<5	750	2.2	2	0.32	<0.5	8	39	7	2.43	20
MH20189		2.70	<0.001	<0.5	5.74	<5	790	2.0	<2	0.31	<0.5	7	37	5	2.34	20
MH20190		4.05	<0.001	<0.5	5.38	<5	730	1.8	<2	0.31	<0.5	5	32	4	2.13	10
MH20191		5.04	<0.001	<0.5	5.41	<5	710	1.7	<2	0.30	<0.5	6	33	5	2.27	10
MH20192		3.14	<0.001	<0.5	5.74	<5	670	1.9	<2	0.30	<0.5	7	39	8	2.53	20
MH20193		3.50	<0.001	<0.5	6.67	<5	640	2.4	4	0.30	<0.5	10	42	21	3.36	20
MH20194		4.54	<0.001	<0.5	9.23	10	600	1.9	8	0.16	<0.5	33	70	278	12.10	30
MH20195		3.53	0.001	0.9	7.85	37	550	1.8	5	0.14	0.7	38	60	1590	10.90	30
MH20196		4.52	0.007	1.2	5.30	1275	160	0.7	7	0.07	0.7	365	23	2020	12.05	20
MH20197		0.96	0.001	<0.5	6.89	258	640	2.2	5	0.23	<0.5	87	45	463	5.69	20
MH20198		3.00	0.021	4.6	5.15	14	620	1.7	37	0.25	2.3	22	37	3280	3.55	10
MH20199		3.69	0.145	12.9	4.06	42	500	1.4	129	0.21	7.9	56	31	>10000	4.38	10
MH20200		0.08	0.017	1.0	5.93	12	40	1.1	<2	1.75	<0.5	30	51	559	2.85	20
MH20201		3.85	0.152	32.7	2.95	87	90	1.1	176	0.16	23.2	175	29	>10000	8.53	10
MH20202		3.65	0.067	16.0	3.86	38	100	1.3	72	0.21	15.6	118	31	>10000	6.58	10
MH20203		4.69	0.074	19.2	3.89	31	250	1.3	84	0.20	14.7	78	26	>10000	5.37	10
MH20204		4.43	0.063	13.8	4.35	12	460	1.4	75	0.26	6.8	46	37	>10000	4.52	10
MH20205		2.65	0.041	20.2	4.02	12	330	1.4	64	0.24	12.3	73	33	>10000	6.07	10
MH20206		3.92	0.016	9.0	3.99	<5	380	1.5	37	0.24	6.8	59	30	>10000	4.71	10
MH20207		2.89	0.001	0.7	3.42	<5	340	1.2	9	0.24	1.6	6	28	533	1.94	10
MH20208		2.39	0.003	0.9	4.54	<5	410	1.5	10	0.29	<0.5	7	33	325	2.83	10
MH20209		3.00	0.001	<0.5	4.34	<5	440	1.6	<2	0.27	<0.5	4	29	135	2.29	10
MH20210		2.43	<0.001	<0.5	4.28	<5	420	1.6	<2	0.28	<0.5	4	31	106	2.20	10
MH20211		1.76	<0.001	<0.5	4.12	<5	400	1.5	3	0.29	<0.5	5	30	203	2.11	10
MH20212		3.58	0.006	0.7	4.23	<5	400	1.4	9	0.27	8.9	9	29	292	2.11	10
MH20213		2.11	<0.001	<0.5	4.39	<5	390	1.4	3	0.32	<0.5	5	33	34	2.18	10
MH20214		2.25	<0.001	<0.5	4.87	<5	400	1.5	<2	0.34	<0.5	5	35	22	2.31	10
MH20215		2.49	<0.001	<0.5	5.68	<5	430	2.2	2	0.39	<0.5	7	38	23	2.62	20
MH20216		2.74	<0.001	<0.5	6.65	<5	480	2.6	2	0.40	<0.5	8	45	24	2.92	20
MH20217		2.84	<0.001	<0.5	5.15	<5	350	1.9	<2	0.34	<0.5	6	39	17	2.92	10
MH20218		2.46	0.001	0.9	3.88	<5	270	1.3	3	0.26	<0.5	4	25	57	2.02	10



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Stafford
Brisbane QLD 4053
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Sample Description	Method Analyte Units LOR	ME-ICP61 K %	ME-ICP61 La ppm	ME-ICP61 Mg %	ME-ICP61 Mn ppm	ME-ICP61 Mo ppm	ME-ICP61 Na %	ME-ICP61 Ni ppm	ME-ICP61 P ppm	ME-ICP61 Pb ppm	ME-ICP61 S %	ME-ICP61 Sb ppm	ME-ICP61 Sc ppm	ME-ICP61 Sr ppm	ME-ICP61 Th ppm	ME-ICP61 Ti %
		0.01	10	0.01	5	1	0.01	1	10	2	0.01	5	1	1	20	0.01
MH20171		1.98	40	0.48	422	1	0.90	15	400	55	<0.01	<5	6	44	20	0.20
MH20175		0.13	<10	0.02	320	19	0.01	8	100	17	0.05	<5	8	3	60	0.86
MH20177		2.01	40	0.51	485	1	0.80	16	390	166	0.01	<5	6	40	20	0.21
MH20182		2.24	40	0.59	627	1	0.86	17	410	336	0.03	<5	7	47	20	0.23
MH20183		2.76	50	0.69	601	<1	1.00	22	450	240	0.01	<5	8	49	20	0.25
MH20184		2.71	40	0.67	556	1	0.96	22	420	170	0.01	<5	8	47	20	0.25
MH20185		1.95	40	0.50	482	1	0.93	15	400	127	0.01	<5	6	48	20	0.21
MH20186		1.92	40	0.49	462	1	1.08	16	410	115	0.01	<5	6	53	20	0.21
MH20187		1.64	30	0.43	373	2	0.88	14	320	236	0.01	<5	5	45	20	0.18
MH20188		2.19	40	0.56	486	1	1.16	17	430	105	0.01	<5	7	57	20	0.23
MH20189		2.05	40	0.51	504	1	1.18	17	440	70	<0.01	<5	6	57	30	0.24
MH20190		1.90	40	0.46	455	1	1.16	15	430	70	<0.01	<5	6	55	20	0.22
MH20191		1.95	40	0.47	471	1	1.10	14	430	76	0.01	<5	6	50	20	0.22
MH20192		2.15	40	0.52	504	1	1.04	18	420	82	0.01	<5	6	45	20	0.23
MH20193		2.69	40	0.67	627	1	0.85	21	530	120	0.03	<5	8	40	20	0.25
MH20194		3.55	40	1.45	2830	4	0.35	33	430	134	0.25	<5	12	22	20	0.31
MH20195		2.84	40	1.21	2530	6	0.23	24	400	108	0.33	<5	11	14	20	0.27
MH20196		1.36	10	1.23	2970	3	0.05	25	160	43	0.91	<5	5	3	<20	0.10
MH20197		2.28	30	0.85	1140	2	0.67	22	340	154	0.22	<5	8	37	20	0.22
MH20198		1.93	30	0.55	492	2	0.80	17	340	901	0.55	<5	6	40	20	0.20
MH20199		1.45	20	0.47	495	2	0.68	18	270	1765	1.75	<5	5	35	<20	0.16
MH20200		4.05	<10	0.82	377	9	1.56	35	640	77	0.09	<5	9	79	<20	0.33
MH20201		1.00	20	0.32	551	1	0.55	35	210	2530	6.45	<5	3	25	<20	0.11
MH20202		1.17	20	0.41	582	2	0.84	31	270	1275	4.17	<5	4	38	<20	0.15
MH20203		1.11	20	0.42	518	1	0.82	19	270	1765	3.04	<5	4	37	<20	0.14
MH20204		1.42	30	0.45	502	1	0.95	21	330	1425	1.97	<5	5	47	20	0.17
MH20205		1.35	30	0.42	516	3	0.85	22	310	1895	3.91	<5	5	43	20	0.17
MH20206		1.33	30	0.40	510	4	0.85	21	300	1565	2.60	<5	4	46	<20	0.16
MH20207		1.03	50	0.31	371	9	0.90	10	270	271	0.14	<5	3	48	20	0.12
MH20208		1.45	50	0.51	575	2	1.09	14	370	226	0.06	<5	5	58	20	0.18
MH20209		1.44	40	0.40	444	1	1.08	14	350	83	0.03	<5	4	56	20	0.17
MH20210		1.39	40	0.38	407	2	1.12	11	350	129	0.03	<5	4	60	20	0.17
MH20211		1.29	30	0.37	347	1	1.10	11	330	166	0.04	<5	4	58	20	0.17
MH20212		1.35	30	0.39	393	2	1.04	13	330	264	0.27	<5	5	54	20	0.17
MH20213		1.36	40	0.40	406	2	1.14	12	370	63	0.02	<5	5	61	20	0.18
MH20214		1.53	40	0.47	417	1	1.17	15	380	44	0.01	<5	6	59	20	0.21
MH20215		1.78	40	0.59	544	1	1.30	16	430	53	0.01	<5	7	63	20	0.23
MH20216		2.15	40	0.69	640	3	1.45	20	500	65	0.01	<5	8	64	20	0.26
MH20217		1.70	30	0.62	696	2	1.13	17	380	49	0.01	<5	6	52	20	0.22
MH20218		1.14	30	0.39	455	2	0.99	10	340	201	0.02	<5	4	43	20	0.16



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Stafford
Brisbane QLD 4053
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Sample Description	Method Analyte Units LOR	ME-ICP61 Ti ppm 10	ME-ICP61 U ppm 10	ME-ICP61 V ppm 1	ME-ICP61 W ppm 10	ME-ICP61 Zn ppm 2	Cu-OG62 Cu % 0.001	Zn-OG62 Zn % 0.001	PUL-QC Pass75um % 0.01
MH20171		10	<10	29	<10	96			
MH20175		<10	<10	422	10	4			
MH20177		10	<10	30	<10	119			
MH20182		<10	<10	36	10	364			
MH20183		<10	<10	45	<10	176			97.0
MH20184		10	<10	42	<10	146			
MH20185		10	<10	30	10	69			
MH20186		<10	<10	31	<10	88			
MH20187		10	<10	27	10	79			
MH20188		10	<10	36	10	82			
MH20189		<10	<10	34	<10	68			
MH20190		<10	<10	31	<10	65			
MH20191		<10	<10	30	10	100			
MH20192		<10	<10	34	<10	83			
MH20193		<10	<10	42	10	154			
MH20194		10	<10	65	<10	466			
MH20195		<10	<10	52	10	545			
MH20196		10	<10	29	<10	556			
MH20197		<10	<10	43	<10	461			
MH20198		<10	<10	32	10	1200			
MH20199		<10	<10	25	<10	3370	1.010		
MH20200		10	<10	72	<10	155			
MH20201		<10	<10	17	<10	6260	3.49		
MH20202		10	<10	22	<10	4800	1.625		
MH20203		10	<10	22	<10	4810	1.685		
MH20204		<10	<10	24	<10	2870	1.215		
MH20205		<10	<10	23	<10	4630	2.28		
MH20206		<10	<10	22	<10	3270	1.055		
MH20207		<10	<10	18	<10	898			
MH20208		10	<10	25	<10	142			
MH20209		<10	<10	23	<10	103			
MH20210		10	<10	23	10	130			
MH20211		<10	<10	23	<10	113			
MH20212		10	<10	24	<10	3820			
MH20213		<10	<10	24	10	269			
MH20214		<10	<10	29	10	90			
MH20215		<10	<10	35	10	100			
MH20216		10	<10	41	10	107			
MH20217		10	<10	30	10	116			
MH20218		<10	<10	20	10	149			



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Sample Description	Method Analyte Units LOR	WEI-21 Recvd Wt. kg	Au-ICP22 Au ppm	ME-ICP61 Ag ppm	ME-ICP61 Al %	ME-ICP61 As ppm	ME-ICP61 Ba ppm	ME-ICP61 Be ppm	ME-ICP61 Bi ppm	ME-ICP61 Ca %	ME-ICP61 Cd ppm	ME-ICP61 Co ppm	ME-ICP61 Cr ppm	ME-ICP61 Cu ppm	ME-ICP61 Fe %	ME-ICP61 Ga ppm
		0.02	0.001	0.5	0.01	5	10	0.5	2	0.01	0.5	1	1	1	0.01	10
MH20219		3.38	0.001	0.7	3.93	<5	280	1.1	6	0.26	<0.5	5	31	46	2.41	10
MH20220		2.38	<0.001	<0.5	3.94	<5	300	1.2	<2	0.27	<0.5	4	29	13	2.19	10
MH20221		3.28	<0.001	<0.5	4.10	<5	310	1.3	<2	0.28	<0.5	4	25	9	2.07	10
MH20222		4.19	0.011	<0.5	5.07	<5	330	1.7	19	0.33	<0.5	6	33	48	2.47	10
MH20223		1.98	<0.001	<0.5	8.40	<5	580	3.3	2	0.43	<0.5	10	57	11	3.67	20
MH20224		3.90	<0.001	<0.5	7.52	6	500	3.3	4	0.46	<0.5	12	53	6	3.44	20
MH20225		0.08	0.360	0.7	5.72	<5	10	1.4	<2	0.15	0.8	1	15	236	0.25	10
MH20030		3.21	<0.001	<0.5	6.32	<5	440	2.4	<2	0.43	<0.5	8	46	5	3.03	20
MH20226		3.67	<0.001	<0.5	4.71	<5	320	1.7	<2	0.36	<0.5	5	40	24	2.63	10
MH20227		3.94	0.001	<0.5	5.81	<5	450	2.1	<2	0.37	<0.5	7	40	12	2.78	20
MH20228		3.26	<0.001	<0.5	7.84	<5	570	3.1	3	0.45	<0.5	11	57	4	3.71	20
MH20229		3.47	0.001	<0.5	11.10	7	980	6.4	2	0.19	<0.5	16	68	23	4.25	30
MH20235		2.38	0.002	0.7	4.01	<5	560	1.1	8	0.24	<0.5	5	29	284	1.81	10



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Sample Description	Method Analyte Units LOR	ME-ICP61 K %	ME-ICP61 La ppm	ME-ICP61 Mg %	ME-ICP61 Mn ppm	ME-ICP61 Mo ppm	ME-ICP61 Na %	ME-ICP61 Ni ppm	ME-ICP61 P ppm	ME-ICP61 Pb ppm	ME-ICP61 S %	ME-ICP61 Sb ppm	ME-ICP61 Sc ppm	ME-ICP61 Sr ppm	ME-ICP61 Th ppm	ME-ICP61 Ti %
		0.01	10	0.01	5	1	0.01	1	10	2	0.01	5	1	1	20	0.01
MH20219		1.13	50	0.44	528	2	1.04	12	380	220	0.02	<5	4	42	30	0.20
MH20220		1.08	40	0.41	472	1	1.08	12	350	113	0.01	<5	4	44	20	0.17
MH20221		1.14	30	0.42	445	1	1.08	10	330	57	0.01	<5	4	49	20	0.16
MH20222		1.53	40	0.50	530	9	1.22	13	420	181	0.02	<5	5	52	20	0.19
MH20223		2.83	40	0.93	769	1	1.40	28	530	112	0.01	<5	11	64	20	0.31
MH20224		2.50	40	0.88	715	<1	1.41	27	480	44	0.01	<5	10	66	20	0.32
MH20225		4.84	<10	0.04	55	<1	1.34	12	560	33	0.08	<5	<1	25	<20	0.03
MH20030		1.95	30	0.70	611	1	1.34	22	430	31	0.01	<5	8	66	20	0.26
MH20226		1.36	30	0.55	512	2	1.15	15	350	29	0.01	<5	5	56	20	0.19
MH20227		1.86	40	0.66	550	1	1.23	17	430	55	0.01	<5	7	57	20	0.24
MH20228		2.59	40	0.95	778	1	1.46	27	510	58	<0.01	<5	11	67	20	0.33
MH20229		4.29	30	0.98	584	<1	0.69	35	620	82	<0.01	<5	14	37	20	0.32
MH20235		1.20	30	0.37	362	2	1.05	11	320	329	0.04	<5	4	46	20	0.16



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Sample Description	Method Analyte Units LOR	ME-ICP61 Ti ppm 10	ME-ICP61 U ppm 10	ME-ICP61 V ppm 1	ME-ICP61 W ppm 10	ME-ICP61 Zn ppm 2	Cu-OG62 Cu % 0.001	Zn-OG62 Zn % 0.001	PUL-QC Pass75um % 0.01
MH20219		<10	<10	22	10	223			
MH20220		<10	<10	21	<10	95			
MH20221		<10	<10	22	10	59			
MH20222		<10	<10	26	10	190			
MH20223		10	<10	56	10	121			98.0
MH20224		<10	<10	53	10	81			
MH20225		10	<10	3	<10	373			
MH20030		10	<10	41	<10	68			
MH20226		<10	<10	29	<10	141			
MH20227		<10	<10	36	<10	84			
MH20228		<10	<10	55	10	98			
MH20229		<10	<10	75	10	121			
MH20235		<10	<10	21	10	284			



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CERTIFICATE OF ANALYSIS AD17077125

CERTIFICATE COMMENTS

ACCREDITATION COMMENTS

Applies to Method:

NATA Accredited. Corporate Accreditation No: 825, Corporate Site No: 23001. The Technical Signatory is Wendy Wong, Senior QC Chemist.
Au-ICP22 ME-ICP61 ME-OG62

LABORATORY ADDRESSES

Applies to Method:

Processed at ALS Perth located at 31 Denninup Way, Malaga, Australia. NATA Accreditation does not cover the performance of ALS Perth Sample Preparation which is processed at 79 Distinction Road, Wangara, WA, Australia
Au-ICP22 Cu-OG62 ME-ICP61 ME-OG62
Zn-OG62

Applies to Method:

Processed at ALS Adelaide located at Unit 1, 1 Burma Road, Pooraka, Adelaide, SA, Australia.
BAG-01 LOG-22 PUL-23 PUL-QC
SPL-21 WEI-21