



Australian Laboratory Services Pty. Ltd.

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No: 825, Corporate Site No: 23001.

## CERTIFICATE AD18142771

This report is for 26 Rock samples submitted to our lab in Adelaide, SA, Australia on 18-JUN-2018.

The following have access to data associated with this certificate:

EARTH AI OPERATIONS

ROMAN TESLYUK

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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Plus Appendix Pages

Finalized Date: 28-JUN-2018

This copy reported on 29-JUN-2018

Account: EARTOP

## SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
PUL-QC	Pulverizing QC Test
LOG-22	Sample login - Rcd w/o BarCode
CRU-21	Crush entire sample >70% -6 mm
LEV-01	Waste Disposal Levy
PUL-32	Pulverize 1000g to 85% < 75 um

## ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
Au-ICP21	Au 30g FA ICP-AES Finish	ICP-AES
ME-MS41	Ultra Trace Aqua Regia ICP-MS	

Signature:

Cameron Brosnan, Laboratory Manager, Perth



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# CERTIFICATE OF ANALYSIS AD18142771

Sample Description	Method Analyte Units LOD	WEI-21 Recvd Wt. kg 0.02	Au-ICP21 Au ppm 0.001	ME-MS41 Ag ppm 0.01	ME-MS41 Al % 0.01	ME-MS41 As ppm 0.1	ME-MS41 Au ppm 0.02	ME-MS41 B ppm 10	ME-MS41 Ba ppm 10	ME-MS41 Be ppm 0.05	ME-MS41 Bi ppm 0.01	ME-MS41 Ca % 0.01	ME-MS41 Cd ppm 0.01	ME-MS41 Ce ppm 0.02	ME-MS41 Co ppm 0.1	ME-MS41 Cr ppm 1
EAIHAM405R		0.30	<0.001	0.02	1.75	0.3	<0.02	<10	150	0.61	0.04	0.32	0.12	107.5	5.4	12
EAIHAM425R		0.23	<0.001	0.01	1.76	0.5	<0.02	<10	170	0.81	0.06	0.40	0.03	95.8	4.3	14
EAIHAM435R		0.33	<0.001	0.01	1.55	0.6	<0.02	<10	100	0.81	0.06	0.44	0.01	96.1	3.8	13
EAIHAM449R		0.36	<0.001	0.01	1.80	0.5	<0.02	<10	260	0.77	0.02	0.31	0.07	100.5	6.3	11
EAIHAM457R		0.51	0.002	0.01	1.67	0.5	<0.02	<10	220	0.64	0.03	0.26	0.02	95.1	3.2	11
EAIHAM477R		0.43	<0.001	0.01	1.57	0.4	<0.02	<10	260	0.64	0.05	0.26	0.04	113.0	5.3	13
EAIHAM492R		1.16	<0.001	0.01	1.21	0.4	<0.02	<10	70	0.58	0.05	0.19	0.01	78.3	4.2	9
EAIHAM493R		0.50	0.002	0.02	1.05	0.7	<0.02	<10	220	0.54	0.03	0.23	0.04	91.0	4.2	11
EAIHAM494R		0.78	<0.001	0.01	1.31	0.2	<0.02	<10	70	0.70	0.05	0.15	0.02	148.5	4.8	12
EAIHAM496R		1.08	<0.001	0.01	0.94	0.5	<0.02	<10	100	0.35	0.02	0.12	0.02	123.0	4.2	10
EAIHAM523R		0.51	<0.001	0.01	1.32	0.5	<0.02	<10	170	0.93	0.07	0.17	0.02	95.2	3.2	9
EAIHAM540R		0.85	<0.001	0.01	1.47	0.2	<0.02	<10	70	0.61	0.03	0.16	0.01	111.5	3.7	10
EAIHAM569R		0.84	<0.001	0.02	1.37	0.5	<0.02	<10	60	0.52	0.04	0.11	0.02	96.1	4.0	10
EAIHAM608R		1.44	<0.001	0.03	1.46	0.3	<0.02	<10	100	0.74	0.14	0.18	0.30	145.5	4.4	11
EAIHAM610R		0.56	<0.001	0.04	1.84	0.3	<0.02	<10	210	0.72	0.10	0.18	0.02	113.0	4.7	12
EAIHAM614R		0.70	<0.001	0.08	1.51	0.2	<0.02	<10	150	0.65	0.17	0.17	0.11	65.1	4.6	10
EAIHAM620R		0.64	<0.001	0.03	1.57	0.4	<0.02	<10	90	0.66	0.06	0.17	0.01	95.2	4.4	12
EAIHAM628R		0.39	<0.001	0.08	2.09	0.4	<0.02	<10	300	0.62	0.34	0.21	0.87	110.5	5.1	12
EAIHAM628-2R		1.85	0.002	0.03	1.25	0.5	<0.02	<10	200	0.43	0.13	0.18	0.48	60.0	4.4	11
EAIHAM648R		0.69	<0.001	0.04	1.92	0.2	<0.02	<10	270	0.73	0.08	0.33	0.05	72.7	5.0	11
EAIHAM662R		2.15	<0.001	0.02	1.19	0.3	<0.02	<10	100	0.49	0.41	0.19	1.03	72.8	4.4	11
EAIHAM677R		0.83	<0.001	0.07	1.43	0.4	<0.02	<10	90	0.54	0.16	0.15	1.14	94.1	4.2	10
EAIHAM707R		1.08	<0.001	0.15	1.58	0.2	<0.02	<10	120	0.58	0.14	0.14	0.45	112.0	3.6	12
EAIHAM781R		0.55	<0.001	0.03	1.71	0.3	<0.02	<10	110	0.46	0.13	0.23	0.12	94.1	4.7	13
EAIHAM790R		0.55	<0.001	0.03	1.27	0.3	<0.02	<10	160	0.54	0.05	0.21	0.17	106.5	4.3	8
EAIHAM803R		0.71	<0.001	0.02	1.47	0.2	<0.02	<10	380	0.50	0.18	0.19	1.02	94.0	5.2	11



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**CERTIFICATE OF ANALYSIS AD18142771**

Sample Description	Method Analyte Units LOD	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
		Cs	Cu	Fe	Ga	Ge	Hf	Hg	In	K	La	Li	Mg	Mn	Mo
		ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm
		0.05	0.2	0.01	0.05	0.05	0.02	0.01	0.005	0.01	0.2	0.1	0.01	5	0.05
EAIHAM405R		7.01	3.0	3.26	8.55	0.19	0.39	<0.01	0.054	0.95	50.3	50.1	0.45	561	0.28
EAIHAM425R		3.36	8.6	2.36	7.76	0.12	0.45	<0.01	0.040	0.94	28.0	21.1	0.30	400	0.59
EAIHAM435R		5.51	9.5	2.50	8.00	0.15	0.49	<0.01	0.047	0.68	35.0	32.7	0.41	382	0.31
EAIHAM449R		4.85	12.3	2.87	8.86	0.18	0.32	<0.01	0.049	1.00	55.3	19.9	0.24	459	0.61
EAIHAM457R		3.86	18.3	2.34	7.56	0.12	0.28	0.01	0.029	0.80	25.4	15.2	0.20	284	0.36
EAIHAM477R		4.23	42.9	2.61	8.12	0.14	0.47	<0.01	0.179	0.87	25.1	24.2	0.28	434	0.59
EAIHAM492R		6.39	7.0	2.26	6.40	0.10	0.31	<0.01	0.031	0.57	24.8	24.0	0.27	323	0.28
EAIHAM493R		3.02	4.5	2.20	6.29	0.13	0.29	0.01	0.028	0.55	37.1	15.8	0.22	358	0.43
EAIHAM494R		5.51	17.1	2.61	8.74	0.17	0.41	<0.01	0.041	0.65	48.1	31.4	0.31	364	0.44
EAIHAM496R		4.60	6.1	2.38	6.95	0.19	0.24	<0.01	0.060	0.55	70.0	34.2	0.26	405	0.47
EAIHAM523R		4.24	10.3	1.94	6.42	0.13	0.26	<0.01	0.037	0.65	43.9	12.7	0.21	336	0.39
EAIHAM540R		5.58	1.9	2.21	7.43	0.13	0.30	<0.01	0.034	0.71	34.8	22.7	0.25	368	0.51
EAIHAM569R		6.48	6.0	2.56	7.52	0.15	0.37	<0.01	0.065	0.69	42.4	23.8	0.25	417	0.26
EAIHAM608R		8.49	11.0	2.36	7.45	0.16	0.37	<0.01	0.240	0.91	32.2	36.6	0.31	717	0.60
EAIHAM610R		7.97	37.3	2.45	8.45	0.15	0.43	0.01	0.065	0.93	36.2	37.5	0.29	578	0.27
EAIHAM614R		6.67	2.7	2.41	7.62	0.15	0.35	0.04	0.101	0.86	30.0	36.3	0.28	524	0.39
EAIHAM620R		7.90	3.9	2.39	8.05	0.14	0.37	<0.01	0.048	0.76	32.1	43.2	0.28	400	0.32
EAIHAM628R		6.57	15.4	2.13	8.34	0.20	0.32	0.02	0.178	0.89	51.5	35.9	0.23	558	0.18
EAIHAM628-2R		7.78	14.1	2.50	6.65	0.15	0.20	<0.01	0.043	0.64	24.6	36.5	0.27	544	0.23
EAIHAM648R		11.95	1.9	2.43	8.19	0.15	0.40	<0.01	0.077	0.75	34.0	52.5	0.37	565	0.17
EAIHAM662R		6.75	3.9	2.14	6.43	0.14	0.23	<0.01	0.039	0.62	22.5	31.1	0.30	457	0.18
EAIHAM677R		7.30	2.4	2.42	7.32	0.18	0.33	<0.01	0.159	0.86	55.0	29.1	0.28	438	0.23
EAIHAM707R		6.73	2.3	2.26	7.74	0.17	0.39	<0.01	0.432	0.89	29.5	32.4	0.32	627	0.12
EAIHAM781R		9.06	0.9	2.33	8.12	0.19	0.34	<0.01	0.067	1.00	44.2	42.4	0.32	446	0.58
EAIHAM790R		10.20	2.4	2.05	6.44	0.12	0.28	0.01	0.049	0.74	19.6	35.4	0.28	483	0.37
EAIHAM803R		7.16	9.3	2.21	7.16	0.13	0.25	<0.01	0.037	0.80	39.4	37.0	0.28	567	0.17



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## CERTIFICATE OF ANALYSIS AD18142771

Sample Description	Method Analyte Units LOD	ME-MS41 Nb ppm 0.05	ME-MS41 Ni ppm 0.2	ME-MS41 P ppm 10	ME-MS41 Pb ppm 0.2	ME-MS41 Rb ppm 0.1	ME-MS41 Re ppm 0.001	ME-MS41 S % 0.01	ME-MS41 Sb ppm 0.05	ME-MS41 Sc ppm 0.1	ME-MS41 Se ppm 0.2	ME-MS41 Sn ppm 0.2	ME-MS41 Sr ppm 0.2	ME-MS41 Ta ppm 0.01	ME-MS41 Te ppm 0.01	ME-MS41 Th ppm 0.2
EAIHAM405R		1.10	6.1	610	11.3	150.0	0.001	<0.01	<0.05	11.7	0.2	5.9	14.5	<0.01	<0.01	17.1
EAIHAM425R		1.12	5.2	340	19.8	105.0	<0.001	<0.01	<0.05	6.1	<0.2	3.6	22.9	0.03	<0.01	20.4
EAIHAM435R		0.83	5.5	250	15.2	100.5	<0.001	<0.01	<0.05	8.1	<0.2	5.0	22.0	0.02	0.01	17.6
EAIHAM449R		0.75	6.3	390	11.3	109.0	<0.001	<0.01	<0.05	8.3	<0.2	4.4	23.4	0.01	0.01	19.3
EAIHAM457R		1.06	4.3	300	13.4	90.5	<0.001	0.02	<0.05	4.7	<0.2	2.3	24.0	0.01	0.04	15.0
EAIHAM477R		0.99	5.9	420	16.3	103.5	<0.001	<0.01	<0.05	9.5	<0.2	13.3	23.3	0.01	0.03	22.3
EAIHAM492R		0.93	5.8	520	9.9	100.5	<0.001	0.01	<0.05	4.2	<0.2	2.8	8.4	<0.01	<0.01	21.6
EAIHAM493R		0.99	5.1	430	10.4	70.3	<0.001	0.02	<0.05	4.8	<0.2	2.4	18.1	<0.01	0.10	19.0
EAIHAM494R		1.27	5.8	380	9.9	117.0	<0.001	<0.01	<0.05	6.4	<0.2	5.0	8.1	<0.01	0.01	23.0
EAIHAM496R		0.88	5.1	320	6.0	95.5	<0.001	<0.01	<0.05	8.8	0.2	4.6	7.5	<0.01	0.02	20.3
EAIHAM523R		0.71	4.4	190	16.1	100.5	<0.001	<0.01	<0.05	5.0	<0.2	2.8	15.4	<0.01	0.02	19.0
EAIHAM540R		1.01	4.8	350	13.5	122.0	<0.001	<0.01	<0.05	5.2	<0.2	2.9	8.4	<0.01	<0.01	22.0
EAIHAM569R		1.10	5.0	650	8.9	111.0	0.001	<0.01	<0.05	9.2	<0.2	8.0	4.6	0.01	0.01	23.0
EAIHAM608R		0.74	5.2	300	21.9	134.0	<0.001	<0.01	<0.05	7.0	<0.2	48.2	6.8	0.01	0.01	18.2
EAIHAM610R		0.79	5.2	370	18.4	146.5	<0.001	<0.01	<0.05	8.2	<0.2	23.8	9.8	0.01	0.01	24.3
EAIHAM614R		1.07	5.3	330	14.8	120.0	<0.001	<0.01	<0.05	8.1	<0.2	22.6	11.4	0.01	<0.01	20.1
EAIHAM620R		0.98	5.5	600	10.4	122.5	<0.001	0.01	<0.05	8.1	0.3	9.9	8.2	0.01	0.01	21.4
EAIHAM628R		0.73	4.2	330	20.5	116.5	<0.001	0.01	<0.05	8.2	0.2	6.0	25.8	0.01	0.01	23.0
EAIHAM628-2R		0.87	5.3	350	10.3	108.0	<0.001	0.02	<0.05	6.9	<0.2	5.2	12.9	<0.01	0.07	19.6
EAIHAM648R		1.07	5.8	460	8.5	137.5	<0.001	<0.01	<0.05	7.8	<0.2	12.4	10.9	0.01	<0.01	23.0
EAIHAM662R		0.88	5.4	360	9.0	98.1	<0.001	<0.01	<0.05	7.1	<0.2	3.9	7.5	0.01	0.01	17.5
EAIHAM677R		0.65	5.4	290	16.1	127.5	<0.001	<0.01	<0.05	7.6	<0.2	12.4	8.8	<0.01	0.01	19.9
EAIHAM707R		0.67	5.5	290	13.9	124.0	<0.001	<0.01	<0.05	9.3	<0.2	44.0	11.5	0.01	0.01	20.5
EAIHAM781R		0.81	5.8	310	15.1	142.0	<0.001	<0.01	<0.05	8.7	<0.2	13.1	10.9	0.01	<0.01	18.6
EAIHAM790R		0.69	5.3	270	10.9	122.5	<0.001	0.01	<0.05	6.3	<0.2	4.6	16.8	<0.01	<0.01	17.4
EAIHAM803R		0.70	5.4	310	10.8	116.0	<0.001	0.01	<0.05	7.1	<0.2	4.0	13.0	0.01	<0.01	19.3



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Sample Description	Method Analyte Units LOD	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	PUL-QC
		Ti	Ti	U	V	W	Y	Zn	Zr
		%	ppm	ppm	ppm	ppm	ppm	ppm	Pass75um %
		0.005	0.02	0.05	1	0.05	0.05	2	0.5
EAIHAM405R		0.188	0.85	1.11	25	0.27	32.8	87	9.3
EAIHAM425R		0.117	0.57	1.44	16	0.19	22.0	74	14.0
EAIHAM435R		0.122	0.53	1.74	21	0.22	21.6	60	13.7
EAIHAM449R		0.120	0.56	1.97	22	0.25	28.7	48	10.2
EAIHAM457R		0.094	0.52	1.47	24	0.09	15.85	44	8.1
EAIHAM477R		0.130	0.53	3.21	21	0.09	21.1	97	13.5
EAIHAM492R		0.094	0.58	1.72	18	0.10	19.80	52	8.8
EAIHAM493R		0.093	0.37	2.64	19	0.09	20.4	53	8.5
EAIHAM494R		0.131	0.68	3.53	22	0.13	22.0	65	10.4
EAIHAM496R		0.110	0.52	1.87	19	0.07	26.3	51	5.9
EAIHAM523R		0.091	0.64	4.20	16	0.05	24.8	62	6.9
EAIHAM540R		0.129	0.72	1.91	19	0.06	19.50	62	7.2
EAIHAM569R		0.142	0.66	3.13	19	0.13	13.45	75	8.8
EAIHAM608R		0.155	0.75	3.18	20	0.57	26.5	179	8.3
EAIHAM610R		0.165	0.84	2.73	21	0.38	18.85	91	11.5
EAIHAM614R		0.146	0.74	2.59	20	0.20	25.2	81	9.3
EAIHAM620R		0.146	0.68	2.24	22	0.31	23.7	68	10.3
EAIHAM628R		0.145	0.62	5.49	20	0.12	28.6	1040	8.3
EAIHAM628-2R		0.129	0.59	2.57	24	0.10	22.1	766	5.0
EAIHAM648R		0.149	0.83	12.05	21	0.15	23.7	102	9.4
EAIHAM662R		0.136	0.55	4.20	22	0.09	31.5	782	5.8
EAIHAM677R		0.152	0.72	2.61	20	0.62	34.9	160	9.0
EAIHAM707R		0.164	0.73	2.14	22	0.43	15.20	641	11.0
EAIHAM781R		0.168	0.80	2.62	24	0.43	36.5	87	8.6
EAIHAM790R		0.112	0.70	3.82	17	0.26	13.30	58	9.2
EAIHAM803R		0.139	0.64	4.01	21	0.14	29.4	998	6.5



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**CERTIFICATE OF ANALYSIS AD18142771**

**CERTIFICATE COMMENTS**

**ANALYTICAL COMMENTS**

Applies to Method:

Gold determinations by this method are semi-quantitative due to the small sample weight used (0.5g).  
ME-MS41

**ACCREDITATION COMMENTS**

Applies to Method:

NATA Accreditation covers the performance of this service but does not cover the performance of ALS Perth Sample Preparation. Corporate Accreditation No: 825, Corporate Site No: 23001. The Technical Signatory is Wendy Wong, Senior QC Chemist  
Au-ICP21 ME-MS41

**LABORATORY ADDRESSES**

Applies to Method:

Processed at ALS Perth located at 31 Denninup Way, Malaga, Australia. Processed at ALS Perth Sample Preparation at 79 Distinction Road, Wangara, WA, Australia  
Au-ICP21 ME-MS41

Applies to Method:

Processed at ALS Adelaide located at Unit 1, 1 Burma Road, Pooraka, Adelaide, SA, Australia.  
CRU-21 LEV-01 LOG-22 PUL-32  
PUL-QC WEI-21