



Australian Laboratory Services Pty. Ltd.  
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Page: 1  
Finalized Date: 17-MAY-2011  
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Account: NATRESNT

## CERTIFICATE BR11065121

Project: KOOLPINYAH DOLOMITE

P.O. No.: KDG009-015

This report is for 8 Crushed Rock samples submitted to our lab in Brisbane, QLD, Australia on 27-APR-2011.

The following have access to data associated with this certificate:

SIMON FELL-SMITH

## SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LEV-01	Waste Disposal Levy
LOG-22	Sample login - Rcd w/o BarCode
PUL-32	Pulverize 1000g to 85% < 75 um

## ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	
ME-MS61r	48 element four acid ICP-MS + REEs	
C-CAL15	Inorganic carbon by difference	
C-IR17	Organic carbon by LECO	LECO
ME-CON02	Various Elements in Concs.	
ME-XRF12s	Silicates by Fusion XRF	XRF
ME-GRA05	H2O/LOI by TGA furnace	TGA
ME-MS42	Up to 34 elements by ICP-MS	ICP-MS
C-IR07	Total Carbon (Leco)	LECO
S-IR08	Total Sulphur (Leco)	LECO

To: DEPARTMENT OF NATURAL RESOURCES, ENVIRONMENT,  
THE  
ATTN: SIMON FELL-SMITH  
WATER RESOURCES BRANCH  
PO BOX 496  
PALMERSTON NT 0831

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 \*\*\*\*\*

Comments: ME-CON02 is only used to report over-range results from ME-XRF12s.

Signature:

Shaun Kenny, Brisbane Laboratory Manager



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Project: KOOLPINYAH DOLOMITE

Page: 2 - A  
Total # Pages: 2 (A - F)  
Plus Appendix Pages  
Finalized Date: 17-MAY-2011  
Account: NATRESNT

**CERTIFICATE OF ANALYSIS BR11065121**

Sample Description	Method Analyte Units LOR	WEI-21	ME-XRF12s	ME-XRF12s	ME-XRF12s	ME-XRF12s	ME-XRF12s	ME-XRF12s	ME-XRF12s	ME-XRF12s	ME-XRF12s	ME-XRF12s	ME-XRF12s	ME-XRF12s	ME-XRF12s	ME-XRF12s
		Recvd Wt.	Al2O3	BaO	CaO	Cr2O3	Fe2O3	K2O	MgO	MnO	Na2O	P2O5	SiO2	SrO	TiO2	Total
		kg	%	%	%	%	%	%	%	%	%	%	%	%	%	%
		0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
KDG 009		0.10	1.14	0.02	0.13	0.04	1.53	0.31	0.20	0.01	0.03	0.03	95.2	<0.01	0.04	99.98
KDG 010		0.09	0.42	<0.01	27.3	<0.01	0.23	0.15	18.75	<0.01	<0.01	0.04	11.10	0.01	0.02	100.00
KDG 011		0.09	0.19	<0.01	28.0	<0.01	0.21	0.06	19.20	0.01	<0.01	0.06	9.33	0.01	0.01	100.05
KDG 012		0.10	0.12	<0.01	9.12	<0.01	1.04	0.01	36.5	0.06	<0.01	0.16	5.82	0.01	<0.01	100.00
KDG 013		0.08	0.38	0.01	29.4	<0.01	0.28	0.01	20.2	0.01	<0.01	0.03	4.54	0.01	0.02	99.99
KDG 014		0.08	3.59	0.13	23.9	0.01	3.07	1.24	15.75	1.12	0.04	0.03	13.70	<0.01	0.18	100.05
KDG 015		0.12	0.28	<0.01	2.02	<0.01	0.96	0.02	37.0	0.05	<0.01	0.04	17.30	<0.01	0.01	99.97
KDG 016		0.07	19.75	0.06	0.22	0.01	5.80	>6.3	2.49	0.02	0.67	0.05	58.8	<0.01	0.74	100.05

Comments: ME-CON02 is only used to report over-range results from ME-XRF12s.

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Project: KOOLPINYAH DOLOMITE

Page: 2 - B  
Total # Pages: 2 (A - F)  
Plus Appendix Pages  
Finalized Date: 17-MAY-2011  
Account: NATRESNT

**CERTIFICATE OF ANALYSIS BR11065121**

Sample Description	Method Analyte Units LOR	ME-GRA05	ME-MS42	ME-MS42	ME-MS42	ME-MS42	ME-MS42	ME-MS42	ME-MS61r	ME-MS61r	ME-MS61r	ME-MS61r	ME-MS61r	ME-MS61r	ME-MS61r	ME-MS61r
		LOI	As	Bi	Hg	Sb	Se	Te	Ag	Al	Ba	Be	Bi	Ca	Cd	Ce
		%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	%	ppm	ppm
		0.01	0.1	0.01	0.005	0.05	0.2	0.01	0.01	0.01	10	0.05	0.01	0.01	0.02	0.01
KDG 009		0.92	1.8	0.11	0.019	0.44	0.3	0.06	0.09	0.61	110	2.35	0.17	0.10	0.04	4.64
KDG 010		41.96	<0.1	0.04	0.009	0.07	0.2	0.01	0.03	0.27	30	0.15	0.05	19.40	0.07	1.98
KDG 011		42.90	<0.1	0.05	0.008	0.09	0.3	0.01	0.03	0.13	20	0.19	0.04	19.50	0.04	0.87
KDG 012		47.06	<0.1	0.12	<0.005	<0.05	<0.2	0.01	0.02	0.07	<10	0.38	0.12	6.26	0.02	0.98
KDG 013		44.95	<0.1	0.03	0.005	0.06	0.2	0.01	0.02	0.23	10	0.14	0.04	20.2	0.06	1.78
KDG 014		37.30	<0.1	0.03	<0.005	0.06	0.2	0.01	0.02	2.04	1120	0.88	0.04	16.15	0.04	18.25
KDG 015		42.10	1.0	0.13	0.005	<0.05	<0.2	0.01	0.02	0.14	10	0.20	0.12	1.32	0.02	1.25
KDG 016		3.96	1.3	0.65	<0.005	0.08	0.2	0.01	0.07	9.97	550	2.39	1.33	0.16	0.03	79.3

Comments: ME-CON02 is only used to report over-range results from ME-XRF12s.

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Project: KOOLPINYAH DOLOMITE

Page: 2 - C  
Total # Pages: 2 (A - F)  
Plus Appendix Pages  
Finalized Date: 17-MAY-2011  
Account: NATRESNT

**CERTIFICATE OF ANALYSIS BR11065121**

Sample Description	Method Analyte Units LOR	ME-MS61r	ME-MS61r	ME-MS61r	ME-MS61r	ME-MS61r	ME-MS61r	ME-MS61r	ME-MS61r	ME-MS61r	ME-MS61r	ME-MS61r	ME-MS61r	ME-MS61r	ME-MS61r	ME-MS61r
		Co	Cr	Cs	Cu	Fe	Ga	Ge	Hf	In	K	La	Li	Mg	Mn	Mo
		ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm
		0.1	1	0.05	0.2	0.01	0.05	0.05	0.1	0.005	0.01	0.5	0.2	0.01	5	0.05
KDG 009		5.2	226	0.35	31.6	1.11	2.39	0.06	0.3	0.012	0.25	1.9	11.7	0.11	70	0.80
KDG 010		1.2	26	0.12	15.3	0.18	0.63	0.05	0.2	<0.005	0.14	1.0	3.3	11.80	62	0.38
KDG 011		0.9	13	<0.05	2.5	0.16	0.34	0.05	0.1	<0.005	0.06	<0.5	2.1	11.85	86	0.12
KDG 012		1.6	26	<0.05	6.4	0.69	0.27	<0.05	0.1	0.012	0.01	<0.5	2.2	20.1	436	0.56
KDG 013		1.2	9	0.05	2.5	0.20	0.57	0.05	0.1	0.005	0.01	1.0	2.1	12.45	108	0.19
KDG 014		8.2	29	1.71	5.0	2.07	5.30	<0.05	0.8	0.024	1.09	8.5	3.3	9.39	7810	0.83
KDG 015		1.5	36	0.06	4.0	0.52	0.61	<0.05	0.2	0.013	0.02	0.5	1.9	16.35	325	0.56
KDG 016		18.6	126	7.53	28.8	4.04	26.4	0.18	3.8	0.059	5.19	38.0	53.0	1.38	122	0.40

Comments: ME-CON02 is only used to report over-range results from ME-XRF12s.

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Project: KOOLPINYAH DOLOMITE

Page: 2 - D  
Total # Pages: 2 (A - F)  
Plus Appendix Pages  
Finalized Date: 17-MAY-2011  
Account: NATRESNT

**CERTIFICATE OF ANALYSIS BR11065121**

Sample Description	Method Analyte Units LOR	ME-MS61r	ME-MS61r	ME-MS61r	ME-MS61r	ME-MS61r	ME-MS61r	ME-MS61r	ME-MS61r	ME-MS61r	ME-MS61r	ME-MS61r	ME-MS61r	ME-MS61r	ME-MS61r	ME-MS61r
		Na	Nb	Ni	P	Pb	Rb	Re	S	Sc	Sn	Sr	Ta	Th	Ti	Tl
		%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm
		0.01	0.1	0.2	10	0.5	0.1	0.002	0.01	0.1	0.2	0.2	0.05	0.2	0.005	0.02
KDG 009		0.02	0.5	9.4	110	4.3	9.4	<0.002	0.15	3.8	0.5	4.1	0.05	1.5	0.021	0.06
KDG 010		0.02	0.4	3.3	200	2.5	4.9	<0.002	0.01	0.5	0.2	72.4	0.05	0.5	0.010	0.03
KDG 011		0.01	0.1	1.1	280	2.4	1.9	<0.002	0.02	0.3	<0.2	54.4	<0.05	0.3	<0.005	<0.02
KDG 012		0.01	0.2	3.0	710	1.9	0.4	<0.002	0.05	0.1	<0.2	68.1	0.05	0.2	<0.005	<0.02
KDG 013		0.02	0.3	2.5	130	2.2	0.6	<0.002	0.07	0.4	0.2	72.9	<0.05	0.4	0.011	0.04
KDG 014		0.04	1.9	12.8	160	1.5	46.1	<0.002	0.01	4.2	0.9	19.4	0.13	3.3	0.083	0.16
KDG 015		0.01	0.2	3.3	160	1.2	1.0	<0.002	0.09	0.2	<0.2	6.8	0.05	0.4	0.007	0.06
KDG 016		0.42	12.9	43.4	210	31.1	208	<0.002	0.35	15.9	2.7	23.2	1.24	17.6	0.430	0.92

Comments: ME-CON02 is only used to report over-range results from ME-XRF12s.

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Page: 2 - E  
 Total # Pages: 2 (A - F)  
 Plus Appendix Pages  
 Finalized Date: 17-MAY-2011  
 Account: NATRESNT

**CERTIFICATE OF ANALYSIS BR11065121**

Sample Description	Method Analyte Units LOR	ME-MS61r U ppm 0.1	ME-MS61r V ppm 1	ME-MS61r W ppm 0.1	ME-MS61r Y ppm 0.1	ME-MS61r Zn ppm 2	ME-MS61r Zr ppm 0.5	ME-MS61r Dy ppm 0.05	ME-MS61r Er ppm 0.03	ME-MS61r Eu ppm 0.03	ME-MS61r Gd ppm 0.05	ME-MS61r Ho ppm 0.01	ME-MS61r Lu ppm 0.01	ME-MS61r Nd ppm 0.1	ME-MS61r Pr ppm 0.03	ME-MS61r Sm ppm 0.03
KDG 009		0.4	118	11.9	11.5	31	12.7	1.37	0.89	0.21	1.09	0.31	0.11	2.7	0.63	0.76
KDG 010		0.7	6	0.2	0.9	13	7.6	0.13	0.08	0.04	0.16	0.03	0.01	0.8	0.23	0.17
KDG 011		1.1	5	1.0	0.5	7	2.7	0.06	0.04	0.03	0.08	0.01	<0.01	0.4	0.10	0.08
KDG 012		1.9	2	0.1	1.5	5	2.8	0.16	0.09	0.05	0.27	0.03	0.01	0.6	0.14	0.21
KDG 013		1.2	4	0.4	0.9	8	4.3	0.13	0.07	0.04	0.16	0.03	0.01	0.8	0.23	0.16
KDG 014		0.5	13	0.6	10.0	15	27.1	1.52	0.93	0.47	1.70	0.31	0.13	8.3	2.25	1.79
KDG 015		1.7	3	0.1	1.4	4	6.8	0.17	0.11	0.05	0.23	0.03	0.01	0.8	0.19	0.20
KDG 016		3.7	88	1.6	14.0	87	136.5	2.86	1.54	1.29	4.79	0.53	0.22	34.1	9.80	6.06

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Page: 2 - F  
 Total # Pages: 2 (A - F)  
 Plus Appendix Pages  
 Finalized Date: 17-MAY-2011  
 Account: NATRESNT

**CERTIFICATE OF ANALYSIS BR11065121**

Sample Description	Method Analyte Units LOR	ME-MS61r Tb ppm 0.01	ME-MS61r Tm ppm 0.01	ME-MS61r Yb ppm 0.03	C-IR07 C % 0.01	S-IR08 S % 0.01	C-CAL15 C inorga % 0.02	C-IR17 C organi % 0.02	ME-CON02 K2O % 0.01
KDG 009		0.21	0.12	0.73	0.04	0.14	0.02	0.02	
KDG 010		0.02	0.01	0.08	10.25	<0.01	10.25	<0.02	
KDG 011		0.01	0.01	0.04	10.50	0.01	10.45	0.05	
KDG 012		0.03	0.01	0.06	11.55	0.01	11.05	0.50	
KDG 013		0.02	0.01	0.06	11.00	0.03	10.95	0.02	
KDG 014		0.27	0.13	0.85	9.05	<0.01	9.04	<0.02	
KDG 015		0.03	0.01	0.09	10.30	0.03	7.55	2.76	
KDG 016		0.59	0.21	1.43	0.15	0.32	0.12	0.03	6.58

Comments: ME-CON02 is only used to report over-range results from ME-XRF12s.

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Page: Appendix 1  
Total # Appendix Pages: 1  
Finalized Date: 17-MAY-2011  
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Method	CERTIFICATE COMMENTS
ME-MS61r	REE's may not be totally soluble in this method.