



NATA Accreditation Number 15784 Site 857  
Accredited for compliance with ISO/IEC 17025

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## ENERGY METALS

Testing and Analysis of (1) Sample

For Vitrinite Reflectance, Carbonate Carbon and Organic Carbon

REPORT NO.	21015301
REPORT TO	Wayne Taylor Exploration Manager Energy Metals Limited PO Box 1323 West Perth WA 6872
SAMPLED BY	Client
SAMPLES RECEIVED	January 2015
PURCHASE ORDER	B150004
DATE REPORTED	23 January 2015

**Greg Van Gestel**  
**Laboratory Manager**  
*ALS Coal Division - Richland*

ADDRESS 478 Freeman Road Richlands QLD 4077 Australia | PHONE +61 7 3713 8400 | FAX +61 7 3217 0774  
ACIRL Pty Ltd ABN 41 000 513 888 Part of the ALS Group A Campbell Brothers Limited Company



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## ANALYSIS AND TESTING REPORT

### ENERGY METALS

Sample Details	PPD4/73.2
Carbonate Carbon %	<0.01
Carbon %	8.02
Total Organic Carbon %	8.01

All results reported to air dried basis



**ACCREDITED TESTS**

<b>HARD COAL TEST</b>	<b>ABBREVIATION</b>	<b>STANDARD /REFERENCE</b>
Abrasion Index	AI	AS1038.19
Adiabatic Self Heating		AL035 (In-House)
Ash	A	AS1038.3
Ash Fusibility		AS1038.15
Carbon		AS1038.6.4
Carbonate Carbon	C <sub>m</sub>	AS1038.23
Chlorine	Cl	AS1038.8
Crucible Swelling Number	CSN	AS1038.12.1
Dilatometer		AS 1038.12.3
Fixed Carbon	FC	AS1038.3
Float/Sink Analysis	F/S	AS4156.1
Forms of Sulfur	FOS [S <sub>o</sub> , S <sub>p</sub> , S <sub>s</sub> ]	AS1038.11
Gieseler		AS1038.12.4.1
Gray King Coke Type	GKCT	AS1038.12.2
Hardgrove Grindability Index	HGI	AS1038.20
Hydrogen	H	AS1038.6.4
Moisture (residual)	M <sub>r</sub>	AS1038.3
Moisture Holding Capacity	MHC	AS1038.17
Nitrogen	N	AS1038.6.4
Oxygen	O	AS1038.16
Phosphorus	P	BS1016.14
Relative Density	RD	AS1038.21.1.1
Relative Ignition Temperature	RIT	AL030 (In-House)
Size Analysis		AS3881
Gross Calorific Value	q	AS1038.5
Total Moisture	M	AS1038.1
Total Sulfur	S	AS1038.6.3.3
Volatile Matter	VM	AS1038.3
Ash Analysis		AL044 (In-House) *

<b>COKE TEST</b>	<b>ABBREVIATION</b>	<b>STANDARD /REFERENCE</b>
Proximate Analysis		AS 1038.4

**Note(s):**

1. Acceptance and reporting of results is in accordance with AS1038.16
2. Sampling by ACIRL is in accordance with the following AS2617 (seams, insitu); AS4264.1 Sampling Procedures ; AS4264.4 Determination of Precision and Bias
3. All analyses reported to Air-Dried Basis unless otherwise indicated.
- \*4. Ash Analysis performed at ACIRL Maitland laboratory (accreditation held). Based on AS1038.14.2, variation ICP instead of flame for species excitation.



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**NON ACCREDITED TEST**

The following tests are not covered in by the scope of accreditation relating to the laboratories technical accreditation.

<b><u>TEST</u></b>	<b><u>STANDARD/REFERENCE</u></b>
Drop Shatter	AS2519
Durham Cone	AS1038.25
Froth Flotation	AS4156.2 and Client Specific Procedures
Mineral Matter	AS1038.22
Pre- Treatment	AS2519
Roadway Dusts	QLD Department of Mines and Energy - Quality of incompatible dust, sampling and analysis of roadway dust in underground coal mine - Coal Mining Safety and Health Act 1999 Recognised Standard - No. 05, July 2003
Roga Index	ISO335
Caking Index	ISO15585
Sapozhnikov	Journal of Mine Metals and Fuels India Oct 1978
Size Adjustment	AS2519



# APPENDIX

## Vitrinite Reflectance

ADDRESS 478 Freeman Road Richlands QLD 4077 Australia | PHONE +61 7 3713 8400 | FAX +61 7 3217 0774  
ACIRL Pty Ltd ABN 41 000 513 888 Part of the ALS Group A Campbell Brothers Limited Company

Coal 

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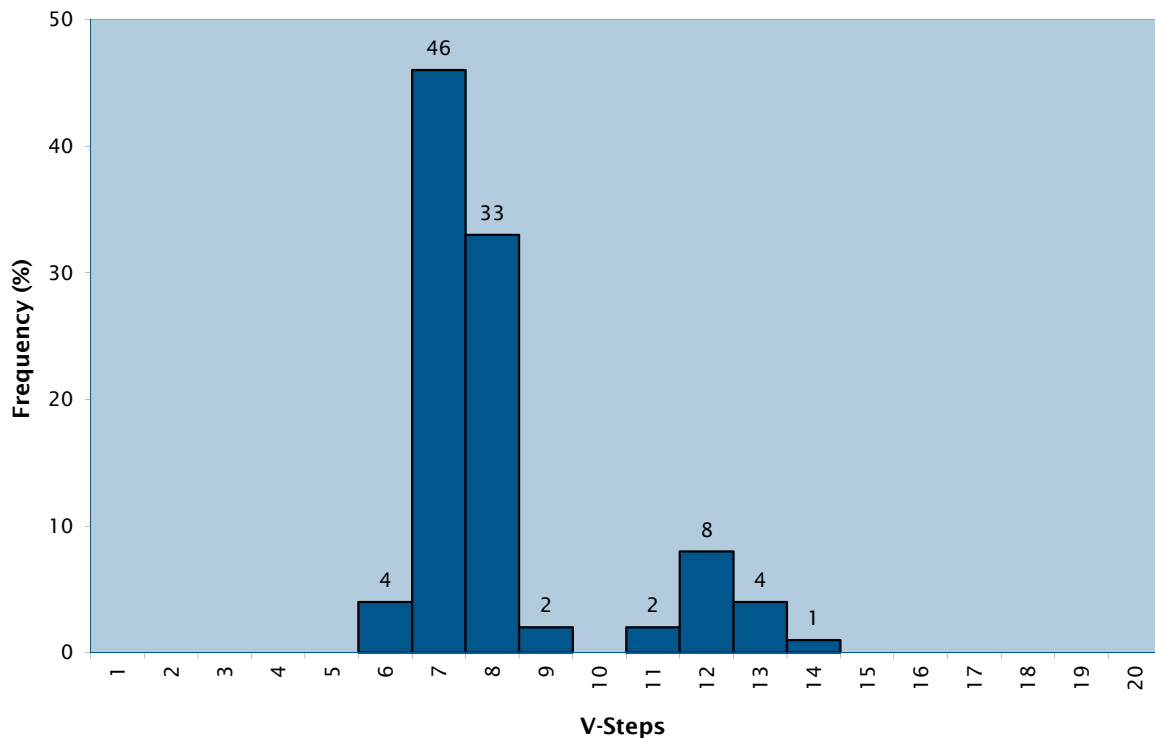
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## VITRINITE REFLECTANCE ANALYSIS

**Sample Details:**

PPD4/73.2 RH496703

	TELOVITRINITE	DETROVITRINITE	VITRINITE
<b>Mean Maximum Reflectance (%)</b>	<b>0.85</b>	<b>0.85</b>	<b>0.85</b>
Calc. Mean Random Reflectance (%)	0.80	0.80	0.80
Estimated Confidence (95%) of Mean	0.040	0.109	0.038
Standard Deviation of Sample	0.19	0.21	0.19
Maximum Value (%)	1.40	1.36	1.40
Minimum Value (%)	0.67	0.65	0.65
Number of Measurements	85	15	100



Prepared and measured in accordance with Australian Standards AS 2856.1; AS 2856.2; AS 2856.3.  
 Date: 13/01/2015 Magnification: x400  
 Analysis performed on As Received sample  
 This data has not been artificially rounded to avoid misleading presentation of results.



Accreditation #: 15784  
 Site #: 857

*Fiona W. McNeil*

Delegated Signatory  
 Fiona McNeil, Petrographer

*Fiona W. McNeil*

Fiona McNeil, Petrographer

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# COAL DIVISION

## AUSTRALIA

### **Richlands – Head Office**

478 Freeman Road  
Richalnds QLD 4077  
Phone: +61 7 3713 8400  
Fax: +61 7 3217 0774  
Email: [ALSCoalRichlands@alsglobal.com](mailto:ALSCoalRichlands@alsglobal.com)

### **Ipswich**

1 Acirl Street  
Riverview QLD 4303  
Phone: +61 7 3810 5200  
Fax: +61 7 3816 0332  
Email: [ALSCoalIpswich@alsglobal.com](mailto:ALSCoalIpswich@alsglobal.com)

### **Bowen**

3 Fitzalan Street  
Bowen QLD 4805  
Phone: +61 7 4963 9300  
Fax: +61 7 4952 3211  
Email: [ALSCoalBowen@alsglobal.com](mailto:ALSCoalBowen@alsglobal.com)

### **Lithgow**

Unit 3, 16 Donald Street  
Lithgow NSW 2790  
Phone: +61 2 6350 7400  
Fax: +61 2 6352 3583  
Email: [ALSCoalLithgow@alsglobal.com](mailto:ALSCoalLithgow@alsglobal.com)

### **Collie**

Lot 2073 Collins Street  
Collie WA 6225  
Phone: +61 8 9734 3622  
Fax: +61 8 9734 4174  
Email: [ALSCoalCollie@alsglobal.com](mailto:ALSCoalCollie@alsglobal.com)

### **Mackay**

5 John Vella Drive  
Paget QLD 4740  
Phone: +61 7 4963 9300  
Fax: +61 7 4952 3211  
Email: [ALSCoalMackay@alsglobal.com](mailto:ALSCoalMackay@alsglobal.com)

### **Emerald**

6-8 McCosker Street  
Emerald QLD 4720  
Phone: +61 7 4988 2600  
Fax: +61 7 4982 4049  
Email: [ALSCoalEmerald@alsglobal.com](mailto:ALSCoalEmerald@alsglobal.com)

### **Maitland**

Junction Street  
Telarah NSW 2320  
Phone: +61 2 4932 2200  
Fax: +61 2 4932 4069  
Email: [ALSCoalMaitland@alsglobal.com](mailto:ALSCoalMaitland@alsglobal.com)

### **Gladstone**

46 Callemondah Drive  
Gladstone QLD 4680  
Phone: +61 7 4971 5600  
Fax: +61 7 4971 5601  
Email: [ALSCoalGladstone@alsglobal.com](mailto:ALSCoalGladstone@alsglobal.com)

### **Muswellbrook**

Unit 2, Lot 6 Industrial Close  
Muswellbrook NSW 2333  
Phone: +61 2 6542 2400  
Fax: +61 2 6543 3234  
Email: [ALSCoalMuswellbrook@alsglobal.com](mailto:ALSCoalMuswellbrook@alsglobal.com)

### **Gunnedah**

5-7 Talbot Road  
Gunnedah NSW 2380  
Phone: +61 2 6742 0058  
Fax: +61 2 6742 0068  
Email: [ALS CoalGunnedah@alsglobal.com](mailto:ALS CoalGunnedah@alsglobal.com)

### **Newcastle**

2 Spit Island Close  
Mayfield NSW 2304  
Phone: +61 2 4014 2600  
Fax: +61 2 4014 2699  
Email: [ALSCoalNewcastle@alsglobal.com](mailto:ALSCoalNewcastle@alsglobal.com)

## CANADA

### **Richmond**

11191 Coppersmith Place  
Richmond BC V7A 5H1  
Phone: +1 604241 3166  
Fax: +1 604 241 3126  
Email: [ALSCoalRichmond@alsglobal.com](mailto:ALSCoalRichmond@alsglobal.com)

## SOUTH AFRICA

### **Witbank**

1 Grysbok Street  
Tasbet Place  
Witbank 1035 Mpumalanga  
Phone: +27 13 692 8000  
Fax: +27 13 692 5609

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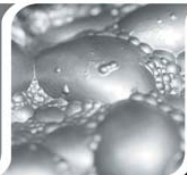
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