

85043610

**HARD ROCK COAL
MINING PTY. LTD.**

Fingal Tier Coal Project

Borehole VR15

FINAL REPORT

27/04/2018



**BUREAU
VERITAS**



Bureau Veritas Minerals Pty Ltd
Brisbane Exploration Laboratory

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221 Leitchs Road, Brendale, QLD, 4500
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FINAL REPORT

REFERENCE NUMBER: 85043610

CLIENT NAME AND ADDRESS: **HardRock Coal Mining Pty. Ltd.**
PO Box 3051, Prahran East,
Victoria, Australia 3181

PROGRAM: **Fingal Tier Coal Project**

HOLE NUMBER: **VR15**

CORE SIZE: HQ

CORE DIAMETER (mm): 63.5

DATE SAMPLES RECEIVED: 23-June-2017

REPORT DATE: 27-April-2018

REPORTED BY:

Duncan Green
Business Unit Manager



ACCREDITED FOR
**TECHNICAL
COMPETENCE**

Accredited for compliance with
ISO/IEC 17025 - Testing.

CORPORATE ACCREDITATION NUMBER: 1805

SITE ACCREDITATION NUMBER: 18415

This final report replaces all preliminary reports and shall not be reproduced except in full.

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ORIGIN : HardRock Coal Mining Pty. Ltd.

DESCRIPTION : VR15

REPORTED TO : Paul Wootton

BV Reference # : 85043610

Dated Received : 23-Jun-17

Date Reported : 27-Apr-18

APPARENT RELATIVE DENSITY

VR15

Sample Details											Analysis			
Client Sample Number	Lab Sample Number	Ply Name	Depth From	Depth To	Thickness	Core Diameter	Mass		Apparent Relative Density (ARD)	Calculation	Comments			
							Start Mass	Air-Dried Mass						
As-Received	Air-Dried	As-Tested	Mixed Bases											
grams	grams	g/cc	%											
HVC382	1077540	Seam A1	222.70	222.74	0.04	63.5	248	247	2.18	89.4	Rubble core; unable to determine length.			
HVC383	1077542	Seam A1	222.74	223.35	0.61	63.5	3,276	3,276	1.86	91.2				
HVC384	1077544	Seam A1	223.35	223.66	0.31	63.5	1,630	1,628	2.17	76.4	Shattered core; measurable length 0.20m			
HVC385	1077546	Seam A1	223.66	224.02	0.36	63.5	2,272	2,272	2.14	93.1				
HVC386	1077548	Seam A1	224.02	224.14	0.12	63.5	547	547	1.87	77.0	Shattered core; unable to determine length.			
HVC387	1077550	Seam A1	224.14	224.52	0.38	63.5	2,693	2,667	2.27	97.6				
HVC388	1077552	Seam A1	224.52	224.90	0.38	63.5	1,594	1,594	1.56	84.9				
HVC389	1077554	Seam A1	224.90	224.96	0.06	63.5	432	432	2.18	104.3	Broken core; measurable length 0.07m			
HVC390	1077556	Seam A2	229.54	229.59	0.05	63.5	218	218	2.04	67.5	Rubble core; unable to determine length.			
HVC391	1077558	Seam A2	229.59	229.77	0.18	63.5	1,199	1,199	2.21	95.2				
HVC392	1077560	Seam A2	229.77	230.03	0.26	63.5	1,604	1,590	2.32	83.2				
HVC393	1077562	Seam A2	230.03	230.19	0.16	63.5	956	956	2.25	83.9				



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							Start Mass	Air-Dried Mass							
							As-Received	Air-Dried	As-Tested	Simple Volumetric Recovery	Mixed Bases				
			metres	metres	metres	mm	grams	grams	g/cc	%					
HVC394	1077564	Seam A2	230.19	231.00	0.81	63.5	4,731	4,729	2.18	84.6	Shattered core; measurable length 0.05m				
HVC395	1077566	Seam A2	231.00	231.16	0.16	63.5	989	989	2.00	97.6					
HVC396	1077568	Seam A2	231.16	231.40	0.24	63.5	1,255	1,248	2.13	77.1					
HVC397	1077570	Seam A2	231.40	231.55	0.15	63.5	833	825	1.75	99.2					
HVC398	1077572	Seam A2	231.55	231.67	0.12	63.5	843	843	2.14	103.7					
HVC399	1077574	Seam A2	231.67	231.90	0.23	63.5	1,217	1,217	1.77	94.4	Shattered core; measurable length 0.05m				
HVC400	1077576	Seam A2	231.90	231.95	0.05	63.5	398	397	2.16	116.1					
HVC401	1077578	Seam A3	234.22	234.26	0.04	63.5	279	279	2.24	98.3	Rubble core; length unmeasurable Broken core; measurable length 0.04m				
HVC402	1077580	Seam A3	234.18	234.40	0.22	63.5	959	952	2.13	64.2					
HVC403	1077582	Seam A3	234.40	234.57	0.17	63.5	674	674	1.72	72.8	Shattered core; measurable length 0.03m Broken core; measurable length 0.13m				
HVC404	1077584	Seam A3	234.57	234.79	0.22	63.5	1,255	1,255	2.13	84.6					
HVC405	1077586	Seam A3	234.79	234.92	0.13	63.5	688	688	1.63	102.5					



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							Mass		Apparent Relative Density (ARD)	Calculation			
							Start Mass	Air-Dried Mass					
												As-Received	Air-Dried
			metres	metres	metres	mm	grams	grams	g/cc	%			
HVC406	1077588	Seam A3	234.92	235.02	0.10	63.5	555	555	2.13	82.3	Broken core; measurable length 0.21m		
HVC407	1077590	Seam A3	235.02	235.35	0.33	63.5	1,299	1,294	2.22	55.8			
HVC408	1077592	Seam A3	235.35	235.72	0.37	63.5	2,367	2,367	2.19	92.2			
HVC409	1077594	Seam A3	235.72	236.15	0.43	63.5	2,186	2,186	1.82	88.2			
HVC410	1077596	Seam A3	236.15	236.20	0.05	63.5	346	346	2.10	104.1	Broken core; measurable length 0.17m		
HVC411	1077598	Seam B0	254.68	254.73	0.05	63.5	314	314	2.17	91.4			
HVC412	1077600	Seam B0	254.73	254.97	0.24	63.5	622	615	1.27	63.7			
HVC413	1077602	Seam B0	254.97	255.08	0.11	63.5	749	749	2.06	104.4			
HVC414	1077604	Seam B0	255.08	255.36	0.28	63.5	1,212	1,212	1.53	89.3	Rubble core; length unmeasurable		
HVC415	1077606	Seam B0	255.36	255.79	0.43	63.5	2,092	2,092	1.75	87.8			
HVC416	1077608	Seam B0	255.79	255.84	0.05	63.5	329	329	2.16	96.2			
HVC417	1077610	Seam B1	255.85	255.90	0.05	63.5	231	229	2.41	60.0			



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							Start Mass	Air-Dried Mass	ARD	Simple Volumetric Recovery							
												As-Received	Air-Dried	As-Tested	Mixed Bases		
																grams	
			metres	metres	metres	mm											
HVC418	1077612	Seam B1	255.90	256.09	0.19	63.5	860	860	1.85		77.3	Broken core; measurable length 0.14m					
HVC419	1077614	Seam B1	256.09	256.58	0.49	63.5	2,713	2,713	1.74		100.5						
HVC420	1077616	Seam B1	256.58	256.79	0.21	63.5	1,435	1,435	2.15		100.4	Rubble core; length unmeasurable					
HVC421	1077618	Seam B1	256.79	257.31	0.52	63.5	2,542	2,542	1.72		89.7						
HVC422	1077620	Seam B1	257.31	257.54	0.23	63.5	1,110	1,103	1.72		88.0						
HVC423	1077622	Seam B1	257.54	257.61	0.07	63.5	314	314	2.43		58.3	Rubble core; length unmeasurable					
HVC424	1077624	Seam B2	257.67	257.71	0.04	63.5	218	218	1.91		90.1	Rubble core; length unmeasurable					
HVC425	1077626	Seam B2	257.71	258.12	0.41	63.5	1,886	1,886	1.61		90.2						
HVC426	1077628	Seam B2	258.12	258.23	0.11	63.5	700	700	2.03		99.0	Shattered core; measurable length 0.09m					
HVC427	1077630	Seam B2	258.23	259.08	0.85	63.5	3,878	3,853	1.67		85.7						
HVC428	1077632	Seam B2	259.08	259.54	0.46	63.5	2,330	2,325	1.84		86.7						
HVC429	1077634	Seam B2	259.54	260.07	0.53	63.5	2,872	2,870	2.06		83.0						



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							Start Mass	Air-Dried Mass									
													As-Received	Air-Dried			
															grams	grams	
			metres	metres	metres	mm			g/cc	%							
HVC430	1077636	Seam B2	260.07	260.29	0.22	63.5	1,132	1,130	1.68	96.5			Rubble core; length unmeasurable				
HVC431	1077638	Seam B2	260.29	260.34	0.05	63.5	330	329	2.19	94.9							
HVC432	1077640	Seam B3	260.48	260.52	0.04	63.5	256	251	2.24	88.5							
HVC433	1077642	Seam B3	260.52	260.91	0.39	63.5	2,113	2,113	1.90	90.0				Rubble core; length unmeasurable			
HVC434	1077644	Seam B3	260.91	261.05	0.14	63.5	670	670	2.11	71.6							
HVC435	1077646	Seam B3	261.05	261.29	0.24	63.5	1,484	1,478	1.99	97.7							
HVC436	1077648	Seam B3	261.29	261.63	0.34	63.5	1,894	1,891	2.21	79.5			Shattered core; measurable length approximately 0.27m				
HVC437	1077650	Seam B3	261.63	261.96	0.33	63.5	2,003	1,991	2.10	90.7							
HVC438	1077652	Seam B3	261.96	262.30	0.34	63.5	1,951	1,950	1.85	97.9							
HVC439	1077654	Seam B3	262.30	262.45	0.15	63.5	873	872	2.17	84.6							
HVC440	1077656	Seam B3	262.45	262.63	0.18	63.5	703	701	1.41	87.2							
HVC441	1077658	Seam B3	262.63	262.68	0.05	63.5	348	347	2.17	101.0							



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							Start Mass	Air-Dried Mass							
									As-Received	Air-Dried	As-Tested	Simple Volumetric Recovery			
													grams	grams	
HVC442	1077660	Seam C1	280.76	280.80	0.04	63.5	322	319	2.62	96.1	Rubble core; length unmeasurable				
HVC443	1077662	Seam C1	280.80	281.09	0.29	63.5	1,401	1,400	2.04	74.7	Shattered core; measurable length approximately 0.18m				
HVC444	1077664	Seam C1	281.09	281.31	0.22	63.5	1,242	1,241	2.24	79.5	Rubble core; length unmeasurable				
HVC445	1077666	Seam C1	281.31	281.52	0.21	63.5	1,156	1,152	1.86	93.1					
HVC446	1077668	Seam C1	281.52	281.80	0.28	63.5	1,878	1,877	2.16	98.0					
HVC447	1077670	Seam C1	281.80	282.02	0.22	63.5	1,335	1,323	2.00	94.9					
HVC448	1077672	Seam C1	282.02	282.07	0.05	63.5	334	331	2.29	91.3					
HVC449	1077674	Seam C2	282.25	282.30	0.05	63.5	239	238	1.90	79.1	Rubble core; length unmeasurable				
HVC450	1077676	Seam C2	282.30	282.56	0.26	63.5	1,573	1,572	1.94	98.4	Shattered core; measurable length 0.24m				
HVC451	1077678	Seam C2	282.56	282.67	0.11	63.5	593	589	2.01	84.1	Rubble core; length unmeasurable				
HVC452	1077680	Seam C2	282.67	282.76	0.09	63.5	520	517	1.88	96.5					
HVC453	1077682	Seam C2	282.76	282.85	0.09	63.5	500	499	2.21	79.2	Shattered core; measurable length 0.05m				



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							Start Mass	Air-Dried Mass	ARD	Simple Volumetric Recovery						
											As-Received	Air-Dried	As-Tested	Mixed Bases		
			metres	metres	metres	mm	grams	grams	g/cc	%						
HVC454	1077684	Seam C2	282.85	283.61	0.76	63.5	3,633	3,633	1.78	84.8	Broken core; measureable length 0.28m					
HVC455	1077686	Seam C2	283.61	284.02	0.41	63.5	2,107	2,106	2.01	80.7						
HVC456	1077688	Seam C2	284.02	284.07	0.05	63.5	345	343	2.09	103.6						
HVC457	1077690	Seam C3	287.28	287.33	0.05	63.5	302	296	2.07	90.3	Broken core; measureable length 0.03m					
HVC458	1077692	Seam C3	287.15	287.66	0.51	63.5	1,849	1,849	1.87	61.2						
HVC459	1077694	Seam C3	287.66	288.17	0.510	63.5	3,277	3,275	2.22	91.3						
HVC460	1077696	Seam C3	288.17	288.48	0.31	63.5	1,344	1,344	1.61	85.0	Rubble core; length unmeasurable					
HVC461	1077698	Seam C3	288.48	288.52	0.04	63.5	189	186	1.68	99.9						
HVC462	1077700	Seam D1	316.40	316.46	0.06	63.5	380	373	2.07	94.8						
HVC463	1077702	Seam D1	316.46	316.57	0.11	63.5	659	658	1.90	99.4	Rubble core; length unmeasurable					
HVC464	1077704	Seam D1	316.57	316.71	0.14	63.5	875	873	2.04	100.1						
HVC465	1077706	Seam D1	316.71	316.91	0.21	63.5	896	895	1.48	93.1						



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							Start Mass	Air-Dried Mass						
							As-Received	Air-Dried	As-Tested	Mixed Bases	%			
			metres	metres	metres	mm	grams	grams	g/cc					
HVC466	1077708	Seam D1	316.91	317.01	0.10	63.5	495	492	2.08	74.7	Rubble core; length unmeasurable			
HVC467	1077710	Seam D1	317.01	317.60	0.59	63.5	2,477	2,445	1.49	87.8				
HVC468	1077712	Seam D1	317.60	317.65	0.05	63.5	337	337	2.21	96.3				
HVC469	1077714	Seam D1	317.79	317.82	0.03	63.5	229	229	2.56	94.2	Rubble core; length unmeasurable			
HVC470	1077716	Seam D2	317.82	318.19	0.37	63.5	1,405	1,405	1.37	87.5				
HVC471	1077718	Seam D2	318.19	318.40	0.21	63.5	803	802	1.44	83.7				
HVC472	1077720	Seam D2	318.40	318.88	0.48	63.5	1,608	1,588	1.36	76.8	Shattered core; length unmeasurable			
HVC473	1077722	Seam D2	318.88	319.30	0.42	63.5	1,376	1,376	1.38	75.0	Shattered core; measurable length 0.28m			
HVC474	1077724	Seam D2	319.30	319.34	0.04	63.5	270	270	2.22	96.0	Rubble core; length unmeasurable			
HVC475	1077726	Seam D3	319.51	319.56	0.05	63.5	314	314	2.12	93.5				
HVC476	1077728	Seam D3	319.56	319.78	0.22	63.5	1,056	1,056	1.76	86.1				
HVC477	1077730	Seam D3	319.78	320.33	0.55	63.5	1,976	1,946	1.35	82.8				



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							Start Mass	Air-Dried Mass	ARD	Simple Volumetric Recovery								
											As-Received	Air-Dried	As-Tested	Mixed Bases				
										metres	metres	metres	mm	grams	grams		g/cc	%
HVC478	1077732	Seam D3	320.33	320.42	0.09	63.5	896	891	2.11	148.2	Shattered core; measurable length 0.06m							
HVC479	1077734	Seam D3	320.42	320.73	0.31	63.5	906	905	1.45	63.6	Shattered core; length unmeasurable							
HVC480	1077736	Seam D3	320.73	320.80	0.07	63.5	507	506	2.35	97.1	Rubble core; length unmeasurable							
HVC481	1077738	Seam E1	334.12	334.20	0.09	63.5	586	586	2.22	98.1	Measurable length 0.06m							
HVC482	1077740	Seam E1	334.20	334.67	0.47	63.5	1,915	1,900	1.39	91.8								
HVC483	1077742	Seam E1	334.67	334.72	0.05	63.5	413	412	2.39	108.9								
HVC484	1077744	Seam F2	372.79	372.85	0.07	63.5	444	443	2.21	97.4	Measurable length 0.08m							
HVC485	1077746	Seam F2	372.82	372.96	0.14	63.5	463	463	1.54	67.8	Broken core; measurable length 0.10m							
HVC486	1077748	Seam F2	372.96	373.01	0.05	63.5	345	345	2.29	95.1								
HVC487	1077750	Seam F3	374.14	374.18	0.04	63.5	303	300	2.16	109.6								
HVC488	1077752	Seam F3	374.18	374.21	0.03	63.5	260	260	2.14	127.9	Broken core; measurable length approximately 0.05m							
HVC489	1077754	Seam F3	374.21	374.22	0.01	63.5	36	36	1.92	59.2	Rubble core; length unmeasurable							



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ORIGIN : HardRock Coal Mining Pty. Ltd.
DESCRIPTION : VR15
REPORTED TO : Paul Wootton

BV Reference # : 85043610
Dated Received : 23-Jun-17
Date Reported : 27-Apr-18

APPARENT RELATIVE DENSITY

VR15

Sample Details												Analysis				Comments
Client Sample Number	Lab Sample Number	Ply Name	Depth From	Depth To	Thickness	Core Diameter	Mass		Apparent Relative Density (ARD)	Calculation						
							Start Mass	Air-Dried Mass								
											As-Received	Air-Dried				
													grams	grams		
			metres	metres	metres	mm			g/cc	%						
HVC490	1077756	Seam F3	374.22	374.26	0.04	63.5	181	181	1.79	79.8	Shattered core; measurable length 0.04m					
HVC491	1077758	Seam F3	374.26	374.46	0.20	63.5	698	698	1.43	77.1	Broken core; measurable length 0.17m					
HVC492	1077760	Seam F3	374.46	374.48	0.02	63.5	46	46	2.26	32.1	Rubble core; length unmeasurable					
HVC493	1077762	Seam F3	374.48	374.54	0.06	63.5	246	246	1.27	101.9						
HVC494	1077764	Seam F3	374.54	374.60	0.06	63.5	293	293	1.74	88.6						
HVC495	1077766	Seam F3	374.60	374.81	0.21	63.5	777	776	1.52	78.6	Broken core; measurable length 0.20m					
HVC496	1077768	Seam F3	374.81	374.83	0.02	63.5	129	129	2.22	91.7	Shattered core; measurable length 0.01m					
HVC497	1077770	Seam F3	374.83	375.15	0.33	63.5	927	916	1.33	66.9	Broken core; measurable length 0.24m					
HVC498	1077772	Seam F4	375.15	375.18	0.03	63.5	102	102	2.29	46.9	Rubble core; length unmeasurable					
HVC499	1077774	Seam F4	375.18	375.28	0.10	63.5	445	445	1.43	98.3						
HVC500	1077776	Seam F4	375.28	375.30	0.02	63.5	95	95	1.86	80.6						
HVC501	1077778	Seam F4	375.30	375.40	0.10	63.5	386	385	1.33	91.4						



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APPARENT RELATIVE DENSITY

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Sample Details													Analysis				Comments
Client Sample Number	Lab Sample Number	Ply Name	Depth From	Depth To	Thickness	Core Diameter	Mass		Apparent Relative Density (ARD)	Calculation							
							Start Mass	Air-Dried Mass									
									As-Received	Air-Dried	As-Tested	Mixed Bases					
													grams	grams	g/cc	%	
HVC502	1077780	Seam F4	375.40	375.45	0.05	63.5	393	387	1.99	122.8	Rubble core; length unmeasurable						
HVC503	1077782	Seam F4	375.45	375.50	0.05	63.5	351	351	2.35	94.3							
HVC504	1077784	Seam F5	376.84	376.88	0.04	63.5	284	284	2.15	104.3							
HVC505	1077786	Seam F5	376.88	376.95	0.07	63.5	315	315	1.68	84.6							
HVC506	1077788	Seam F5	376.95	377.09	0.14	63.5	933	933	2.45	85.9							
HVC507	1077790	Seam F5	377.09	377.26	0.17	63.5	645	637	1.41	83.9							
HVC508	1077792	Seam F5	377.26	377.32	0.06	63.5	404	404	2.20	96.6	Rubble core; length unmeasurable						
HVC509	1077794	Seam F6	382.29	382.34	0.05	63.5	438	437	2.52	109.5							
HVC510	1077796	Seam F6	382.34	382.40	0.06	63.5	266	265	1.73	80.6							
HVC511	1077798	Seam F6	382.40	382.45	0.05	63.5	422	422	2.56	104.1							
HVC512	1077800	Seam G1	397.82	397.85	0.04	63.5	285	283	2.67	95.6	Shattered core; length unmeasurable						
HVC513	1077802	Seam G1	397.85	398.01	0.16	63.5	904	904	2.05	87.0							



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APPARENT RELATIVE DENSITY

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							Start Mass	Air-Dried Mass								
											As-Received	Air-Dried				
									grams	grams						
			metres	metres	metres	mm		g/cc		%						
HVC514	1077804	Seam G1	398.01	398.17	0.16	63.5	1,109	1,109	1.76	124.4	Shattered core; measurable length 0.05m					
HVC515	1077806	Seam G1	398.17	398.34	0.17	63.5	457	457	1.69	50.2	Shattered core; measurable length 0.08m					
HVC516	1077808	Seam G1	398.34	398.39	0.05	63.5	338	338	2.35	90.8						
HVC517	1077810	Seam G2-6	405.29	405.36	0.08	63.5	553	552	2.38	97.6						
HVC518	1077812	Seam G2-6	405.36	405.58	0.22	63.5	1,600	1,600	1.98	116.0	Measurable length 0.08m					
HVC519	1077814	Seam G2-6	405.58	405.63	0.05	63.5	296	295	2.26	91.6	Shattered core; measurable length approximately 0.18m					
HVC520	1077816	Seam G2-6	407.90	407.96	0.07	63.5	470	470	2.39	95.5	Shattered core; measurable length approximately 0.18m					
HVC521	1077818	Seam G2-6	407.96	408.04	0.08	63.5	608	608	2.41	99.6	Shattered core; measurable length approximately 0.18m					
HVC522	1077820	Seam G2-6	408.04	408.09	0.05	63.5	344	342	2.44	98.4						
HVC523	1077822	Seam G2-6	408.41	408.47	0.07	63.5	450	449	2.25	96.9	Rubble core; length unmeasurable					
HVC524	1077824	Seam G2-6	408.47	409.00	0.53	63.5	2,861	2,860	2.16	78.9	Shattered core; measurable length approximately 0.40m					
HVC525	1077826	Seam G2-6	409.00	409.28	0.28	63.5	1,688	1,688	2.20	86.5	Shattered core; measurable length approximately 0.20m					



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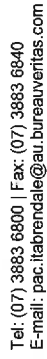
ORIGIN : HardRock Coal Mining Pty. Ltd.
DESCRIPTION : VR15
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BV Reference # : 85043610
Dated Received : 23-Jun-17
Date Reported : 27-Apr-18

APPARENT RELATIVE DENSITY

VR15

Sample Details										Analysis			Comments
Client Sample Number	Lab Sample Number	Ply Name	Depth From	Depth To	Thickness	Core Diameter	Mass		Apparent Relative Density (ARD)	Calculation			
							Start Mass	Air-Dried Mass					
									As-Received	Air-Dried	As-Tested	Mixed Bases	
HVC526	1077828	Seam G2-6	409.28	409.45	0.17	63.5	1,119	1,118	2.12	98.0	Broken core; length 0.19m		
HVC527	1077830	Seam G2-6	409.45	409.51	0.06	63.5	133	131	1.29	53.4	Rubble core; length unmeasurable		
HVC528	1077832	Seam G2-6	409.51	409.55	0.04	63.5	282	282	2.06	108.1			
HVC529	1077834	Seam G2-6	409.55	409.98	0.43	63.5	1,613	1,612	1.42	83.4			
HVC530	1077836	Seam G2-6	409.98	410.47	0.49	63.5	1,829	1,829	1.31	90.0			
HVC531	1077838	Seam G2-6	410.47	410.52	0.05	63.5	386	385	2.33	104.4			
HVC532	1077840	Seam H1	419.82	419.87	0.05	63.5	364	363	2.31	99.2			
HVC533	1077842	Seam H1	419.87	420.16	0.29	63.5	1,244	1,241	1.59	85.0			
HVC534	1077844	Seam H1	420.16	420.39	0.23	63.5	1,453	1,453	2.32	86.0			
HVC535	1077846	Seam H1	420.39	420.44	0.05	63.5	332	332	2.32	90.4			
HVC536	1077848	Seam H2	426.47	426.52	0.05	63.5	278	278	2.14	82.0	Shattered core; measurable length 0.10m		
HVC537	1077850	Seam H2	426.52	426.72	0.20	63.5	1,026	1,022	2.11	76.5			



Paul Wootton

Date Reported: 27-Apr-18

VR15

Sample Details											Analysis			
Client Sample Number	Lab Sample Number	Ply Name	Depth From	Depth To	Thickness	Core Diameter	Mass		Apparent Relative Density (ARD)	Calculation	Comments			
							Start Mass	Air-Dried Mass						
									As-Received	Air-Dried		As-Tested	Mixed Bases	
														grams
HVC538	1077852	Seam H2	426.72	427.01	0.29	63.5	1,993	1,991	2.37	91.5	Rubble core, length Unmeasurable			
HVC539	1077854	Seam H2	427.01	427.52	0.51	63.5	2,960	2,960	1.88	97.5				
HVC540	1077856	Seam H2	427.52	427.57	0.05	63.5	368	368	2.39	97.2				
HVC541	1077858	Seam H3	436.73	436.78	0.05	63.5	282	281	2.54	66.9				
HVC542	1077860	Seam H3	436.78	437.30	0.52	63.5	2,620	2,601	1.78	88.7				
HVC543	1077862	Seam H3	437.30	437.38	0.08	63.5	548	547	2.30	93.9				
HVC544	1077864	Seam H3	437.38	437.64	0.26	63.5	1,756	1,756	2.35	90.7				
HVC545	1077866	Seam H3	437.64	437.97	0.33	63.5	1,786	1,786	2.10	81.4				
HVC546	1077868	Seam H3	437.97	438.52	0.55	63.5	2,864	2,863	2.30	71.5	Shattered core; measurable length 0.30m			
HVC547	1077870	Seam H3	438.52	439.05	0.53	63.5	3,214	3,200	2.11	90.4				
HVC548	1077872	Seam H3	439.05	439.13	0.08	63.5	584	584	2.37	97.3	Broken core; length 0.08m			



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ORIGIN : HardRock Coal Mining Pty. Ltd.

DESCRIPTION : VR15

REPORTED TO : Paul Wootton

BV Reference # : 85043610

Dated Received : 23-Jun-17

Date Reported : 27-Apr-18

RAW ANALYSIS

VR15

Sample Details					Analysis									
Client Sample Number	Lab Sample Number	Ply Name	Depth From metres	Depth To metres	Thickness metres	Core Diameter mm	Mass		Proximate Analysis				General Analysis	
							Start Mass	Air-Dried Mass	Analysis Moisture	Ash	Volatile Matter	Fixed Carbon	Total Sulphur	Calorific Value (Gross, Sulphur Corrected)
							As-Received grams	Air-Dried grams	Air-dried %	Air-dried %	Air-dried %	Air-dried %	Air-dried %	Air-dried MJ/kg
HVC382	1077541	Seam A1	222.70	222.74	0.04	63.5	248	247	3.5	88.9	7.6	0.0	0.18	<0.001
HVC383	1077543	Seam A1	222.74	223.35	0.61	63.5	3,276	3,276	4.8	63.6	12.4	19.2	0.15	8.64
HVC384	1077545	Seam A1	223.35	223.66	0.31	63.5	1,630	1,628	4.8	80.7	10.2	4.3	0.07	2.00
HVC385	1077547	Seam A1	223.66	224.02	0.36	63.5	2,272	2,272	6.9	80.2	8.8	4.1	0.08	1.94
HVC386	1077549	Seam A1	224.02	224.14	0.12	63.5	547	547	4.2	62.6	12.0	21.2	0.18	10.14
HVC387	1077551	Seam A1	224.14	224.52	0.38	63.5	2,693	2,667	6.8	87.0	6.2	0.0	0.02	<0.001
HVC388	1077553	Seam A1	224.52	224.90	0.38	63.5	1,594	1,594	6.2	38.9	20.6	34.3	0.32	17.45
HVC389	1077555	Seam A1	224.90	224.96	0.06	63.5	432	432	2.5	84.4	7.6	5.5	0.09	3.47
HVC390	1077557	Seam A2	229.54	229.59	0.05	63.5	218	218	7.1	86.4	6.5	0.0	0.02	<0.001
HVC391	1077559	Seam A2	229.59	229.77	0.18	63.5	1,199	1,199	2.5	88.6	6.8	2.1	0.01	0.82
HVC392	1077561	Seam A2	229.77	230.03	0.26	63.5	1,604	1,590	4.9	89.2	5.9	0.0	<0.01	<0.001
HVC393	1077563	Seam A2	230.03	230.19	0.16	63.5	956	956	5.1	85.2	8.3	1.4	0.02	0.53



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RAW ANALYSIS

VR15

Sample Details					Analysis									
Client Sample Number	Lab Sample Number	Ply Name	Depth From	Depth To	Thickness	Core Diameter	Mass		Proximate Analysis			General Analysis		
							Start Mass	Air-Dried Mass	Analysis Moisture	Ash	Volatile Matter	Fixed Carbon	Total Sulphur	Calorific Value (Gross, Sulphur Corrected)
							As-Received	Air-Dried	Air-dried	Air-dried	Air-dried	Air-dried	Air-dried	Air-dried
			metres	metres	metres	mm	grams	grams	%	%	%	%	%	MJ/kg
HVC394	1077565	Seam A2	230.19	231.00	0.81	63.5	4,731	4,729	5.3	83.1	8.8	2.8	0.01	1.12
HVC395	1077567	Seam A2	231.00	231.16	0.16	63.5	989	989	4.7	75.7	10.1	9.5	0.09	4.38
HVC396	1077569	Seam A2	231.16	231.40	0.24	63.5	1,255	1,248	7.4	83.8	8.8	0.0	0.05	<0.001
HVC397	1077571	Seam A2	231.40	231.55	0.15	63.5	833	825	4.3	57.4	14.2	24.1	0.23	11.81
HVC398	1077573	Seam A2	231.55	231.67	0.12	63.5	843	843	5.0	81.3	10.9	2.8	0.04	1.43
HVC399	1077575	Seam A2	231.67	231.90	0.23	63.5	1,217	1,217	4.5	59.7	13.4	22.4	0.26	11.28
HVC400	1077577	Seam A2	231.90	231.95	0.05	63.5	398	397	6.8	86.4	6.8	0.0	0.01	<0.001
HVC401	1077579	Seam A3	234.22	234.26	0.04	63.5	279	279	3.8	85.8	10.4	0.0	<0.01	<0.001
HVC402	1077581	Seam A3	234.18	234.40	0.22	63.5	959	952	6.3	83.3	10.4	0.0	0.01	<0.001
HVC403	1077583	Seam A3	234.40	234.57	0.17	63.5	674	674	5.1	49.8	17.0	28.1	0.31	13.99
HVC404	1077585	Seam A3	234.57	234.79	0.22	63.5	1,255	1,255	4.1	80.1	11.8	4.0	0.11	1.88
HVC405	1077587	Seam A3	234.79	234.92	0.13	63.5	688	688	5.7	48.5	19.2	26.6	0.35	13.79



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Dated Received : 23-Jun-17

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RAW ANALYSIS

VR15

Sample Details					Analysis									
Client Sample Number	Lab Sample Number	Ply Name	Depth From	Depth To	Thickness	Core Diameter	Mass		Proximate Analysis			General Analysis		
							Start Mass	Air-Dried Mass	Analysis Moisture	Ash	Volatile Matter	Fixed Carbon	Total Sulphur	Calorific Value (Gross, Sulphur Corrected)
							As-Received	Air-Dried	Air-dried	Air-dried	Air-dried	Air-dried	Air-dried	Air-dried
			metres	metres	metres	mm	grams	grams	%	%	%	%	%	MJ/kg
HVC406	1077589	Seam A3	234.92	235.02	0.10	63.5	555	555	7.8	83.5	8.7	0.0	0.03	<0.001
HVC407	1077591	Seam A3	235.02	235.35	0.33	63.5	1,299	1,294	3.9	83.8	8.2	4.1	0.08	2.78
HVC408	1077593	Seam A3	235.35	235.72	0.37	63.5	2,367	2,367	8.7	84.0	7.3	0.0	0.01	<0.001
HVC409	1077595	Seam A3	235.72	236.15	0.43	63.5	2,186	2,186	4.0	64.0	13.2	18.8	0.43	10.02
HVC410	1077597	Seam A3	236.15	236.20	0.05	63.5	346	346	2.3	92.4	4.6	0.7	0.02	0.17
HVC411	1077599	Seam B0	254.68	254.73	0.05	63.5	314	314	1.7	92.7	4.7	0.9	0.06	0.36
HVC412	1077601	Seam B0	254.73	254.97	0.24	63.5	622	615	7.5	13.6	31.5	47.4	0.61	26.22
HVC413	1077603	Seam B0	254.97	255.08	0.11	63.5	749	749	6.4	76.8	9.2	7.6	0.42	3.94
HVC414	1077605	Seam B0	255.08	255.36	0.28	63.5	1,212	1,212	7.8	35.9	21.6	34.7	0.34	18.68
HVC415	1077607	Seam B0	255.36	255.79	0.43	63.5	2,092	2,092	5.9	50.7	14.5	28.9	0.18	13.08
HVC416	1077609	Seam B0	255.79	255.84	0.05	63.5	329	329	6.5	78.3	11.0	4.2	0.07	2.07
HVC417	1077611	Seam B1	255.85	255.90	0.05	63.5	231	229	6.2	84.1	9.7	0.0	0.22	<0.001



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ORIGIN : HardRock Coal Mining Pty. Ltd. **BV Reference # :** 85043610
DESCRIPTION : VR15 **Dated Received :** 23-Jun-17
REPORTED TO : Paul Woolton **Date Reported :** 27-Apr-18

RAW ANALYSIS

VR15

Sample Details							Analysis								
Client Sample Number	Lab Sample Number	Ply Name	Depth From metres	Depth To metres	Thickness metres	Core Diameter mm	Mass		Proximate Analysis				General Analysis		
							Start Mass	Air-Dried Mass	Analysis Moisture %	Ash %	Volatile Matter %	Fixed Carbon %	Total Sulphur %	Calorific Value (Gross, Sulphur Corrected) MJ/kg	
							As-Received	Air-Dried							
							grams	grams							
HVC418	1077613	Seam B1	255.90	256.09	0.19	63.5	860	860	6.4	57.2	17.2	19.2	<0.01	10.30	
HVC419	1077615	Seam B1	256.09	256.58	0.49	63.5	2,713	2,713	6.6	48.3	17.5	27.6	0.18	13.81	
HVC420	1077617	Seam B1	256.58	256.79	0.21	63.5	1,435	1,435	9.2	82.6	8.2	0.0	0.21	<0.001	
HVC421	1077619	Seam B1	256.79	257.31	0.52	63.5	2,542	2,542	6.0	46.6	15.5	31.9	0.02	14.81	
HVC422	1077621	Seam B1	257.31	257.54	0.23	63.5	1,110	1,103	6.0	52.2	19.2	22.6	0.27	12.48	
HVC423	1077623	Seam B1	257.54	257.61	0.07	63.5	314	314	5.1	83.5	10.8	0.6	0.02	0.05	
HVC424	1077625	Seam B2	257.67	257.71	0.04	63.5	218	218	5.8	81.0	11.6	1.6	0.05	0.90	
HVC425	1077627	Seam B2	257.71	258.12	0.44	63.5	1,886	1,886	6.8	41.5	19.2	32.5	0.30	16.43	
HVC426	1077629	Seam B2	258.12	258.23	0.11	63.5	700	700	3.7	72.3	12.8	11.2	0.07	5.10	
HVC427	1077631	Seam B2	258.23	259.08	0.85	63.5	3,878	3,853	5.5	48.3	17.0	29.2	0.20	14.03	
HVC428	1077633	Seam B2	259.08	259.54	0.46	63.5	2,330	2,325	5.6	60.3	15.8	18.3	0.16	9.06	
HVC429	1077635	Seam B2	259.54	260.07	0.53	63.5	2,872	2,870	6.4	71.4	13.2	9.0	0.10	4.51	



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ORIGIN : HardRock Coal Mining Pty. Ltd.

DESCRIPTION : VR15

REPORTED TO : Paul Wootton

BV Reference # : 85043610

Dated Received : 23-Jun-17

Date Reported : 27-Apr-18

RAW ANALYSIS

VR15

Sample Details							Analysis								
Client Sample Number	Lab Sample Number	Ply Name	Depth From	Depth To	Thickness	Core Diameter	Mass		Proximate Analysis				General Analysis		
							Start Mass	Air-Dried Mass	Analysis Moisture	Ash	Volatile Matter	Fixed Carbon	Total Sulphur	Calorific Value (Gross Sulphur Corrected)	
							As-Received	Air-Dried	Air-dried	Air-dried	Air-dried	Air-dried	Air-dried		%
			metres	metres	metres	mm	grams	grams	%	%	%	%	%	%	MJ/kg
HVC430	1077637	Seam B2	260.07	260.29	0.22	63.5	1,132	1,130	7.6	51.4	21.5	19.5	0.38	12.14	
HVC431	1077639	Seam B2	260.29	260.34	0.05	63.5	330	329	6.1	84.3	9.6	0.0	0.20	0.02	
HVC432	1077641	Seam B3	260.48	260.52	0.05	63.5	256	251	4.9	87.2	7.9	0.0	0.02	<0.001	
HVC433	1077643	Seam B3	260.52	260.91	0.39	63.5	2,113	2,113	4.6	60.7	15.2	19.5	0.19	10.36	
HVC434	1077645	Seam B3	260.91	261.05	0.14	63.5	670	670	8.1	84.5	7.4	0.0	0.01	<0.001	
HVC435	1077647	Seam B3	261.05	261.29	0.24	63.5	1,484	1,478	4.4	67.1	12.0	16.5	0.16	8.33	
HVC436	1077649	Seam B3	261.29	261.63	0.34	63.5	1,894	1,891	8.3	84.3	7.4	0.0	<0.01	<0.001	
HVC437	1077651	Seam B3	261.63	261.96	0.33	63.5	2,003	1,991	4.2	78.4	10.6	6.8	0.06	3.32	
HVC438	1077653	Seam B3	261.96	262.30	0.34	63.5	1,951	1,950	3.9	65.2	14.7	16.2	0.19	9.03	
HVC439	1077655	Seam B3	262.30	262.45	0.15	63.5	873	872	2.9	82.2	12.8	2.1	0.05	1.02	
HVC440	1077657	Seam B3	262.45	262.63	0.18	63.5	703	701	8.5	26.0	25.5	40.0	0.49	20.87	
HVC441	1077659	Seam B3	262.63	262.68	0.05	63.5	348	347	2.8	88.8	6.5	1.9	0.04	1.22	



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ORIGIN : HardRock Coal Mining Pty. Ltd.

DESCRIPTION : VR15

REPORTED TO : Paul Woolton

BV Reference # : 85043610

Dated Received : 23-Jun-17

Date Reported : 27-Apr-18

RAW ANALYSIS

VR15

Sample Details					Analysis									
Client Sample Number	Lab Sample Number	Ply Name	Depth From	Depth To	Thickness	Core Diameter	Mass		Proximate Analysis			General Analysis		
							Start Mass	Air-Dried Mass	Analysis Moisture	Ash	Volatile Matter	Fixed Carbon	Total Sulphur	Calorific Value (Gross, Sulphur Corrected)
							As-Received	Air-Dried	Air-dried	Air-dried	Air-dried	Air-dried	Air-dried	Air-dried
			metres	metres	metres	mm	grams	grams	%	%	%	%	%	MJ/kg
HVC442	1077661	Seam C1	280.76	280.80	0.05	63.5	322	319	7.8	83.9	8.3	0.0	0.01	<0.001
HVC443	1077663	Seam C1	280.80	281.09	0.29	63.5	1,401	1,400	6.6	69.1	11.5	12.8	0.19	5.13
HVC444	1077665	Seam C1	281.09	281.31	0.22	63.5	1,242	1,241	6.9	84.8	8.3	0.0	0.02	<0.001
HVC445	1077667	Seam C1	281.31	281.52	0.21	63.5	1,156	1,152	5.8	61.7	12.3	20.2	0.16	9.48
HVC446	1077669	Seam C1	281.52	281.80	0.28	63.5	1,878	1,877	5.5	76.3	10.7	7.5	0.06	3.10
HVC447	1077671	Seam C1	281.80	282.02	0.22	63.5	1,335	1,323	7.4	67.6	11.5	13.5	0.09	5.33
HVC448	1077673	Seam C1	282.02	282.07	0.05	63.5	334	331	2.8	88.9	8.3	0.0	0.01	<0.001
HVC449	1077675	Seam C2	282.25	282.30	0.05	63.5	239	238	2.7	89.3	8.0	0.0	0.01	<0.001
HVC450	1077677	Seam C2	282.30	282.56	0.26	63.5	1,573	1,572	6.2	65.5	12.7	15.6	0.13	7.31
HVC451	1077679	Seam C2	282.56	282.67	0.11	63.5	593	589	9.8	80.7	8.9	0.6	0.02	0.46
HVC452	1077681	Seam C2	282.67	282.76	0.09	63.5	520	517	7.3	54.8	12.8	25.1	0.15	10.95
HVC453	1077683	Seam C2	282.76	282.85	0.09	63.5	500	499	1.7	88.8	9.4	0.1	0.01	<0.001



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ORIGIN : HardRock Coal Mining Pty. Ltd.
DESCRIPTION : VR15
REPORTED TO : Paul Woolton

BV Reference # : 85043610
Dated Received : 23-Jun-17
Date Reported : 27-Apr-18

RAW ANALYSIS

VR15

Sample Details							Analysis								
Client Sample Number	Lab Sample Number	Ply Name	Depth From	Depth To	Thickness	Core Diameter	Mass		Proximate Analysis			General Analysis			
							Start Mass	Air-Dried Mass	Analysis Moisture	Ash	Volatile Matter	Fixed Carbon	Total Sulphur	Calorific Value (Gross, Sulphur Corrected)	
							As-Received	Air-Dried							Air-dried
			metres	metres	metres	mm	grams	grams	%	%	%	%	%	%	
HVC454	1077685	Seam C2	282.85	283.61	0.76	63.5	3,633	3,633	7.0	54.3	15.4	23.3	0.20	11.33	
HVC455	1077687	Seam C2	283.61	284.02	0.41	63.5	2,107	2,106	7.4	70.8	12.5	9.3	0.10	4.41	
HVC456	1077689	Seam C2	284.02	284.07	0.05	63.5	345	343	5.2	76.3	10.2	8.3	0.44	3.62	
HVC457	1077691	Seam C3	287.28	287.33	0.05	63.5	302	296	4.1	77.8	12.6	5.5	0.05	2.32	
HVC458	1077693	Seam C3	287.15	287.66	0.51	63.5	1,849	1,849	6.1	59.0	14.8	20.1	0.14	8.80	
HVC459	1077695	Seam C3	287.66	288.17	0.51	63.5	3,277	3,275	5.5	78.9	11.0	4.6	0.05	2.02	
HVC460	1077697	Seam C3	288.17	288.48	0.31	63.5	1,344	1,344	6.2	44.6	20.4	28.8	0.36	15.70	
HVC461	1077699	Seam C3	288.48	288.52	0.04	63.5	189	186	3.2	83.7	7.9	5.2	0.10	2.88	
HVC462	1077701	Seam D1	316.40	316.46	0.06	63.5	380	373	3.2	87.1	5.5	4.2	0.07	2.30	
HVC463	1077703	Seam D1	316.46	316.57	0.11	63.5	659	658	3.6	63.4	11.3	21.7	0.18	10.63	
HVC464	1077705	Seam D1	316.57	316.71	0.14	63.5	875	873	11.9	79.8	8.0	0.3	0.02	0.11	
HVC465	1077707	Seam D1	316.71	316.91	0.21	63.5	896	895	6.8	28.9	23.7	40.6	0.40	21.46	



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ORIGIN : HardRock Coal Mining Pty. Ltd.

DESCRIPTION : VR15

REPORTED TO : Paul Wootton

BV Reference # : 85043610

Dated Received : 23-Jun-17

Date Reported : 27-Apr-18

RAW ANALYSIS

VR15

Sample Details										Analysis					
Client Sample Number	Lab Sample Number	Ply Name	Depth From	Depth To	Thickness	Core Diameter	Mass		Proximate Analysis				General Analysis		
							Start Mass	Air-Dried Mass	Analysis Moisture	Ash	Volatile Matter	Fixed Carbon	Total Sulphur	Calorific Value (Gross Sulphur Corrected)	
							As-Received	Air-Dried	Air-dried	Air-dried	Air-dried	Air-dried	Air-dried	Air-dried	%
HVC466	1077709	Seam D1	316.91	317.01	0.10	63.5	495	492	12.4	78.5	8.1	1.0	0.01	0.18	
HVC467	1077711	Seam D1	317.01	317.60	0.59	63.5	2,477	2,445	7.3	32.2	23.7	36.8	0.40	19.61	
HVC468	1077713	Seam D1	317.60	317.65	0.05	63.5	337	337	4.2	82.4	7.4	6.0	0.07	3.16	
HVC469	1077715	Seam D1	317.79	317.82	0.03	63.5	229	229	10.1	81.0	8.9	0.0	0.01	<0.001	
HVC470	1077717	Seam D2	317.82	318.19	0.37	63.5	1,405	1,405	6.8	23.8	25.6	43.8	0.39	22.74	
HVC471	1077719	Seam D2	318.19	318.40	0.21	63.5	803	802	7.6	31.5	25.6	35.3	0.39	19.11	
HVC472	1077721	Seam D2	318.40	318.88	0.48	63.5	1,608	1,588	7.0	18.6	28.0	46.4	0.45	24.71	
HVC473	1077723	Seam D2	318.88	319.30	0.42	63.5	1,376	1,376	7.4	23.9	29.1	39.6	0.54	22.80	
HVC474	1077725	Seam D2	319.30	319.34	0.04	63.5	270	270	4.3	83.0	7.9	4.8	0.10	2.55	
HVC475	1077727	Seam D3	319.51	319.56	0.05	63.5	314	314	4.6	87.3	6.2	1.9	0.04	0.80	
HVC476	1077729	Seam D3	319.56	319.78	0.22	63.5	1,056	1,056	4.9	50.4	18.3	26.4	0.21	12.88	
HVC477	1077731	Seam D3	319.78	320.33	0.55	63.5	1,976	1,946	5.3	22.8	30.2	41.7	0.53	23.97	



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ORIGIN : HardRock Coal Mining Pty. Ltd.

DESCRIPTION : VR15

REPORTED TO : Paul Wootton

BV Reference # : 85043610

Dated Received : 23-Jun-17

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RAW ANALYSIS

VR15

Sample Details							Analysis							
Client Sample Number	Lab Sample Number	Ply Name	Depth From	Depth To	Thickness	Core Diameter	Mass		Proximate Analysis			General Analysis		
							Start Mass	Air-Dried Mass	Analysis Moisture	Ash	Volatile Matter	Fixed Carbon	Total Sulphur	Calorific
							As-Received	Air-Dried	Air-dried	Air-dried	Air-dried	Air-dried	Air-dried	Value (Gross, Sulphur Corrected)
							grams	grams	%	%	%	%	%	MJ/kg
HVC478	1077733	Seam D3	320.33	320.42	0.09	63.5	896	891	4.8	79.8	9.7	5.7	0.11	3.33
HVC479	1077735	Seam D3	320.42	320.73	0.31	63.5	906	905	7.8	30.1	27.2	34.9	0.58	20.78
HVC480	1077737	Seam D3	320.73	320.80	0.07	63.5	507	506	4.2	83.4	8.4	4.0	0.08	2.47
HVC481	1077739	Seam E1	334.12	334.20	0.05	63.5	586	586	0.7	96.8	2.5	0.0	<0.01	<0.001
HVC482	1077741	Seam E1	334.20	334.67	0.47	63.5	1,915	1,900	6.3	25.4	25.9	42.4	0.38	23.02
HVC483	1077743	Seam E1	334.67	334.72	0.05	63.5	413	412	4.5	87.4	5.6	2.5	0.01	1.06
HVC484	1077745	Seam F2	372.79	372.85	0.07	63.5	444	443	0.9	96.7	2.4	0.0	0.02	<0.001
HVC485	1077747	Seam F2	372.82	372.96	0.14	63.5	463	463	8.2	45.3	21.4	25.1	0.36	15.38
HVC486	1077749	Seam F2	372.96	373.01	0.05	63.5	345	345	2.8	90.8	5.2	1.2	0.04	0.80
HVC487	1077751	Seam F3	374.14	374.18	0.04	63.5	303	300	2.7	91.8	5.1	0.4	0.02	0.42
HVC488	1077753	Seam F3	374.18	374.21	0.03	63.5	260	260	4.3	80.0	9.3	6.4	0.11	3.78
HVC489	1077755	Seam F3	374.21	374.22	0.01	63.5	36	36	7.2	80.9	8.2	3.7	0.07	1.84



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RAW ANALYSIS

VR15

Sample Details							Analysis							
Client Sample Number	Lab Sample Number	Ply Name	Depth From	Depth To	Thickness	Core Diameter	Mass		Proximate Analysis				General Analysis	
							Start Mass	Air-Dried Mass	Analysis Moisture	Ash	Volatile Matter	Fixed Carbon	Total Sulphur	Calorific Value (Gross Sulphur Corrected)
							As-Received	Air-Dried	Air-dried	Air-dried	Air-dried	Air-dried	Air-dried	Air-dried
							grams	grams	%	%	%	%	%	%
HVC490	1077757	Seam F3	374.22	374.26	0.04	63.5	181	181	8.7	64.7	13.1	13.5	0.14	6.70
HVC491	1077759	Seam F3	374.26	374.46	0.20	63.5	698	698	5.7	23.1	24.1	47.1	0.36	23.68
HVC492	1077761	Seam F3	374.46	374.48	0.02	63.5	46	46	3.0	73.8	13.5	9.7	0.11	4.87
HVC493	1077763	Seam F3	374.48	374.54	0.06	63.5	246	246	6.5	14.4	29.9	49.2	0.53	26.50
HVC494	1077765	Seam F3	374.54	374.60	0.06	63.5	293	293	4.7	55.6	18.8	20.9	0.23	11.42
HVC495	1077767	Seam F3	374.60	374.81	0.21	63.5	777	776	5.3	39.7	24.6	30.4	0.34	17.98
HVC496	1077769	Seam F3	374.81	374.83	0.02	63.5	129	129	4.8	67.3	14.1	13.8	0.20	8.31
HVC497	1077771	Seam F3	374.83	375.15	0.33	63.5	927	916	5.1	17.4	28.5	49.0	0.47	25.80
HVC498	1077773	Seam F4	375.15	375.18	0.03	63.5	102	102	6.4	80.0	11.9	1.7	0.04	0.92
HVC499	1077775	Seam F4	375.18	375.28	0.10	63.5	445	445	6.1	22.2	28.2	43.5	0.44	23.62
HVC500	1077777	Seam F4	375.28	375.30	0.02	63.5	95	95	3.5	80.6	13.2	2.7	0.04	1.24
HVC501	1077779	Seam F4	375.30	375.40	0.10	63.5	386	385	5.5	18.8	31.5	44.2	0.54	25.28



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VR15

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Client Sample Number	Lab Sample Number	Ply Name	Depth From	Depth To	Thickness	Core Diameter	Mass		Proximate Analysis				General Analysis		
							Start Mass	Air-Dried Mass	Analysis Moisture	Ash	Volatile Matter	Fixed Carbon	Total Sulphur	Calorific Value (Gross Sulphur Corrected)	
							As-Received	Air-Dried	Air-dried	Air-dried	Air-dried	Air-dried	Air-dried	Air-dried	
							grams	grams	%	%	%	%	%	MJ/kg	
HVC502	1077781	Seam F4	375.40	375.45	0.05	63.5	393	387	4.2	76.6	9.9	9.3	0.13	4.89	
HVC503	1077783	Seam F4	375.45	375.50	0.05	63.5	351	351	3.4	90.5	5.5	0.6	0.02	0.24	
HVC504	1077785	Seam F5	376.84	376.88	0.05	63.5	284	284	3.6	83.1	8.5	4.8	0.09	2.70	
HVC505	1077787	Seam F5	376.88	376.95	0.07	63.5	315	315	5.0	61.0	16.9	17.1	0.29	10.54	
HVC506	1077789	Seam F5	376.95	377.09	0.14	63.5	933	933	3.7	89.6	6.3	0.4	0.02	0.32	
HVC507	1077791	Seam F5	377.09	377.26	0.17	63.5	645	637	4.5	28.9	28.1	38.5	0.49	21.65	
HVC508	1077793	Seam F5	377.26	377.32	0.06	63.5	404	404	3.5	83.8	7.9	4.8	0.07	2.67	
HVC509	1077795	Seam F6	382.29	382.34	0.05	63.5	438	437	3.0	91.4	5.2	0.4	0.02	0.11	
HVC510	1077797	Seam F6	382.34	382.40	0.06	63.5	266	265	5.0	55.5	17.8	21.7	1.17	12.39	
HVC511	1077799	Seam F6	382.40	382.45	0.05	63.5	422	422	3.0	91.7	5.1	0.2	0.02	0.06	
HVC512	1077801	Seam G1	397.82	397.85	0.04	63.5	285	283	2.1	92.7	5.2	0.0	0.02	<0.001	
HVC513	1077803	Seam G1	397.85	398.01	0.16	63.5	904	904	6.1	69.1	11.8	13.0	0.10	5.39	



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ORIGIN : HardRock Coal Mining Pty. Ltd.

DESCRIPTION : VR15

REPORTED TO : Paul Wootton

BV Reference # : 85043610

Dated Received : 23-Jun-17

Date Reported : 27-Apr-18

RAW ANALYSIS

VR15

Sample Details							Analysis							
Client Sample Number	Lab Sample Number	Ply Name	Depth From	Depth To	Thickness	Core Diameter	Mass		Proximate Analysis				General Analysis	
							Start Mass	Air-Dried Mass	Analysis Moisture	Ash	Volatile Matter	Fixed Carbon	Total Sulphur	Calorific Value (Gross Sulphur Corrected)
							As-Received	Air-Dried	Air-dried	Air-dried	Air-dried	Air-dried	Air-dried	Air-dried
							grams	grams	%	%	%	%	%	%
HVC514	1077805	Seam G1	398.01	398.17	0.16	63.5	1,109	1,109	6.9	48.9	13.9	30.3	0.21	12.47
HVC515	1077807	Seam G1	398.17	398.34	0.17	63.5	457	457	6.6	47.8	20.1	25.5	0.47	14.42
HVC516	1077809	Seam G1	398.34	398.39	0.05	63.5	338	338	2.5	92.7	4.8	0.0	0.02	<0.001
HVC517	1077811	Seam G2-6	405.31	405.36	0.05	63.5	553	552	0.8	93.6	5.5	0.1	0.02	<0.001
HVC518	1077813	Seam G2-6	405.36	405.58	0.22	63.5	1,600	1,600	4.9	64.5	12.1	18.5	0.12	7.97
HVC519	1077815	Seam G2-6	405.58	405.63	0.05	63.5	296	295	2.9	90.9	5.4	0.8	0.02	0.42
HVC520	1077817	Seam G2-6	407.90	407.96	0.05	63.5	470	470	2.4	92.9	4.7	0.0	0.01	0.08
HVC521	1077819	Seam G2-6	407.96	408.04	0.08	63.5	608	608	2.9	88.4	6.3	2.4	0.03	1.02
HVC522	1077821	Seam G2-6	408.04	408.09	0.05	63.5	344	342	2.5	91.0	5.3	1.2	0.02	0.38
HVC523	1077823	Seam G2-6	408.41	408.47	0.07	63.5	450	449	2.8	89.4	6.1	1.7	0.02	0.93
HVC524	1077825	Seam G2-6	408.47	409.00	0.53	63.5	2,861	2,860	3.5	76.0	10.3	10.2	0.09	4.30
HVC525	1077827	Seam G2-6	409.00	409.28	0.28	63.5	1,688	1,688	3.2	77.9	9.9	9.0	0.07	3.70



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RAW ANALYSIS

VR15

Sample Details										Analysis					
Client Sample Number	Lab Sample Number	Ply Name	Depth From	Depth To	Thickness	Core Diameter	Mass		Proximate Analysis			General Analysis			
							Start Mass	Air-Dried Mass	Analysis Moisture	Ash	Volatile Matter	Fixed Carbon	Total Sulphur	Calorific Value (Gross Sulphur Corrected)	
							As-Received	Air-Dried	Air-dried	Air-dried	Air-dried	Air-dried	Air-dried	%	
			metres	metres	metres	mm	grams	grams	%	%	%	%	%	%	MJ/kg
HVC526	1077829	Seam G2-6	409.28	409.45	0.17	63.5	1,119	1,118	3.2	74.9	11.1	10.8	0.08		4.58
HVC527	1077831	Seam G2-6	409.45	409.51	0.06	63.5	133	131	4.0	17.1	24.3	54.6	0.44		26.09
HVC528	1077833	Seam G2-6	409.51	409.55	0.04	63.5	282	282	4.5	79.1	13.4	3.0	0.07		1.53
HVC529	1077835	Seam G2-6	409.55	409.98	0.43	63.5	1,613	1,612	5.1	22.4	23.7	48.8	0.38		23.92
HVC530	1077837	Seam G2-6	409.98	410.47	0.49	63.5	1,829	1,829	6.5	13.5	32.0	48.0	0.55		26.92
HVC531	1077839	Seam G2-6	410.47	410.52	0.05	63.5	386	385	2.3	90.7	5.9	1.1	0.01		0.42
HVC532	1077841	Seam H1	419.82	419.87	0.05	63.5	364	363	2.3	92.7	5.0	0.0	0.02		0.10
HVC533	1077843	Seam H1	419.87	420.16	0.29	63.5	1,244	1,241	5.8	34.0	19.5	40.7	0.34		19.65
HVC534	1077845	Seam H1	420.16	420.39	0.23	63.5	1,453	1,453	4.8	82.8	10.1	2.3	0.01		0.82
HVC535	1077847	Seam H1	420.39	420.44	0.05	63.5	332	332	4.7	85.9	9.1	0.3	0.01		0.09
HVC536	1077849	Seam H2	426.47	426.52	0.05	63.5	278	278	5.1	82.9	10.0	2.0	0.02		0.79
HVC537	1077851	Seam H2	426.52	426.72	0.20	63.5	1,026	1,022	4.6	74.4	11.4	9.6	0.07		4.08



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DESCRIPTION : VR15

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							Start Mass	Air-Dried Mass	Analysis Moisture	Ash	Volatile Matter	Fixed Carbon	Total Sulphur	Calorific Value (Gross Sulphur Corrected)	
							As-Received	Air-Dried	Air-dried	Air-dried	Air-dried	Air-dried	Air-dried	Air-dried	
							grams	grams	%	%	%	%	%	%	MJ/kg
HVC538	1077853	Seam H2	426.72	427.01	0.29	63.5	1,993	1,991	3.6	87.6	7.2	1.6	0.02	1.00	
HVC539	1077855	Seam H2	427.01	427.52	0.51	63.5	2,960	2,960	5.1	57.6	14.6	22.7	0.20	10.60	
HVC540	1077857	Seam H2	427.52	427.57	0.05	63.5	368	368	3.7	84.6	7.8	3.9	0.05	2.30	
HVC541	1077859	Seam H3	436.73	436.78	0.05	63.5	282	281	3.7	89.3	5.5	1.5	0.02	0.55	
HVC542	1077861	Seam H3	436.78	437.30	0.52	63.5	2,620	2,601	4.6	49.8	14.0	31.6	0.18	13.34	
HVC543	1077863	Seam H3	437.30	437.38	0.08	63.5	548	547	2.2	83.3	12.9	1.6	0.02	0.48	
HVC544	1077865	Seam H3	437.38	437.64	0.26	63.5	1,756	1,756	6.8	82.0	11.1	0.1	0.06	0.17	
HVC545	1077867	Seam H3	437.64	437.97	0.33	63.5	1,786	1,786	4.5	62.0	13.1	20.4	0.12	8.18	
HVC546	1077869	Seam H3	437.97	438.52	0.55	63.5	2,864	2,863	5.1	79.9	12.1	2.9	0.02	1.01	
HVC547	1077871	Seam H3	438.52	439.05	0.53	63.5	3,214	3,200	4.2	70.8	14.6	10.4	0.12	5.19	
HVC548	1077873	Seam H3	439.05	439.13	0.08	63.5	584	584	3.9	81.3	11.5	3.3	0.02	1.36	



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REPORTED TO : Paul Wootton

BV Reference # : 85043610
Dated Received : 23-Jun-17
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WASHABILITY
VR15

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Client Sample Number	Lab Sample Number	Ply Name	Depth From	Depth To	Thickness	Stage	Sink / Froth # Fraction	Float / Froth Fraction	Fractional			Cumulative		
									Mass		Analysis	Mass		Analysis
									Mass	Mass	Mass	Ash	Mass	Ash
									As-Tested	As-Tested	As-Tested	Air-dried	As-Tested	Air-dried
									grams	%	%	%	grams	%
HVC383	1148648	AU	222.74	223.35	0.61	Start mass Float sink			2,449.0	0.0	0.0	I/S	0.0	I/S
							1.40	1.50	16.0	0.7	16.0	29.8	0.7	29.8
							1.50	1.60	32.0	1.3	48.0	34.3	2.0	32.8
							1.60	1.70	55.0	2.2	103.0	41.5	4.2	37.4
							1.70	1.80	315.0	12.9	418.0	48.6	17.1	45.9
							1.80	1.90	578.0	23.6	996.0	56.4	40.7	52.0
							1.90		1,431.0	59.3	2,427.0	69.3	100.0	62.3



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									Mass		Analysis	Mass		Analysis	
									Mass	Mass	Mass	Ash	Mass	Ash	
									As-Tested	As-Tested	As-Tested	Air-dried	As-Tested	Air-dried	
									grams	%	%	%	grams	%	
HVC388	1148657	AM	224.52	224.90	0.38	Start mass			1,195.0	23.6	9.7	282.0	23.6	9.7	
						Float sink	1.40	1.40	282.0	9.4	20.8	394.0	33.0	12.9	
							1.50	1.60	161.0	13.5	29.3	555.0	46.4	17.6	
							1.60	1.70	185.0	15.5	40.3	740.0	61.9	23.3	
							1.70	1.80	154.0	12.9	49.9	894.0	74.8	27.9	
							1.80	1.90	94.0	7.9	57.4	988.0	82.7	30.7	
							1.90		200.0	17.3	70.5	1,188.0	100.0	37.6	



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									Mass		Analysis		Mass		Analysis		
									Mass	Mass	Mass	Ash	Mass	Mass	Mass	Ash	
									As-Tested	As-Tested	As-Tested	Air-dried	As-Tested	As-Tested	As-Tested	Air-dried	
									grams	%	%	%	grams	%	grams	%	
HVC397-399	1148666	AL	231.40	231.90	0.50	Start mass Float sink	1.40 1.50 1.60 1.70 1.80 1.90	1.40 1.50 1.60 1.70 1.80 1.90	2,105.0 11.0 28.0 61.0 230.0 416.0 283.0 1,063.0	0.5 1.3 2.9 10.9 19.8 13.4 51.1	14.1 25.6 33.7 41.9 49.3 58.6 78.0	11.0 39.0 100.0 330.0 746.0 1,029.0 2,092.0	0.5 1.9 4.8 15.7 35.4 48.9 100.0	14.1 22.4 29.3 38.1 44.3 48.3 63.5			



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Client Sample Number	Lab Sample Number	Ply Name	Depth From	Depth To	Thickness	Stage	Sink / Froth # Fraction	Float / Froth Fraction	Fractional				Cumulative	
									Mass		Analysis		Mass	
									Mass	Mass	Mass	Ash	Mass	Mass
									As-Tested	As-Tested	As-Tested	Air-dried	As-Tested	As-Tested
									grams	%	%	%	grams	%
HVC463	1148675	DU	316.46	316.57	0.11	Start mass Float sink	1.40 1.50 1.50 1.60 1.60 1.70 1.80 1.80 1.90	1.40 1.50 1.60 1.70 1.80 1.90	498.0 0.0 1.0 2.0 43.0 145.0 100.0 204.0	0.0 0.2 0.4 8.6 29.1 20.1 41.6	I/S I/S 36.1 46.2 52.8 58.4 78.3	0.0 0.2 0.6 9.2 38.4 58.4 100.0	I/S I/S 36.1 44.8 50.9 53.5 63.8	



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									Mass		Analysis		Mass		
									Mass	Mass	Mass	Ash	Mass	Mass	
									As-Tested	As-Tested	As-Tested	Air-dried	As-Tested	As-Tested	
									grams	grams	grams	%	grams	%	
HVC465-473	1148684	DM	316.71	319.30	2.60	Start mass Float sink	1.40 1.40 1.50 1.60 1.70 1.80 1.90	1.40 1.50 1.60 1.70 1.80 1.90	6,143.0	35.6	2,189.0	14.0	2,189.0	35.6	14.0
									2,189.0	24.9	3,719.0	19.8	60.5	16.4	
									656.0	10.7	4,375.0	31.3	71.2	18.6	
									263.0	4.3	4,638.0	40.1	75.5	19.8	
									187.0	3.0	4,825.0	48.8	78.5	21.0	
									115.0	1.9	4,940.0	56.8	80.4	21.8	
									1,152.0	19.6	6,092.0	76.8	100.0	32.6	



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									Mass		Analysis		Mass		Analysis		
									Mass	Mass	Mass	Ash	Mass	Mass	Mass	Ash	
									As-Tested	As-Tested	As-Tested	Air-dried	As-Tested	As-Tested	As-Tested	Air-dried	
									grams	%	%	%	grams	%	%	%	
HVC476-479	1148693	DL	319.56	320.73	1.17	Start mass Float sink			2,657.0	35.0	12.0	930.0	35.0	12.0			
							1.40		930.0	15.7	20.4	1,347.0	50.7	14.6			
							1.50		417.0	6.4	31.9	1,518.0	57.1	16.5			
							1.60		171.0	4.8	40.6	1,645.0	61.9	18.4			
							1.70		127.0	5.8	47.4	1,800.0	67.7	20.9			
							1.80		155.0	5.9	54.3	1,957.0	73.7	23.6			
							1.90		157.0	26.3	74.7	2,637.0	100.0	37.0			



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									Mass			Analysis		Cumulative							
									Mass	Mass	Ash	Mass	Mass	As-Tested	Air-dried	As-Tested	As-Tested				
																		grams	%	grams	%
HVC482	1148702	E	334.20	334.67	0.47	Start mass Float sink	1.40 1.40 1.50 1.60 1.60 1.70 1.80 1.80 1.90	1.40 1.50 1.60 1.70 1.80 1.90	1,479.0	56.6	15.4	15.4	837.0	56.6	15.4						
									837.0	17.5	23.4	17.3	1,096.0	74.1	17.3						
									259.0	6.2	34.9	18.7	1,188.0	80.3	18.7						
									92.0	6.2	44.7	20.5	1,279.0	86.5	20.5						
									91.0	5.3	54.9	22.5	1,358.0	91.8	22.5						
									79.0	3.0	59.9	23.7	1,403.0	94.9	23.7						
									45.0	5.1	73.1	26.2	1,466.0	100.0	26.2						
									63.0												



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									Mass		Analysis		Mass		Analysis
									Mass	Mass	Mass	Mass			
As-Tested	As-Tested	As-Tested	As-Tested	Air-dried	As-Tested	As-Tested	As-Tested	Air-dried	As-Tested	As-Tested	Air-dried				
grams	grams	%	%	%	grams	%	%	%	grams	%	%				
HVC488-502	1148711	F	374.18	375.45	1.27	Start mass Float sink	1.40 1.40 1.50 1.60 1.60 1.70 1.80 1.80 1.90	1.40 1.50 1.60 1.70 1.80 1.90	1,277.0	37.5	13.2	479.0	37.5	13.2	
									479.0	19.3	22.6	726.0	56.9	16.4	
									100.0	7.8	31.5	826.0	64.7	18.2	
									51.0	4.0	43.7	877.0	68.7	19.7	
									44.0	3.4	50.5	921.0	72.1	21.2	
									37.0	2.9	58.6	958.0	75.0	22.6	
									309.0	25.0	77.3	1,267.0	100.0	36.3	



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ORIGIN : HardRock Coal Mining Pty. Ltd.

DESCRIPTION : VR15

REPORTED TO : Paul Wootton

BV Reference # : 85043610

Dated Received : 23-Jun-17

Date Reported : 27-Apr-18

WASHABILITY

VR15

Sample Details				Analysis									
Client Sample Number	Lab Sample Number	Ply Name	Depth From metres	Depth To metres	Thickness metres	Stage	Sink / Froth # Fraction	Float / Froth Fraction	Fractional			Cumulative	
									Mass		Analysis	Mass	
									Mass	Mass	Ash	Mass	Mass
									As-Tested grams	As-Tested grams	Air-dried %	As-Tested grams	Air-dried %
HVC513-515	1148720	GU	397.85	398.34	0.49	Start mass			1,043.0	71.0	6.8	71.0	6.8
						Float sink	1.40	1.40			16.1		16.1
							1.50	1.50	30.0	30.0	2.9	101.0	9.7
							1.60	1.60	32.0	32.0	3.1	133.0	12.8
							1.70	1.70	144.0	144.0	13.8	277.0	26.6
							1.80	1.80	134.0	134.0	12.8	411.0	39.4
							1.90	1.90	105.0	105.0	10.1	516.0	49.5
							1.90	1.90	519.0	519.0	50.5	1,035.0	100.0
											74.1		56.8



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WASHABILITY
VR15

Sample Details										Analysis							
Client Sample Number	Lab Sample Number	Ply Name	Depth From	Depth To	Thickness	Stage	Sink / Froth # Fraction	Float / Froth Fraction	Fractional				Cumulative				
									Mass		Analysis		Mass		Analysis		
									Mass	Mass	Mass	Ash	Mass	Mass	Mass	Ash	
									As-Tested	As-Tested	As-Tested	Air-dried	As-Tested	As-Tested	As-Tested	Air-dried	
									grams	grams	grams	%	grams	grams	grams	%	
HVC524-526	1148729	GM	408.47	409.45	0.98	Start mass Float sink		1.40	4,010.0	0.0	10.7	2.0	0.0	10.7	10.7		
							1.40	1.50	1.0	0.0	I/S	3.0	0.1	10.7	10.7		
							1.50	1.60	1.0	0.0	I/S	4.0	0.1	10.7	10.7		
							1.60	1.70	1.0	0.0	I/S	5.0	0.1	10.7	10.7		
							1.70	1.80	3.0	0.1	40.1	8.0	0.2	17.7	17.7		
							1.80	1.90	57.0	1.4	55.6	65.0	1.6	50.9	50.9		
							1.90		3,912.0	98.4	76.6	3,977.0	100.0	76.2	76.2		



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WASHABILITY VR15

Sample Details										Analysis							
Client Sample Number	Lab Sample Number	Ply Name	Depth From	Depth To	Thickness	Stage	Sink / Froth # Fraction	Float / Froth Fraction	Fractional				Cumulative				
									Mass		Analysis		Mass		Analysis		
									Mass	Mass	Mass	Ash	Mass	Mass	Mass	Ash	
									As-Tested	As-Tested	As-Tested	Air-dried	As-Tested	As-Tested	As-Tested	Air-dried	
			metres	metres	metres				grams	%	%	grams	%	%	%		
HVC527-530	1148738	GL	409.45	410.47	1.02	Start mass Float sink		1.40	1,756.0	61.6	9.7	1,081.0	61.6	9.7	9.7		
							1.40	1.50	1,081.0	6.8	20.7	1,201.0	68.4	10.8			
							1.50	1.60	120.0	12.8	30.4	1,425.0	81.2	13.9			
							1.60	1.70	224.0	4.8	38.0	1,510.0	86.0	15.2			
							1.70	1.80	85.0	2.8	46.4	1,559.0	88.8	16.2			
							1.80	1.90	49.0	1.1	54.5	1,578.0	89.9	16.7			
							1.90		19.0	10.1	73.7	1,741.0	100.0	22.5			



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ORIGIN : HardRock Coal Mining Pty. Ltd.
DESCRIPTION : VR15
REPORTED TO : Paul Woolton

BV Reference # : 85043610
Dated Received : 23-Jun-17
Date Reported : 27-Apr-18

RAW COAL COMPOSITE VR15

Sample Details						Analysis						
Client Sample Number	Lab Sample Number	Ply Name	Depth From	Depth To	Thickness	Proximate Analysis				General Analysis		
						Analysis Moisture	Ash	Volatlie Matter	Fixed Carbon	Total Sulphur	Calorific Value (Gross, Sulphur Corrected)	Chlorine
						Air-dried	Air-dried	Air-dried	Air-dried	Air-dried	Air-dried	Air-dried
text	text	text	metres	metres	metres	%	%	%	%	%	MJ/Kg	%
HVC383	1077543	AU	222.74	223.35	0.61	4.8	63.6	12.4	19.2	0.15	8.64	<0.01
HVC388	1077553	AM	224.52	224.90	0.38	6.2	38.9	20.6	34.3	0.32	17.45	<0.01
HVC397-399	1148674	AL	231.40	231.90	0.50	4.6	64.8	12.8	17.8	0.18	8.66	<0.01
HVC463	1077703	DU	316.46	316.57	0.11	3.6	63.4	11.3	21.7	0.18	10.63	<0.01
HVC465-473	1148692	DM	316.71	319.30	2.60	7.0	32.2	24.0	36.8	0.39	19.60	<0.01
HVC476-479	1148701	DL	319.56	320.73	1.17	5.4	37.0	24.5	33.1	0.42	18.44	<0.01
HVC482	1077741	E	334.20	334.67	0.47	6.3	25.4	25.9	42.4	0.38	23.02	<0.01
HVC488-502	1148719	F	374.18	375.45	1.27	5.2	37.8	23.1	33.9	0.34	18.15	<0.01
HVC513-515	1148728	GU	397.85	398.34	0.49	6.5	56.3	15.1	22.1	0.26	10.76	<0.01
HVC524-526	1148737	GM	408.47	409.45	0.98	3.4	76.5	10.4	9.7	0.08	4.19	<0.01
HVC527-530	1148746	GL	409.45	410.47	1.02	5.3	21.2	27.4	46.1	0.44	24.24	<0.01



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ORIGIN : HardRock Coal Mining Pty. Ltd. **BV Reference # :** 85043610
DESCRIPTION : VR15 **Dated Received :** 23-Jun-17
REPORTED TO : Paul Wootton **Date Reported :** 27-Apr-18

CLEAN COAL COMPOSITE

VR15

Sample Details						Analysis					
Client Sample Number	Lab Sample Number	Ply Name	Depth From	Depth To	Thickness	Proximate Analysis			General Analysis		
						Analysis Moisture	Ash	Volatile Matter	Fixed Carbon	Total Sulphur	Calorific Value (Gross, Sulphur Corrected)
						Air-dried	Air-dried	Air-dried	Air-dried	Air-dried	Air-dried
					metres	%	%	%	%	MJ/Kg	
HVC465-473	1181580	DM	316.71	319.30	2.60	5.2	20.9	28.8	45.1	0.50	24.46
HVC476-479	1181581	DL	319.56	320.73	1.17	4.8	20.9	30.4	43.9	0.56	24.66
HVC488-502	1181582	F	374.18	375.45	1.27	4.3	21.3	28.7	45.7	0.45	24.66
HVC527-530	1181583	GL	409.45	410.47	1.02	4.3	16.2	28.8	50.7	0.47	26.40



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CLEAN COAL COMPOSITE

VR15

Sample Details			Analysis													
Client Sample Number	Lab Sample Number	Ply Name	Ash Analysis													
			SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	CaO	MgO	Na ₂ O	K ₂ O	TiO ₂	Mn ₃ O ₄	P ₂ O ₅	SO ₃	BaO	SrO	ZnO
			Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
text	text	text	%	%	%	%	%	%	%	%	%	%	%	%	%	%
HVC465-473	1181580	DM	64.3	21.9	8.7	0.78	2.03	0.25	0.77	0.94	0.04	0.03	0.26	0.04	0.04	<0.02
HVC476-479	1181581	DL	68.6	23.9	3.39	0.56	0.87	0.2	1.04	1.05	0.03	0.04	0.2	0.03	0.03	<0.02
HVC488-502	1181582	F	64.5	27.8	2.87	0.8	0.94	0.34	1.1	1.17	0.02	0.03	0.22	0.03	0.05	<0.02
HVC527-530	1181583	GL	61.5	33.3	2.21	0.49	0.49	0.24	0.52	1.46	0.02	0.03	0.16	0.05	0.03	0.02



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CLEAN COAL COMPOSITE
VR15

Sample Details			Analysis			
Client Sample Number	Lab Sample Number	Ply Name	Ash Fusion Temperatures - Reducing Atmosphere			
			Deformation	Spherical	Hemispherical	Flow
			As-Tested °C	As-Tested °C	As-Tested °C	As-Tested °C
HVC465-473	1181580	DM	1330	1380	1400	1460
HVC476-479	1181581	DL	>1560	>1560	>1560	>1560
HVC488-502	1181582	F	>1560	>1560	>1560	>1560
HVC527-530	1181583	GL	>1560	>1560	>1560	>1560



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CLEAN COAL COMPOSITE

VR15

Sample Details										Analysis									
Client Sample Number	Lab Sample Number	Ply Name	Depth From	Depth To	Thickness	Trace Elements - Major Concern						Trace Elements - Moderate Concern							
						As	B	Cd	Pb	Hg	Mo	Se	Cr	Cu	F	Ni	V	Zn	
						Dry ppm	Dry ppm	Dry ppm	Dry ppm	Dry ppm	Dry ppm	Dry ppm	Dry ppm	Dry ppm	Dry ppm	Dry ppm	Dry ppm		
HVC465-473	1181580	DM	316.71	319.30	2.60	0.3	22	0.07	13	0.07	<2	0.3	11	16	83	17	19	29	
HVC476-479	1181581	DL	319.56	320.73	1.17	0.5	21	0.11	14	0.03	2	0.5	20	22	74	11	39	23	
HVC488-502	1181582	F	374.18	375.45	1.27	0.4	19	0.07	12	0.03	<2	0.3	10	13	83	9	25	24	
HVC527-530	1181583	GL	409.45	410.47	1.02	0.4	19	0.11	12	0.03	<2	0.3	7	8	48	8	12	29	



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CLEAN COAL COMPOSITE

VR15

Sample Details			Analysis																
Client Sample Number	Lab Sample Number	Ply Name	Trace Elements - Minor Concern																
			Sb	Ba	Be	Bi	Ce	Cs	Co	Ga	Ge	In	La	Li	Mn	Nb	Sc	Ag	Sr
			Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
text	text	text	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
HVC465-473	1181580	DM	0.5	61	3	0.29	32.4	1.3	15	7.7	<20	0.04	15	13	70	7.6	4.1	0.22	65
HVC476-479	1181581	DL	1.4	59	3	0.4	41.8	1.7	9	7.2	<20	0.06	18	11	50	8.2	7.3	0.25	47
HVC488-502	1181582	F	1.2	63	3	0.32	23.7	1.4	8	7.6	<20	0.04	10	15	40	5.5	5.8	0.16	77
HVC527-530	1181583	GL	2.5	55	3	0.41	27.4	0.45	10	8.4	<20	0.05	12	11	29	5.7	4.4	0.15	35



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CLEAN COAL COMPOSITE
VR15

Sample Details			Analysis								
Client Sample Number	Lab Sample Number	Ply Name	Trace Elements - Minor Concern						Trace Elements - Radioactive		
			Ta	Te	Tl	Sn	W	Y	Zr	Th	U
			Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
			ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
HVC465-473	1181580	DM	0.48	<0.01	<0.01	<0.01	1.1	14	130	7.7	2.1
HVC476-479	1181581	DL	0.53	<0.01	<0.01	<0.01	0.76	19	170	10.5	2.5
HVC488-502	1181582	F	0.31	<0.01	<0.01	<0.01	0.62	21	130	7.9	2.2
HVC527-530	1181583	GL	0.43	<0.01	<0.01	<0.01	0.9	14	150	9.7	2.5



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DESCRIPTION : VR15
REPORTED TO : Paul Wootton

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LISTING OF BRISBANE LABORATORY'S ACCREDITED COAL METHODS

The analyses reported herein have been performed according to the appropriate Standard listed below

Standard	Test Method	Standard	Test Method
AS 1038.1 (2001)	Total Moisture	BS 1016 Part 1	Total Moisture
AS 1038.3 (2000)	Proximate Analysis	BS 1016 Part 6	Total Sulphur
AS 1038.5 (1998)	Gross Calorific Value	BS 1016 Part 8	Chlorine
AS 1038.6.3.3	Total Sulfur	BS 1016 Part 104.1	Moisture in Sample
AS 1038.6.4	Carbon, Hydrogen, Nitrogen	BS 1016 Part 104.3	Volatile Matter
AS 1038.8.1	Chlorine	BS 1016 Part 104.4	Ash
AS 1038.12.1 (2002)	Crucible Swelling Number	BS 1016 Part 105	Gross Calorific Value
AS 1038.12.2	Gray King	BS 1016 Part 107.1	Crucible Swelling Number
AS 1038.12.3 (2002)	Dilatation	BS 1016 Part 107.2	Gray King
AS 1038.12.4 .1 (1995)	Plasticity	BS 1016 Part 109	Size Analysis
AS 1038.13 (1990)	Methods for the Analysis and Testing of Coal and Coke – Tests Specific	BS 1017	Sampling
AS 1038.15 (1995)	Ash Fusibility	ASTM D409	Hardgrove Grindability Index
AS 1038.17	Moisture Holding Capacity - Higher Rank	ASTM D440	Drop Shatter
AS 1038.20	Hardgrove Grindability index	ASTM D441	Drum Tumble
AS 1038.21.1.1	Relative Density	ASTM D720	Crucible Swelling Number
AS 1038.21.1.2	Relative Density	ASTM D1412	Equilibrium Moisture
AS 1038.23	Carbonate Carbon	ASTM D1756	Carbonate carbon
AS 1038.26	Apparent Relative Density	ASTM D1857	Ash Fusibility
AS 2267 (1997)	Guide to the Conduct of Pilot Coke Oven Tests (Coke Making)	ASTM D2639	Plasticity
AS 2434.3	Moisture Holding Capacity - Lower Rank	ASTM D2961	Single Stage Total Moisture
AS 3881 (2002)	Size Analysis	ASTM D3172	Proximate
AS 4156.1	Floot Sink Testing	ASTM D3173	Proximate Moisture
AS 4156.2.1	Froth Flotation - Basic	ASTM D3174	Proximate Ash
AS 4156.2.2	Froth Flotation - Sequential	ASTM D3302	Total Moisture
AS 4156.8	Drop shatter	ASTM D4239 (B)	Total Sulfur
AS 4264.1	Sampling	ASTM D4749	Sieve Analysis
AS 4264.4	Sampling - Precision and bias	ASTM D5061	Total Sulfur
AS 4264.5	Sampling - Inspection of mechanical systems	ASTM D5341 (2010)	Measuring Coke Reactivity Index (CRI) and Coke Strength after Reaction (CSR)
ISO 501	Crucible Swelling Number	ASTM D5373	Carbon, Hydrogen, Nitrogen
ISO 502	Gray King	ASTM D5865	Gross Calorific Value
ISO 540	Ash Fusibility	ASTM D2013	Preparing Coal Sample for Analysis
ISO 556	Determination of mechanical strength	ASTM D2234	Collection of Gross Sample
ISO 562	Proximate, Volatile Matter	<i>Note the following tests were performed at Bureau Veritas Minerals Laboratories Ltd - Cardiff Laboratory (NATA accreditation no.: 626)</i>	
ISO 579	Total Moisture	AS 1038.14.3	Ash Composition Analysis by XRF
ISO 587	Chlorine	AS 1038.10	Trace elements (Aluminium; barium; calcium; chromium; copper; iron; magnesium; manganese; nickel; phosphorus; potassium; silicon; sodium; strontium; titanium; vanadium; zinc) by XRF
ISO 589 (B & C)	Total Moisture	AS 1038.10	Trace elements (Antimony; arsenic; selenium) by AES/CP (Hydride generation)
ISO 925	Carbonate Carbon	AS 1038.10	Trace elements (Barium; beryllium; boron; cobalt; lithium; molybdenum) by AES/CP
ISO 1171	Proximate, Ash	AS 1038.10	Trace elements (Cadmium; lead) by AAS (graphite furnace)
ISO 1928	Gross Calorific Value	AS 1038.10	Trace elements (Fluorine) by ISE
ISO 1953	Size Analysis	AS 1038.10	Trace elements (Mercury) by AAS (Vapour generation)
ISO 5074	Hardgrove Grindability Index		
ISO 8264	Dilatation		
ISO 11722	Proximate, Moisture		
ISO 19579	Total Sulfur		
ISO 10329	Dilatation		
ISO 17246	Proximate analysis - fixed carbon		
ISO 19579	Total Sulfur		
ISO 13909.1	Mechanical Sampling – General		
ISO 13909.2	Mechanical Sampling - Moving streams		
ISO 13909.3	Mechanical Sampling - Stationary lots		
ISO 13909.4	Mechanical Sampling - Preparation of samples		
ISO 18283	Manual Sampling		
ISO 18894	Determination of Coke Reactivity Index (CRI) and Coke Strength after Reaction (CSR)		
ISO 23873	Dilatation		

TEXT SUBSTITUTIONS		
TEST	AS ANALYSED (BV REPORT)	MODIFIED RESULT (THIS REPORT)
Crucible Swelling Number	Greater than 9 (>9)	>9
Ash Fusion	Greater than 1560 (> 1560)	>1560
Gieseler Plastometer	No Fluidity (0)	NF
Ash Analysis	nd	< 0 (where 0 is the relevant detection limit)
Trace Elements	nd	< 0 (where 0 is the relevant detection limit)
Forms of Sulfur	nd	< 0 (where 0 is the relevant detection limit)
ABBREVIATIONS		
All Tests (where applicable)	I/S	Insufficient Sample
All Tests (where applicable)	N/R	Not Required
Dilatation	CO	Contraction Only