

## Virginia Mines - Update 19.6.18

Gem Holdings Limited through its subsidiaries owns a 90% stake in the Virginia mines. The mines consist of 5 tracts of land covered by two leases. One of which (the Ken Lease) is subject to renegotiation and covers 1,121 acres including the Upper Banner seam on the Davis tract and the main lease (the Cobalt Lease) covers the remaining 4,653 acres and includes the Lower Banner seam on the Davis tract. The Cobalt lease runs to December 2032 and has an option to extend for a further 20 years.

The following is an extract from the competent persons report (NI 43 101) dated 21<sup>st</sup> December 2016 summarising the Measured, Indicated and Inferred resources of 247 million tons.

Tract	Measured*	Indicated*	Inferred*
Davis	40.528	48.083	67.401
Mill Creek	9.335	14.775	2.507
Tarpon	1.227		37.025
Fleming		4.921	18.354
Stanley		0.518	2.293
Total	51.090	68.297	127.580

(Figures in tons millions)

The report goes on to define 2.5m tons of reserves on the Davis tract for immediate extraction. This reserve figure was based purely on existing permits. The company has a program for extending permits as and when further acreage is required to be mined (see note below).

The company's strategy is to commence mining on the Lower Banner seam of the Davis tract and the landlords consent to commence mining is expected in the near future. The company is currently earning approximately \$40 net per ton of clean coal sold and, with increased production, margins are expected to improve. The nature of the Lower Banner in terms of overburden and topography suggests that output from the Lower Banner will exceed that achieved on the Upper Banner.

The following table, extracted from the NI 43 101 shows the detailed breakdown of Measured, Indicated and Inferred resources on the Davis tract.

COAL SEAM	ASTM GROUP	In-Place Coal Resources (KTONS)		
		Measured	Indicated	Inferred
<b>SPLASHDAM</b>	Bituminous	1,911	0	0
<b>UPPER BANNER</b>	Bituminous	3,523	0	0
<b>LOWER BANNER</b>	Bituminous	6,614	0	0
<b>KENNEDY RIDER</b>	Bituminous	1,199	2,199	2,834
<b>KENNEDY</b>	Bituminous	1,499	2,649	3,549

COAL SEAM	ASTM GROUP	In-Place Coal Resources (KTONS)		
AILY	Bituminous	1,499	2,649	3,549
RAVEN	Bituminous	1,999	3,532	4,732
JAWBONE	Bituminous	1,799	3,179	4,258
TILLER	Bituminous	999	1,766	2,366
UPPER SEABOARD	Bituminous	1,799	3,179	4,258
GRASSY CREEK	Bituminous	1,399	2,473	3,312
LOWER SEABOARD 2	Bituminous	1,199	2,199	2,834
LOWER SEABOARD	Bituminous	1,199	2,199	2,834
UPPER HORSEPEN 2	Bituminous	1,299	2,296	3,075
UPPER HORSEPEN	Bituminous	1,199	2,199	2,834
MIDDLE HORSEPEN 2	Bituminous	1,499	2,649	3,549
WAR CREEK	Bituminous	1,499	2,649	3,549
LOWER HORSEPEN	Bituminous	1,499	2,649	3,549
POCAHONTAS 6	Bituminous	1,499	2,649	3,549
POCAHONTAS UN	Bituminous	1,199	2,199	2,834
POCAHONTAS 3	Bituminous	2,398	4,239	5,678
POCAHONTAS 2	Bituminous	1,799	3,179	4,258
<b>TOTAL</b>		<b>40,528</b>	<b>48,083</b>	<b>67,401</b>

#### Note

#### **Coal Reserves - Davis Tract (Splashdam, Upper and Lower Banner seams only)**

*In accordance with CIM definitions and in accordance with the policies of National Instrument 43-101, a coal reserve is the economically mineable portion of a Measured or Indicated coal resource that has been demonstrated after a thorough analysis of mining, processing, economic and other relevant factors, to be economically justified for coal extraction, at the time of reporting. Coal reserves are sub-divided in order of increasing confidence into 'Probable' and 'Proven' reserves, respectively. A 'Probable' coal reserve is typically the economically mineable part of an 'Indicated' resource and in some cases of a 'Measured' resource. A 'Proven' coal reserve is typically the economically mineable part of a 'Measured' resource.*

*The Davis Tract is of interest for immediate development. The Davis Tract contains numerous coal seams that contain substantial coal resources. These seams have well known extent, quality and mining conditions and have been historically proven to be high quality metallurgical coals or down market in the thermal segment.*

*With respect to this Technical Report, only the coal resources recoverable by the surface mining methods in the Splashdam, Upper Banner and Lower Banner seams, that are included in the KEN Energy permit and ongoing permit revisions, on the Davis Tract have been economically*

*evaluated. The proven reserves in these seams will be sold on the metallurgical market. The analysis supports the classification of these resources as Proven Reserves. The coal shown to exist in the balance of the seams has remained classified as Coal Resources.*

Gem intends to mine the Lower Banner seam using a third party "Highwall Mining" contractor paid a fixed sum per ton of clean coal sold. There are ready buyers for the product the principle buyer having a dedicated wash plant within 15 miles of the Davis tract. Highwall mining as described in the NI 43 101 is a form of surface mining similar to Auger mining which does not require personnel to operate underground and produces a larger yield than ordinary Auger mining. The company intends to increase its scale of operations either by employing more third-party contractors or by acquiring its own "Highwall" mining capability.

As an example of the quality of coals encompassed by the 5 tracts the following is a further extract from the NI 43 101 detailing the specification of the Lower Banner Coal Bed extracted from a report by the Virginia Department of Conservation Economic Data, Division of mineral resources from February 1979.

#### *Lower Banner Coal Bed*

*180 to 275 feet above the Kennedy coal and crops out in Buchanan, Dickenson, Russell, Tazewell and Wise Counties. The thickness of coal ranges from two to six feet. Most of the Lower Banner coal production was from Buchanan and Dickenson counties in 1977. The range of analyses on and as-received basis is as follows: (US Bureau of mines, 1944 and Swanson and others 1976).*

<i>Moisture %</i>	<i>1.2 -8.1</i>
<i>Volatile Matter</i>	<i>% 20.1 - 36.6</i>
<i>Fixed Carbon %</i>	<i>54.6 70.9</i>
<i>Ash %</i>	<i>5.2 - 11.2</i>
<i>Sulfur %</i>	<i>0.4 - 1.9</i>
<i>BTU</i>	<i>13,030 - 14,630</i>

Our own testing has shown a free swelling index of 7-9 and oxidization of 96 - 98% suggest the product will be a major constituent part in high quality Metallurgical Coal.