COVER SHEET

0	0	0	0	0	0	0	9	1	4	4	7

SEC Registration Number

SEMIRARA MINING AND POWER CORPORATION

(Company's Full Name)

2nd Floor DMCI PLAZA 2281 DON CHINO ROCES AVENUE MAKATI CITY

(Business Address: No. Street City/Town/Province)

John R. Sadullo	(632) 888-3000/3055
(Contact Person)	(Company Telephone Number)

1	2	3	1	1	7	-	C					
(Fiscal Year)				(Form Type)						*Month*	*Day*	(Annual Meeting)

(Secondary License Type, If Applicable)

Corporate Finance Dept.	
Dept. Requiring this Doc.	Amended Articles Number/Section

Total Amount of Borrowings

Total No. of Stockholders	Domestic	Foreign

To be accomplished by SEC Personnel concerned

File Number	LCU
Document ID	Cashier

STAMPS

Remarks: Please use BLACK ink for scanning purposes.

SECURITIES AND EXCHANGE COMMISSION

SEC FORM 17-C
CURRENT REPORT UNDER SECTION 17
OF THE SECURITIES REGULATION CODE
AND SRC RULE 17.2(c) THEREUNDER

1. **March 17, 2015**
   Date of Report

2. SEC Identification No.: **91447** 3. BIR Tax Identification No.: **000-190-324-000**

4. **SEMIRARA MINING AND POWER CORPORATION**
   Exact name of issuer as specified in its charter

5. **Philippines** 6. _____ (SEC Use Only)
   Province, country or other jurisdiction of incorporation — Industry Classification Code:

7. **2/F, DMCI Plaza, 2281 Chino Roces Avenue, Makati City** **1231**
   Address of principal office — Postal Code

8. **(632) 888-3000/3055 Fax No. (632) 888-3955**
   Issuer's telephone number, including area code

9. Semirara Mining Corporation
   Former name or former address, if changed since last report

10. Securities registered pursuant to Sections 8 and 12 of the SRC or Sections 4 and 8 of the RSA

Title of Each Class	Number of Shares of Common Stock (Outstanding)
Common Shares	**1,068,750,000**

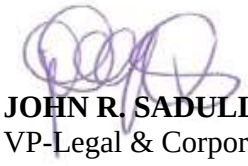
11. Indicate the item numbers reported herein: **Items 4 & 9**.

Please find attached our disclosure to the Philippine Stock Exchange in connection with the Technical Report Economic Assessment and Coal Reserve Estimation of Bobog Coal Deposit, Semirara Island, Antique, Philippines, prepared by Engr. Rufino B. Bomasang, a Competent Person on Coal with Registration No. EM 00587-004/10 who has consented to the filing of this Report to the Philippine Stock Exchange and other regulatory authority.

SIGNATURES

Pursuant to the requirements of the Securities Regulation Code, the issuer has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

Issuer : Semirara Mining and Power Corporation



Signature and Title : **JOHN R. SADULLO**
VP-Legal & Corporate Secretary

Date : March 17, 2015

SEMIRARA MINING CORPORATION

March 17, 2015

THE PHILIPPINE STOCK EXCHANGE, INC.
3rd Floor, Philippine Stock Exchange Plaza
Ayala Triangle, Ayala Avenue, Makati City

Attn.: **Ms. Janet A. Encarnacion**
Head, Disclosure Department

Re: Technical Report Economic Assessment and Coal Reserve Estimation of the Bobog Coal Deposit, Semirara Isaland, Antique, Philippines

Gentlemen:

Previous to Semirara Mining and Power Corporation's disclosure to the Philippine Stock Exchange last November 8 and 19, 2013 in connection with the Company's Bobog Mine, we are furnishing you copy of the above-captioned report dated December 29, 2014 received today by the Company.

In this regard, we quote hereunder the Executive Summary of said Technical Report:

EXECUTIVE SUMMARY

1. COAL RESOURCES

1.1 Adequacy of Exploratory Data

The Bobog area has been extensively drilled with the drilling of 127 holes spaced at 250 meters apart and subsequent in-fill drilling of 61 holes, particularly where core recovery was low.

1.2 Data Quality

We find the drilling data used in estimating the resources to be of good quality, especially considering the minimum core recovery of 90%. We likewise find the following assumptions valid: (a) minimum thickness of 0.5 meters, (b) minimum heating value of 7000 BTU/lb, and (c) maximum ash content of 40%.

1.3 Coal Resources Summary

With adequate drilling done, good quality data, and valid assumptions, we concur with the coal resources estimated by Messrs. George Baquiran and Elson Crisologo, both duly registered geologists, in their Competent Persons Report dated October 15, 2013, summarized as follows:

1.3.1. A total of 59.3 million metric tons (MT) of combined measured and indicated resources with average air dried properties as follows: heating value of 9120 BTU/lb, ash content of 10.3%, sulfur content of 1.0%, and residual moisture content of 12.2%.

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1.3.2. A total of 13.4 million MT of inferred coal resources with average air dried properties as follows: heating value of 9120 BTU/lb, ash content of 8.6%, sulfur content of 0.8%, and residual moisture of 11.7%.
As part of our validation of existing resources, we did our own modelling of the resources based on the drilling data and came out with a higher total resource base of 92.1 million MT. This was primarily because we projected the coal seams beyond edge drill holes by 62.5 meters, based on the 125 meter drill hole spacing (whereas the in-house report was based on a 50 meter projection).

The cut-off thickness used was 0.5 meter (except for a few seams with thicknesses slightly below 0.5 meter but which we believe could be extracted by a skilled operator) and the cut-off heating value of 7000 BTU per pound (again except for two seams with a little less than 7000).

These resources consist of 18 seams ranging in thickness from 0.50 meter to 22.8 meters. We likewise find the above estimates of resources to be of sufficient magnitude to warrant the development of Bobog as a separate mine to supplement and later replace Panian mine and enable Semirara Mining Company to continue supplying its customers and its own power plants.

2. THE MINING PLAN

The mining operation at Bobog will be essentially patterned after the existing mining operation at the nearby Panian mine. In addition, the Bobog mining plan takes into consideration lessons learned from over thirty years of open pit mining operations at Semirara island, initially at the Unong pit and later at the Panian pit, particularly in maintaining pit slope stability and managing water inflow.
As conceptually planned the Bobog open pit mine will ultimately have a footprint 2.55 kilometers long (at its maximum length), 1.82 kilometers wide (at its maximum width), and 320 meters below sea level. With a progressive pit rehabilitation scheme, however, Bobog will not end up as a very large hole in the ground at the end of the life of the mine, but as a reclaimed area as close as possible to the original topography and which will even be more vegetated than the original area.

2.1 Mining Method

Mining will be done primarily by truck-and-excavator, complemented by bulldozers and payloaders. This system has been found to be more flexible and effective than the bucket wheel excavator system used at Unong. The old bucket wheels will therefore be confined to stacker-and-reclaimer functions at the stockpiles and waste dumps.

2.2 Mine design parameters

With the proximity of Panian and considering that the host rock and coal deposit at Bobog are essentially extensions of those at Panian, the mine design parameters will be essentially the same as Panian (i.e. bench height of 10 meters, ramp width of 30 meters, ramp slope of 6%, and pit slopes varying from 22 to 32 degrees).

2.3 Mining Recovery and Dilution

With the cut-off thickness of 0.5 meter, the overall mining recovery, taking into consideration mining losses and beneficiation of the 20% of the mineable coal, is estimated at 90%, as has been successfully done at the nearby Panian mine. Waste inherently associated with the coal deposit and waste dilution during mining from the top and bottom of the coal seam are removed at the washing plant, particularly for

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high ash coals, to ensure that the ash content of the final product meets customer specifications.

2.4 Working Schedule

Mining operation will be done in two long shifts of 12 hours each to maintain a production capacity of 22,500 metric tons per day (MTPD)

2.5 Mining Equipment Adequacy

Enough equipment is currently available at the nearby Panian pit, some, or all, of which can be transferred to the Bobog mine as soon as needed. In general, these equipment have relatively high availabilities, especially the newly acquired ones in 2014. This includes off-road trucks, excavators, crawler tractors, wheel dozers, motor graders, water trucks, and small power shovels.

2.6 Pit Slope Stability

The Bobog pit is designed to maintain pit slope stability, especially with lessons learned from the collapse of a portion of the northwest wall of the Panian pit on February 13, 2013, which subsequently disrupted operations. A study by Geotechnica Corporation, a well-known consulting firm, later showed that the landslide was due to a confluence of previously undetected planes of weakness, aggravated by inflow of water which in turn saturated said planes of weakness. To prevent recurrence of said landslide, Panian now uses the GEOMOS, a total station-based real time displacement monitoring system. This has enabled the mine to increase recovery while at the same time reducing unexpected incidents of bench and pit failures. This system will therefore be used also at Bobog, unless a better system can be put into use.

2.7 Water Inflow Management

At Panian, water inflow has been effectively controlled through the use of cut-off walls and dewatering wells. This system will also be used at Bobog, where dewatering wells have already been drilled within the cut-off walls that have been dug. Water that passes through the cut-off walls is therefore intercepted, thus preventing the saturation of the benches and making them more stable. This system of cut-off walls and dewatering wells will be even more elaborate at Bobog which is much closer to the sea than Panian.

2.8 Washing Plant

In order to meet the quality specifications of customers, a washing plant has been installed to treat high ash Panian coal. This will also be used for any high ash Bobog coal. The plant is a gravity concentration plant that removes the waste by mechanically separating it from coal, which is lighter than waste. Since it is a purely mechanical process, it does not lead to water pollution. At present, the washing plant treats about 10% of mined coal, or around 2,250 MTPD. The remaining 90% of the mineable coal is marketable coal.

2.9 Mine Support Services

With the proximity of Bobog and Panian, the support services being provided to Panian will likewise support Bobog. The existing mine support infrastructure includes

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among others the power plant, the mechanical shop, the assay laboratory, and industrial water supply.

2.10 Environmental Protection Programs

The various programs aimed at protecting the environment throughout Semirara Island, which will be continued and enhanced with the operation of the Bobog mine, consist of the following: (a) Panian Pit Progressive Rehabilitation, which involves the progressive rehabilitation of the pit while mining is still going on, including the tree planting of beach agoho and other tree species in mined out areas; (b) proper management of water resources, including the maintenance of two water reservoirs with a filtration plant to provide domestic water requirements and proper disposal of produced water from the pit by pumping it in stages to a wetland; (c) re-vegetation of the Unong pit and its ongoing development as an eco-tourism attraction; (d) Tabunan marine hatchery Laboratory and sanctuary to ensure the protection and enhancement of marine resources; and (e) protection of wildlife, particularly of the Philippine macaque, fruit bat, monitor lizards, various endemic and resident birds, as well as migrant birds.

2.11 Socio-Economic Programs

The company has an extensive socio-economic program that benefits both the employees (52 % of whom are from Semirara and nearby islands) and the surrounding communities. Among others, the company built and maintains basic infrastructure that serves both the mine and the surrounding communities (e.g. roads, airstrip, pier, power plant, etc.); provides housing, free electricity and water, transportation to and from work, and medical services though a company owned and maintained hospital that serves also the neighboring communities; built and maintains an ice plant that benefits local fisher folk; started manufacturing bricks and other products, creating additional livelihood for local residents; built and supports eight elementary schools and four high schools (including the Divine Word Academy of Semirara), which serve both the children of employees and residents of surrounding communities; set up teacher training programs to ensure quality education in Semirara's schools and a vocational training center; built and maintains a multi-purpose gym, tennis courts, badminton and volleyball courts, which are made available to both employees and residents of surrounding communities; and maintains safety and accident prevention programs for the mine and an emergency preparedness program for the entire island, which lies directly in the path of typhoons (including the recent super typhoons Yolanda and Ruby)

In our view, the Semirara mining operation has been a good example of a responsible mine that has simultaneously addressed all three dimensions of a sustainable development project (economic, environmental, and social), which we expect to be further enhanced with the operation of the Bobog mine.

3.0 ECONOMIC ANALYSIS

3.1 Coal Market

With Semirara as the main producer of local coal, the market for Panian coal has been fairly well established in the power, cement, and industrial sectors. With no other major local coal mine being developed to meet growing Philippine coal requirements and with Semirara Mining Corporation itself putting up new power plants, the market for Bobog coal is likewise assured. In this study, we have assumed a coal price of

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PhP 2,200 per DMT based on the average of actual sales for the last two and a half years to various customers, with whom Semirara has sales contracts.

3.2 Capital Expenditures

All the equipment needed for stripping and coal extraction are already available from the Panian operation. The mine support facilities (washery, power, assay laboratory, mechanical shop, water supply system, etc.) are also all in place. The remaining book value of these equipment and facilities will be depreciated as they are used during the Bobog operations. Some pre-stripping will also be done and the cost will be reflected as depletion over the life of the project. Thus, the total pre-production investment at Bobog consists of the book value of said equipment and facilities and the pre-stripping cost. These total PhP 14.33 billion.

3.3 Operating Costs

At Panian, the operating cost per bank cubic meter of material (coal and waste) has been progressively reduced in the last three years from PhP 155 to 96 per cubic meter due to improvements in the mining system, particularly with increased in-pit waste dumping, thus shortening the movement of material and at the same time back-filling the mined out areas.

There is definitely a trend towards a lower cost per material moved and cost per ton of coal mined. In the financial projections, therefore, we used the average of 2013 and 1H of 2014 for cost per BCM material moved, which is PhP 107.74. This translates to a total mining cost of PhP 802.69 per ton of coal. Including other costs of mining (transportation to stockpile, blending & stockpiling, pit dewatering, shiploading costs, mine overhead and coal washing plant), the total production cost per DMT of coal adds up to PhP 1,151.40. Rounding up, we used PhP 1,150 in the financial projections.

3.4 Financial Analysis

Based on a financial model provided by the company, a set of financial exercises were done to determine the viability of the Bobog Project. Various assumptions were made based on the various documents and information given. Most of these are from the Panian Operations, but a lot of operating parameters will be similar and thus are applied to Bobog.

Base Case. A "base case" was adopted using the production cost of PhP 1,150, coal price of PhP 2,200 price, production capacity of 22,500 DMT per day and an overall mining recovery of 90%.

DCFROR and NPV. The bottom line figures of the exercise for the base case are DCFROR of 39.05% and NPV (at a hurdle rate of 15%) of PhP 9.22 billion.

Sensitivity Analyses. The impacts of changes in coal price and production cost show that the DCFROR and NPV of the project are equally sensitive to coal prices and mining costs. With an increase of production cost from PhP 1,150 to PhP 1,615 per DMT (a 28.79% increase), the analysis shows that the project will still break even (i.e., NPV is zero at a 15% hurdle rate). Similarly, the project breaks even at a coal price of PhP 1,583 per DMT, which is a 28.06% drop in price, compared to the base case.

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An incremental financial analysis was also done on the possibility of getting an estimated additional tonnage of 5.74 million DMT of mineable coal underneath the existing mine support infrastructure at an additional cost of PhP 300 million during the last two years of the Bobog Project. This shows DCFROR and NPV of 33.79% and PhP 10.09 billion, respectively.

4.0 RESERVES SUMMARY

Based on our mine pit design after modelling all the seams within the proposed pit, we estimate total mineable reserves of 71 million DMT, based on a cut-off thickness of 0.5 meters and a cut-off heating value of 7000 BTU per pound. These mineable reserves consist of 18 seams ranging in thickness from 0.5 to 22.8 meters. They have an average heating value of 9560 BTU per pound.

Based on the October 2013 report by G B Baquiran and E J Crisologo, the reserves to have an average ash content of 10.0%, average sulfur content of 0.9%, and average moisture content of 12.1% on an air dried basis.

The average stripping ratio after pre-stripping is 6.40 cubic meters of waste rock per metric ton of coal. On the other hand, the expanded pit has an estimated stripping ratio of 7.63. With an estimated overall mining and washing recovery of 90%, based on past experience at Panian, this translates to recoverable coal reserves of 64 million DMT. An upside of up to around 5.74 million DMT can be further produced at the west wall from coal lying underneath existing mine support infrastructure, which could be removed towards the last two years of the Bobog operation.

5.0 CONCLUSIONS

After superimposing an optimum pit over the existing coal resources delineated at Bobog by extensive drilling, our analysis confirms the viability of mining all of said coal resources, as shown by the high DCFROR and NPV.

The company clearly has the capability to mine Bobog based on its almost 25 years of experience at the Unong and Panian pits. During this period important lessons on key aspects of the mining operation have been learned and innovative solutions to problems have been developed. One of these is the use of the cut-off wall in lowering the inflow of water and thus stabilizing the benches and the pit as a whole. This is important for Bobog, as it is closer to the sea than Panian. Another is the use of GEOMOS for real-time monitoring of the movement of bench faces, which has enabled the operations people to maximize extraction while ensuring safety of men and equipment. On the mining cost, in-pit dumping of waste in the last three years has enabled the company to reduce total mining costs from an average of PhP 1,580 per DMT to around PhP 1,090. Based on the average cost per bank cubic meter of material from between 2013 and 1st half of 2014, we estimate total production cost at Bobog to be PhP 1,150 per ton.

With an established market for Semirara coal (i.e. power plants, cement manufacturers, and industrial boilers), the company is expected to remain as the most dominant player in the coal mining industry.

Most importantly, Semirara has given due attention not only to the economic aspect of its mining operation, but also to the environmental and social dimensions, as evidenced by its extensive environmental protection and social development programs. Thus, it has effectively set a classic example for other mines to follow.

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6.0 RECOMMENDATIONS

Firstly, to assure the maintenance of the safety, continuity and profitability of the operations at Bobog, we recommend the following:

1. To ensure the effectivity of the cut-off wall, it is imperative that a continuous monitoring system in conjunction with GEOMOS as is currently practiced at Panian and the dewatering wells as is currently being done be continued and even enhanced at Bobog;

2. A continuing and more in-depth study of the structural geology at Bobog should be pursued to ensure that faults that can potentially lead to another pit slide are identified soon enough.

Secondly, we recommend that the proven practice of progressive rehabilitation of Panian and its surroundings (a rarity for a producing multiple-bench mine) should also be continued at Bobog.

Finally, we recommend that Semirara maximize the mining and use of Bobog's coal resources by transferring the mine support infrastructure at the west wall during the last two years of operation and mining the almost 6 million tons underneath said infrastructure.

The Technical Report was prepared by Engr. Rufino B. Bomasang, a Competent Person on Coal with Registration No. EM 00587-004/10 who has consented to the filing of this Report to the Philippine Stock Exchange and other regulatory authority.

In view of the foregoing, please find attached copy of the Technical Report.

Thank you.

Very truly yours,

SEMIRARA MINING AND POWER CORPORATION

By:

JOHN R. SADULLO
Corporate Secretary

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ECONOMIC ASSESSMENT AND COAL RESERVE ESTIMATION OF THE BOBOG COAL DEPOSIT, SEMIRARA ISLAND, ANTIQUE, PHILIPPINES

By

RUFINO B. BOMASANG
Competent Person on Coal
Registration. No. EM 00587-004/10

December 29, 2014
Makati City, Philippines

COVER PICTURE

The cover picture depicts the company's addressing simultaneously all three dimensions of responsible mining (i.e., economic viability, social acceptability and environmental sustainability) –

Top: Coal mining at Panian using off-road trucks and hydraulic excavators

Middle: Social infrastructure including (clockwise from top left) personnel housing, concreting of main road, multipurpose hall, market stalls, the Food Court, barangay plaza, children's playground, church

Bottom: View of Panian Pit from the south showing sump, in-pit waste dumping and rehabilitated areas south & west of the pit

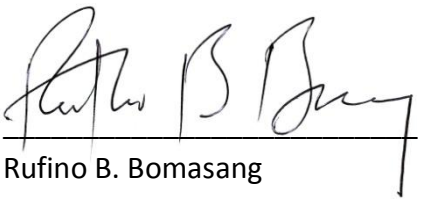
CERTIFICATE AND CONSENT OF CP FOR TECHNICAL REPORT

I, Rufino B. Bomasang, do hereby certify that:

1. I graduated with a Bachelor of Science degree in Mining Engineering from the University of the Philippines in October, 1963;
2. I am a licensed Mining Engineer with Professional Regulation Commission Registration No. 587;
3. I am a member, past director, and past president of the Philippine Society of Mining Engineers.
4. I am a duly accredited Competent Person, as defined by the Philippine Mineral Reporting Code (PMRC), with Registration No. EM 00587-004/10.
5. I am currently an Independent International Energy Consultant, specializing on upstream energy exploration, development, and production.
6. I have been involved with the Semirara coal project as follows:
   (a) As Manager for Development and Production of the then Energy Development Board, I prepared the initial preliminary feasibility study on Semirara in 1976 that helped attract private companies to further explore and develop the coal project;
   (b) As Chief of the Coal and Uranium Division of the Bureau of Energy Development, Ministry of Energy from 1977 to 1986, I evaluated the exploration/development program proposed by the Semirara consortium (which later became the Semirara Coal Corporation, or SCC), awarded to SCC the coal operating contract, monitored/supervised its subsequent exploration, development, and production operations, and headed the team that investigated the coal handling and slagging problems in using Semirara coal at the Calaca I power plant and recommended measures to address the problems;
   (c) As Deputy Executive Director and later Acting Executive Director from 1989 to 1992 and later as Undersecretary of Energy from 1993 to 1995, continued to monitor the Semirara mining operations; and
   (d) As independent consultant, headed the team that estimated the mineable reserves at the Panian coal deposit in 2010 and prepared the competent person's report submitted to the PSE in connection with the company's raising of funds for its Calaca power projects.
7. I was assisted by Gabriel P. Pamintuan, Jr. and Darrel S. Ablaza, both duly registered mining engineers, in evaluating the Bobog coal project and in preparing this technical report.
8. To the best of my knowledge, this Competent Person's Report contains all information that is required to be disclosed in order to make this report not misleading.

9. This Technical Report has been prepared in compliance with the Philippine Mineral Reporting Code and TR-Form 2.
10. I consent to the filing of this CP Report with the Philippine Stock Exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication on the website of SMC.

Dated this 29th day of December, 2014.



Rufino B. Bomasang

Address : 8135 Santol Street, Marcelo Green Village, Paranaque City, 1700
Telephone Number : +639178370970
Email address : rufinobomasang@yahoo.com

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The Bobog pit is designed to maintain pit slope stability, especially with lessons learned from the collapse of a portion of the northwest wall of the Panian pit on February 13, 2013, which subsequently disrupted operations. A study by Geotechnica Corporation, a well-known consulting firm, later showed that the landslide was due to a confluence of previously undetected planes of weakness, aggravated by inflow of water which in turn saturated said planes of weakness. To prevent recurrence of said landslide, Panian now uses the GEOMOS, a total station-based real time displacement monitoring system. This has enabled the mine to increase recovery while at the same time reducing unexpected incidents of bench and pit failures. This system will therefore be used also at Bobog, unless a better system can be put into use.

2.7 Water Inflow Management

At Panian, water inflow has been effectively controlled through the use of cut-off walls and dewatering wells. This system will also be used at Bobog, where dewatering wells have already been drilled within the cut-off walls that have been dug. Water that passes through the cut-off walls is therefore intercepted, thus preventing the saturation of the benches and making them more stable. This system of cut-off walls and dewatering wells will be even more elaborate at Bobog which is much closer to the sea than Panian.

2.8 Washing Plant

In order to meet the quality specifications of customers, a washing plant has been installed to treat high ash Panian coal. This will also be used for any high ash Bobog coal. The plant is a gravity concentration plant that removes the waste by mechanically separating it from coal, which is

lighter than waste. Since it is a purely mechanical process, it does not lead to water pollution. At present, the washing plant treats about 10% of mined coal, or around 2,250 MTPD. The remaining 90% of the mineable coal is marketable coal.

2.9 Mine Support Services

With the proximity of Bobog and Panian, the support services being provided to Panian will likewise support Bobog. The existing mine support infrastructure includes among others the power plant, the mechanical shop, the assay laboratory, and industrial water supply.

2.10 Environmental Protection Programs

The various programs aimed at protecting the environment throughout Semirara Island, which will be continued and enhanced with the operation of the Bobog mine, consist of the following: (a) Panian Pit Progressive Rehabilitation, which involves the progressive rehabilitation of the pit while mining is still going on, including the tree planting of beach agoho and other tree species in mined out areas; (b) proper management of water resources, including the maintenance of two water reservoirs with a filtration plant to provide domestic water requirements and proper disposal of produced water from the pit by pumping it in stages to a wetland; (c) re-vegetation of the Unong pit and its ongoing development as an eco-tourism attraction; (d) Tabunan marine hatchery Laboratory and sanctuary to ensure the protection and enhancement of marine resources; and (e) protection of wildlife, particularly of the Philippine macaque, fruit bat, monitor lizards, various endemic and resident birds, as well as migrant birds.

2.11 Socio-Economic Programs

The company has an extensive socio-economic program that benefits both the employees (52 % of whom are from Semirara and nearby islands) and the surrounding communities. Among others, the company built and maintains basic infrastructure that serves both the mine and the surrounding communities (e.g. roads, airstrip, pier, power plant, etc.); provides housing, free electricity and water, transportation to and from work, and medical services though a company owned and maintained hospital that serves also the neighboring communities; built and maintains an ice plant that benefits local fisher folk; started manufacturing bricks and other products, creating additional livelihood for local residents; built and supports eight elementary schools and four high schools (including the Divine Word Academy of Semirara), which serve both the children of employees and residents of surrounding communities; set up teacher training programs to ensure quality education in Semirara's schools and a vocational training center; built and maintains a multi-purpose gym, tennis courts, badminton and volleyball courts, which are made available to both employees and residents of surrounding communities; and maintains safety and accident prevention programs for the mine and an emergency preparedness program

for the entire island, which lies directly in the path of typhoons (including the recent super typhoons Yolanda and Ruby)

In our view, the Semirara mining operation has been a good example of a responsible mine that has simultaneously addressed all three dimensions of a sustainable development project (economic, environmental, and social), which we expect to be further enhanced with the operation of the Bobog mine.

3.0 ECONOMIC ANALYSIS

3.1 Coal Market

With Semirara as the main producer of local coal, the market for Panian coal has been fairly well established in the power, cement, and industrial sectors. With no other major local coal mine being developed to meet growing Philippine coal requirements and with Semirara Mining Corporation itself putting up new power plants, the market for Bobog coal is likewise assured. In this study, we have assumed a coal price of PhP 2,200 per DMT based on the average of actual sales for the last two and a half years to various customers, with whom Semirara has sales contracts.

3.2 Capital Expenditures

All the equipment needed for stripping and coal extraction are already available from the Panian operation. The mine support facilities (washery, power, assay laboratory, mechanical shop, water supply system, etc.) are also all in place. The remaining book value of these equipment and facilities will be depreciated as they are used during the Bobog operations. Some pre-stripping will also be done and the cost will be reflected as depletion over the life of the project. Thus, the total pre-production investment at Bobog consists of the book value of said equipment and facilities and the pre-stripping cost. These total PhP 14.33 billion.

3.3 Operating Costs

At Panian, the operating cost per bank cubic meter of material (coal and waste) has been progressively reduced in the last three years from PhP 155 to 96 per cubic meter due to improvements in the mining system, particularly with increased in-pit waste dumping, thus shortening the movement of material and at the same time back-filling the mined out areas.

There is definitely a trend towards a lower cost per material moved and cost per ton of coal mined. In the financial projections, therefore, we used the average of 2013 and 1H of 2014 for cost per BCM material moved, which is PhP 107.74. This translates to a total mining cost of PhP 802.69 per ton of coal. Including other costs of mining (transportation to stockpile, blending & stockpiling, pit dewatering, shiploading costs, mine overhead and coal washing plant), the total

production cost per DMT of coal adds up to PhP 1,151.40. Rounding up, we used PhP 1,150 in the financial projections.

3.4 Financial Analysis

Based on a financial model provided by the company, a set of financial exercises were done to determine the viability of the Bobog Project. Various assumptions were made based on the various documents and information given. Most of these are from the Panian Operations, but a lot of operating parameters will be similar and thus are applied to Bobog.

Base Case. A "base case" was adopted using the production cost of PhP 1,150, coal price of PhP 2,200 price, production capacity of 22,500 DMT per day and an overall mining recovery of 90%.

DCFROR and NPV. The bottom line figures of the exercise for the base case are DCFROR of 39.05% and NPV (at a hurdle rate of 15%) of PhP 9.22 billion.

Sensitivity Analyses. The impacts of changes in coal price and production cost show that the DCFROR and NPV of the project are equally sensitive to coal prices and mining costs. With an increase of production cost from PhP 1,150 to PhP 1,615 per DMT (a 28.79% increase), the analysis shows that the project will still break even (i.e., NPV is zero at a 15% hurdle rate). Similarly, the project breaks even at a coal price of PhP 1,583 per DMT, which is a 28.06% drop in price, compared to the base case.

An incremental financial analysis was also done on the possibility of getting an estimated additional tonnage of 5.74 million DMT of mineable coal underneath the existing mine support infrastructure at an additional cost of PhP 300 million during the last two years of the Bobog Project. This shows DCFROR and NPV of 33.79% and PhP 10.09 billion, respectively.

4.0 RESERVES SUMMARY

Based on our mine pit design after modelling all the seams within the proposed pit, we estimate total mineable reserves of 71 million DMT, based on a cut-off thickness of 0.5 meters and a cut-off heating value of 7000 BTU per pound. These mineable reserves consist of 18 seams ranging in thickness from 0.5 to 22.8 meters. They have an average heating value of 9560 BTU per pound.

Based on the October 2013 report by G B Baquiran and E J Crisologo, the reserves to have an average ash content of 10.0%, average sulfur content of 0.9%, and average moisture content of 12.1% on an air dried basis.

The average stripping ratio after pre-stripping is 6.40 cubic meters of waste rock per metric ton of coal. On the other hand, the expanded pit has an estimated stripping ratio of 7.63.

With an estimated overall mining and washing recovery of 90%, based on past experience at Panian, this translates to recoverable coal reserves of 64 million DMT. An upside of up to around 5.74 million DMT can be further produced at the west wall from coal lying underneath existing mine support infrastructure, which could be removed towards the last two years of the Bobog operation.

5.0 CONCLUSIONS

After superimposing an optimum pit over the existing coal resources delineated at Bobog by extensive drilling, our analysis confirms the viability of mining all of said coal resources, as shown by the high DCFROR and NPV.

The company clearly has the capability to mine Bobog based on its almost 25 years of experience at the Unong and Panian pits. During this period important lessons on key aspects of the mining operation have been learned and innovative solutions to problems have been developed. One of these is the use of the cut-off wall in lowering the inflow of water and thus stabilizing the benches and the pit as a whole. This is important for Bobog, as it is closer to the sea than Panian. Another is the use of GEOMOS for real-time monitoring of the movement of bench faces, which has enabled the operations people to maximize extraction while ensuring safety of men and equipment. On the mining cost, in-pit dumping of waste in the last three years has enabled the company to reduce total mining costs from an average of PhP 1,580 per DMT to around PhP 1,090. Based on the average cost per bank cubic meter of material from between 2013 and 1st half of 2014, we estimate total production cost at Bobog to be PhP 1,150 per ton.

With an established market for Semirara coal (i.e. power plants, cement manufacturers, and industrial boilers), the company is expected to remain as the most dominant player in the coal mining industry.

Most importantly, Semirara has given due attention not only to the economic aspect of its mining operation, but also to the environmental and social dimensions, as evidenced by its extensive environmental protection and social development programs. Thus, it has effectively set a classic example for other mines to follow.

6.0 RECOMMENDATIONS

Firstly, to assure the maintenance of the safety, continuity and profitability of the operations at Bobog, we recommend the following:

1. To ensure the effectivity of the cut-off wall, it is imperative that a continuous monitoring system in conjunction with GEOMOS as is currently practiced at Panian and the dewatering wells as is currently being done be continued and even enhanced at Bobog;
2. A continuing and more in-depth study of the structural geology at Bobog should be pursued to ensure that faults that can potentially lead to another pit slide are identified soon enough.

Secondly, we recommend that the proven practice of progressive rehabilitation of Panian and its surroundings (a rarity for a producing multiple-bench mine) should also be continued at Bobog.

Finally, we recommend that Semirara maximize the mining and use of Bobog's coal resources by transferring the mine support infrastructure at the west wall during the last two years of operation and mining the almost 6 million tons underneath said infrastructure.

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ECONOMIC ASSESSMENT AND COAL RESERVES ESTIMATION OF THE BOBOG COAL PROJECT SEMIRARA ISLAND, ANTIQUE, PHILIPPINES

by

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Competent Person on Coal

Registration No. EM 587-004/10

1.0 INTRODUCTION

This report was prepared pursuant to the obligation of Semirara Mining Corporation (SMC) as a publicly listed company to inform the investing public through the Philippine Stock Exchange (PSE) of significant developments in its mining operations at Semirara Island. Under the Philippine Mineral Reporting Code duly approved by the PSE, the Securities Exchange Commission, and the professional organizations, technical reports on mineral and coal resources and reserves must be prepared by competent persons duly accredited as such by the respective professional organizations.

In this connection, this report is essentially an economic evaluation of the Bobog coal deposit in Semirara Island and an estimate of the reserves. Bobog is located immediately east of the Panian coal deposit which is currently being mined but expected to be depleted in the next five to eight years. In order to continue supplying coal to its power plants at Calaca and other coal users in the power and cement industries, SMC plans to develop the Bobog coal deposit, which it had extensively explored by drilling, resulting in the delineation of substantial coal resources. A report on the delineated coal resources has already been prepared Messrs. George Baquiran and Elson Crisologo, both duly registered geologists with the Professional Regulation Commission and duly accredited as competent persons by the Geological Society of the Philippines.

This report starts with a validation of the coal resources to confirm the sufficiency of information needed for the preparation of an optimal mining plan and conversion of the resources to reserves. This is followed by a summary of the features of the mining plan, the economic analysis of said plan, and the summary of the mineable and marketable coal reserves. The report then concludes with the competent person's conclusions and recommendations.

2.0 RELIANCE ON OTHER EXPERTS OR CPs

For the coal resources estimate, we relied primarily on the report of Messrs. George Baquiran and Elson Crisologo, who are both accredited as Competent Persons by the Geological Society of the Philippines. Since both of them have been involved with Semirara for several years, especially Mr. Baquiran who was the one who planned the initial exploratory drilling in the mid-1970s and has been continuously involved up to the present, they are thoroughly familiar with the geology of the deposit. For the mining portion, we likewise took into consideration the insights of Engineer Arnel Jadormio, who is currently in charge of the open pit mining operation at Panian, particularly on steps being done to prevent recurrence of the pit slope failure of a portion of the Panian pit in 2013. For the geotechnical aspects of the project, we relied on the expert opinion of Dr. Arthur Saldivar-Sali (a well-known engineering geologist with a Ph. D from the Imperial College of London), who was engaged by SMC to investigate the pit slope collapse at Panian in 2013 and has since then been a continuing consultant up to now.

3.0 TENEMENT AND MINERAL RIGHTS

The Bobog Project is located within the Coal Operating Contract (COC) No. 5, which is composed of 13 coal blocks (5,500 ha.) in Semirara Island, 9 blocks (3,000 ha.) in Caluya Island, and 12 blocks (4,200 ha.) on Sibay Island.

The Bobog Project is in the northeast portion of Semirara Island and is one kilometer from the current Panian pit; it covers around 82.5 hectares and straddles two adjacent coal blocks 256 and 296.

The Bobog Project site is shown on Figure 1 on the next page.

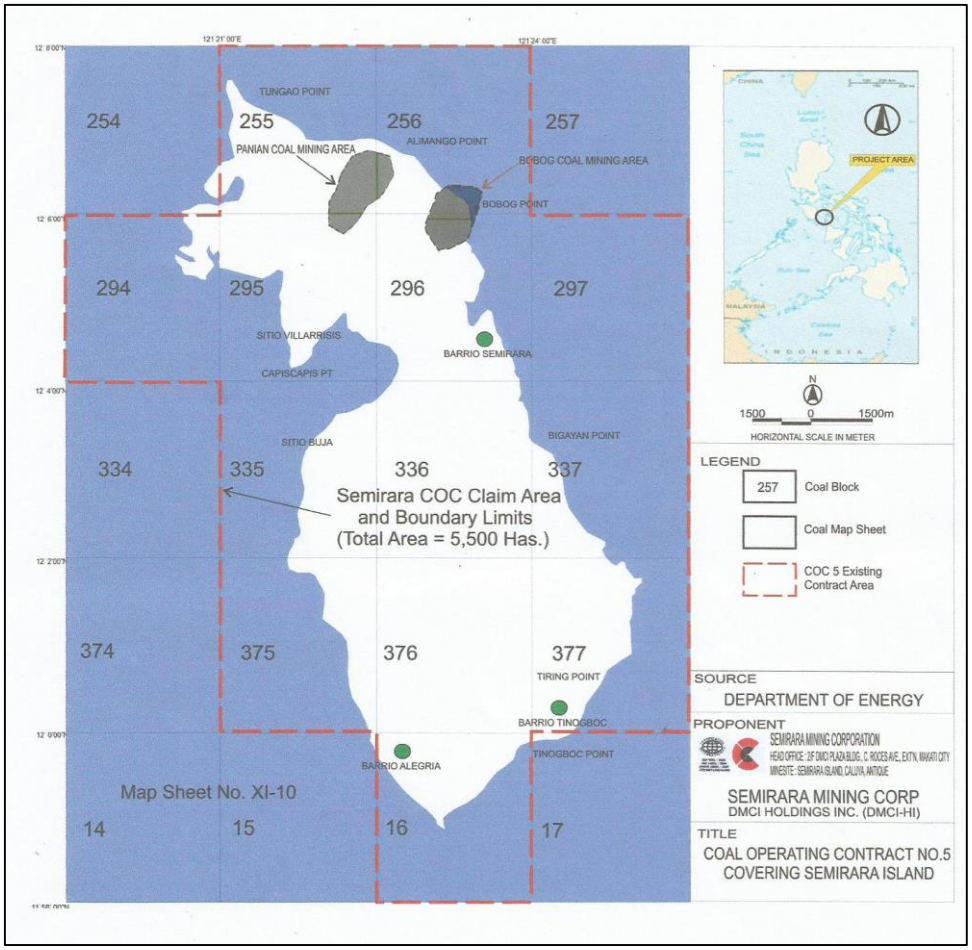

Figure 1. Map of Operating Contract No. 5 (Source: GBBaquiran and EJCrisologo, Update Report on the Bobog Coal Deposit, Semirara Islands, Philippines)

4.0 GEOGRAPHIC FEATURES

4.1 Location and Accessibility

Semirara is located southeast of Mindoro Island, some 350 km southeast of Manila. The island has an area of 55 square kilometers and may be reached by boat or airplane. The Bobog coal deposit is at the northeastern part of Semirara Island, due east of the current Panian Pit; various roads of the Panian Coal Projec can be used to access the future Bobog Project.

Air services can be availed of for travel to nearby San Jose, Mindoro Occidental and Caticlan, Malay in Aklan. From Manila, private charter air services are available at least three times a week. The company has constructed and maintains a 2-km concreted airport at the northern part of the island. Commercial ferry boat services are available daily to and from San Jose, Mindoro

Occidental and Culasi, Antique. Travel within the island is through company-owned shuttle bus service vehicles and privately-owned tricycles.

4.2 Topography, Physiography and Vegetation

The island has a rolling topography marked by a steep limestone ridge that runs north to south at the center of the island; a flat saddle disturbs this pattern and runs southwestward from Bobog Point to Brgy Semirara. The highest elevations in the north and south are at 95 m and 130 m, respectively.

4.3 Climate

Semirara possesses a pronounced dry season from November to April and wet the rest of the year. Highest precipitation is from June to September (classified as Modified Corona Type 1).

4.4 Land use

The 55 sq km island is mostly grassland (40%) and forest (16%). The various industrial areas, including the coal mine pits, cover a total of 23%. Cultivated areas, wetlands and residential areas make up the rest of the island.

4.5 Socio-economic

Three barangays make up Semirara Island – Barangays Semirara, Alegria, and Tinogboc, which are located at the north, south and southwestern parts of the island, respectively.

The company employs 2,700 people, of which 52% are locals, and is the largest employer in the island. The population as of the 2007 census is at 12,000. Apart from mining, the main livelihood are fishing and farming.

5.0 PREVIOUS WORK

The presence of considerable quantities of coal in the Bobog area was discovered during the geotechnical drilling for the construction of the pier foundation thereat. Drilling and logging revealed the coal measures at shallow depths; eventually, a drilling campaign from 2008 to 2011 was made that further showed potential commercial quantities.

Further work on Bobog included a seismic reflection survey conducted in the Bobog area by DIA Consultants Co., Ltd in July 2011 to delineate faults that may serve as water inflow channels.

Results of the drilling became the basis for a CP report in August 2012; Bobog contained a significant amount of coal resources. Due to the poor core recoveries, and to increase confidence on the resource estimation of the Bobog deposit, further drilling was done in 2012 that resulted in the PMRC-compliant CP Geology in December 2012. An in-house study in December 2013 came out with reserves as shown in Table 1 below.

PIT DESIGN	PROVED	PROBABLE	TOTAL RESERVES	RECOVERABLE RESERVES*	SR (WASTE:COAL)
GEO (-300m)	27,252,973	20,195,010	47,447,983	45,075,583*	10.83 : 1
GEO (-320m)	28,457,191	23,814,227	52,271,418	49,657,847*	10.94 : 1
GEO (-320m) Refined	31,166,410	27,038,604	58,205,014	55,294,763	10.89 : 1

* Recovery factor at 95%, excluding seam portions with >40% ash, pit bottom at 320 m bsl

Table 1. Reserves from Dec 23, 2014 study by Semirara Mining Corporation.

The company continues to study the Bobog resources with still higher, though still unreported, values (as of this writing).

6.0. HISTORY OF PRODUCTION

Coal mining at Semirara Island started in 1979 with test production at the Unong mine, some 15 kilometers away from the subject Bobog Mine. Large scale production at Unong started in 1984 and continued until 2000. The mining method used in Unong was by bucket wheel excavator. The mining was stopped due to low coal prices and increased costs due to uncontrolled inflow of sea water into the pit.

The historical production at Unong is shown in Figure 2 on the next page.

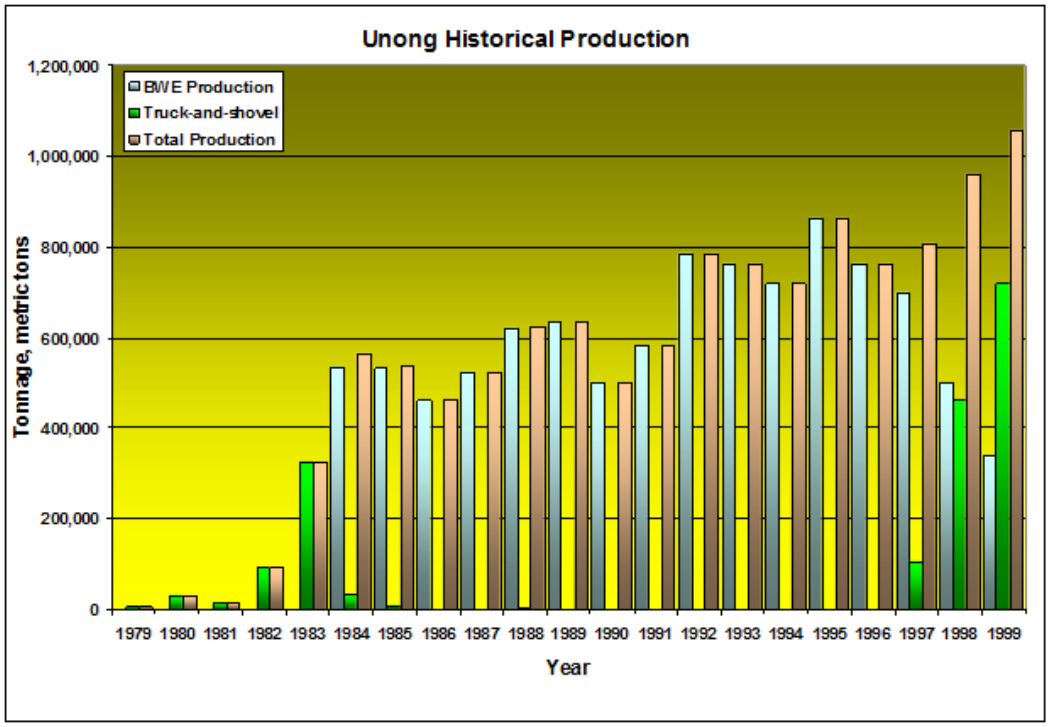

Figure 2. Unong historical production (Source: GBBaquiran and EJCrisologo, Update Report on the Bobog Coal Deposit, Semirara Islands, Philippines)

Operations at the currently producing Panian Pit started in 1999, using trucks and excavators in a multiple-bench open pit. A coal washing plant with a capacity of 4,000 DMTPD improves coal quality by reducing ash content. The Panian coal mine is currently the only large-scale surface coal mine in the country. Panian produced 9.14 million metric tons in 2013, around 95 percent of the country's coal production. Figure 3 on the next page shows the historical production of Panian.

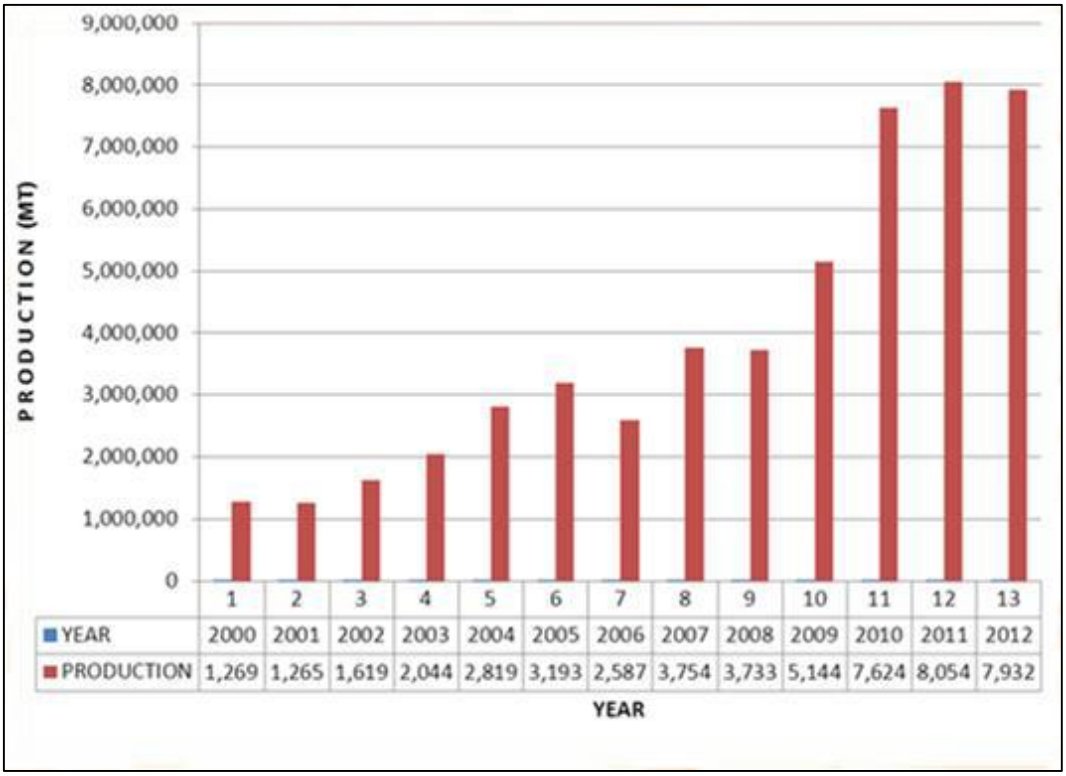

Figure 3. Panian historical production (Source: GBBaquiran & EJCrisologo, Update Report on the Bobog Coal Deposit, Semirara Island, Philipines, 2013)

7.0 REGIONAL, DISTRICT AND PROJECT SITE GEOLOGY*

7.1 Regional Geology

The sedimentary sequences and coal of Semirara Island have been well studied in the past (Floresta & Villanueva 1994 and Monenco 1990). Aged from Early to Late Miocene, there are observed several depositional sequences of sandstones, siltstones, mudstones, claystones, calcarenites and coal seams. Drilling by British Petroleum (BP) has shown that the sedimentary facies are several thousand meters thick (VIMC 1978).

Massive coralline limestone and calcarenite lie uncomformably over the clastic sedimentary sequences; Pleistocene to Recent clastic deposits uncomformably overlie the Pliocene formation, which are in turn Recent stream and marine terrace formations, sedimentation of which continue to the present (Dames and Moore 1984).

*(Source: GBBaquiran and EJCrisologo, Update Report on the Bobog Coal Deposit, Semirara Islands, Philippines)

7.2 Stratigraphy

The stratigraphic sequence of Semirara Island is composed of the following: Miocene Semirara Formation, Pliocene Buenavista Formation and Pliocene to Recent marine deposits.

The coal seams are found within the Semirara Formation, which is at least 2,300 meters thick, based on the BP drilling; the coal seams aggregate around 108 meters based on the BP Semirara No. 1 exploratory well.

The Semirara Formation has three members, as identified by Melendres and Vergara: the lower member is of light gray to brownish tuffaceous shale with interbeds of sandstone, siltstone, carbonaceous shale, minor conglomerate and at least two coal beds and is has an exposed thickness of 160-233 meters; the middle member is mainly gray to brown tuffaceous shale and cross-bedded sandstone and thin coal beds having a thickness of 30 to 70 meters; and the third member is a limestone that reaches a thickness of 100 meters.

A carbonate facies composed of reefal debris can be found at the upper part of the Semirara formation; composed of unconsolidated material with a very high porosity and permeability, this specific layer has been an important stratigraphic unit as it presented the main challenge in the mining of coal in the island, it is the main target of the cut-off wall that has made coal mining by SMC very successful. (This will be discussed further in the section on pit stability and maintenance.)

The Buenavista Formation is mostly shallow marine limestone with interbedded sandstone; the main facies include calcarenite, and crystalline and coralline limestones, and achieved a maximum thickness of 150 meters.

The youngest member is composed of alluvial and beach clastics of Pleistocene to Recent units reaching a maximum thickness of 50 meters.

7.3 Structural Geology

The island is crossed by normal and hinge faults trending North-to-Northeast, including the Panian fault that cuts across the Panian coal deposit. Two major faults, the Dapdap and Binarato divide the island into three main segments. A series of northeast-trending, southwest-plunging anticlines exist in the island, with the west limbs having steeper slopes compared to their eastern counterparts. Tilting, and folding caused the uplift of the area, followed by erosion from Late Miocene to Pliocene; submergence during the Pliocene enabled the deposition of limestone which was uplifted during the Quaternary. Crustal adjustments brought about the present configuration of the island.

8.0 PROJECT PROPERTY GEOLOGY*

8.1 Bobog Geologic Work

The existence of coal seams in the Bobog area have been noted even during the exploration at Panian; the drilling for foundation studies of the pier in Bobog showed shallow carbonaceous claystones (24 meters from the surface) and the presence of the Semirara formation composed of coal bearing sequences agree with those at Panian.

8.2 Lithology, Stratigraphy and Structures

The sequence of sandstones, siltstones, mudstones, coal seams and limestones of the Semirara Formation can also be found in Bobog. The stratigraphic sequence at Bobog is composed of mudstones, siltstones and coal seams capped with limestone. The lower sequence becomes predominantly mudstones with the coal seams occurring within mudstone-sandstone and mudstone layers.

8.3 Structural Geology

The Bobog deposit is separated from the Panian Deposit by a NE-SW Panian fault, with a displacement of around 500 meters; the Bobog seams are around 500 meters deeper.

Although there are no surface indications of two major faults (East Dike Fault and East Dike Fault West), their presence have been confirmed during the seam correlation exercise (Inoue 2009).

More faults have been identified during the seismic reflection survey done in 2011; this could be the reason for the non-occurrence of coal on the east of Bobog. Figure 4 on the next page shows the structural geology of the Bobog Project area.

9.0 COAL OCCURRENCE*

Coal in Semirara Island is found as the topmost layers in a sequence with sandstone, siltstone and mudstone-claystone; four distinct cycles of deposition have been identified. There is also an occasional occurrence of unconsolidated reefal debris, which is a highly porous- and –permeable layer, and limestone, which is pronounced as a north-south ridge on top of the island.

* (Source: GBBaquiran and EJCrisologo, Update Report on the Bobog Coal Deposit, Semirara Islands, Philippines)

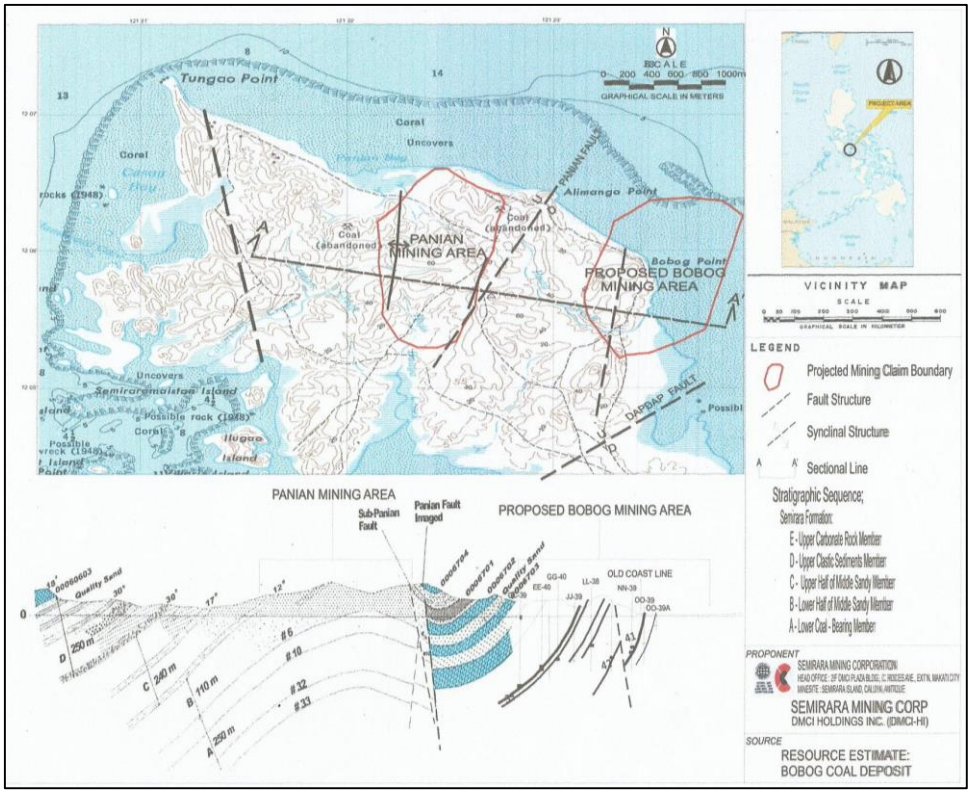

Figure 4. Geology of the Bobog Project area. (Source: GBBaquiran and EJCrisologo, Update Report on the Bobog Coal Deposit, Semirara Islands, Philippines)

The cycles show a thinning of sedimentary beds that end in coal or high-carbonaceous shale lithologies. Thick coal beds (eg 33, 3233 and 33) are lenticular and show a depositional environment of a rapidly subsiding trough (Monenco, 1990). The nomenclature of the coal seams have been in the sequence as encountered from the surface (reverse of the chronology of deposition), from Seams 3 to 50; there are a total of 48 coal seams.

The age of the deposit is Miocene and can be correlated with coals in southern Mindoro, some 20 km to the northeast (Limos-Martinez and Watanabe, 2006).

10.0 EXPLORATION*

The exploration of the Bobog Project stated in early 2008 with the drillhole BB-21 near the auxiliary stockpile that showed only 5 minor and poor quality seams; this was followed by HH-21 and MM-21, 300 and 600 meters east, respectively, from BB-21, both of which showed thicker and better quality seams.

These were followed by a full-blown drilling program at a 250-meter drilling grid; in-fill drilling was made in areas where correlation was poor; this drilling program was done from March 2008 to December 2011, with a total of 127 drill holes. Poor core recovery prompted a re-drilling in 2012, with an additional 61 holes.

11.0 QA/QC OF DATA USED

11.1 Data Filters

The quality of drilling data was assured with following criteria: a minimum of 90% core recovery; more than 0.5 meter thickness; and, agreement between geologic/geophysical logs and coal quality. Poor core recovery in the 2008-2011 drilling became the driving factor in the re-drilling in 2012; in addition to the minimum thickness of 0.5 meter, additional requirements of minimum calorific value of 7000 BTU/lb and maximum ash content of 40%. Partings (carbonaceous claystones) of up to 0.5 meters were included in the mining of the seams due to mining constraints.

11.2 Seam Correlation

Drill hole logging using gamma ray was done to increase confidence in coal seam correlation.

11.3 Statistical Analyses

An in-depth statistical analysis of the entire drilling data set from the 2012 re-drilling program was made; the significant variables used included: air-dry loss (ADL), ash content, heating value (BTU/lb), fixed carbon (FC), residual moisture (RM), sulfur, and volatile combustible material (VCM). The Update Report by GB Baquiran and EJ Crisologo gives the details of this statistics exercise.

* (Source: GBBaquiran and EJCrisologo, Update Report on the Bobog Coal Deposit, Semirara Islands, Philippines)

12.0 DECLARED MINERAL RESOURCES

The October 2013 Update Report gives the following summary of resources:

Resource Category	Resuce Estimate, metric tons	Ave Heating Value, BTU/lb	Ave. Ash Content, %	Ave. Sulfur Content, %	Ave. Residual Moisture, %
Measured	33,588,000	9,720	10.2	0.9	12.2
Indicated	25,711,000	9,700	10.4	1.0	12.2
Total M & I	59,299,000	9,700	10.3	1.0	12.2
Inferred	13,420,000	9,120	8.6	0.8	11.7

Table 2. Declared resources for the Bobog Project (Source: GBBaquiran and EJCrisologo, Update Report on the Bobog Coal Deposit, Semirara Islands, Philippines)

We find these estimates reasonable and even conservative, considering that the drilling data used in estimating the resources is of good quality with (a) at least 90 % core recovery, (b) a minimum thickness of 0.5 meters, and (c) minimum of heating value of 7000 BTU/lb and (d) maximum ash content of 40%. Accordingly, we concur with these estimates of resources, and we find them to be of such magnitude as to warrant the planning of a separate Bobog mining operation.

13.0 ECONOMIC ASSESSMENT OF THE PROJECT

13.1 Description of Mineral Resources estimates used as basis for conversion to Ore Reserves

The mineral resource estimates, based on the October 15, 2013 Update Report constitute the certified resources of the company, prepared by GB Baquiran and EJ Crisologo; although both authors are employees of Semirara Mining Corporation, the necessary steps for a CP Geologic Report have been observed to make the figures official.

The company's geologic staff, though, continue to drill, model and estimate resources, such that later studies, though not yet certified, prove the existence of more resources in the island.

13.2 Type and Level of Feasibility Study

The type of study made in this competent person report is in the category of pre-feasibility, having made use of Class 3 and Class 2 cost classification, based on the AACE Cost Estimate Classification System.

13.3 Brief Description of the Project

The Bobog Project intends to produce the coal resources to the east of the current Panian operations. Geologically separated by the Panian Fault, Bobog is relatively deeper set compared to Panian because the seams are hosted by downthrown blocks. The coal seams though are of the same names and quality.

Although mining in Bobog will seem to be much deeper than in Panian, getting down to 320 meters below mean sea level will not be new in Semirara, as the said depth has been reached in Panian.

The tried-and-tested excavator-and-trucks will be employed in Bobog, with a compliment bulldozers and other equipment. In this study, it has been assumed that the same mine plan will be adopted in Bobog, but at a higher capacity of 22,500 metric tons of coal per day. It has been observed that in the current year, daily production will approach 25,000 metric tons; this will be addressed in the sensitivity analyses that will be done in the financial aspect.

Similarly, clean coal will be directly stockpiled and ready for the market, while high-ash and coal material containing associated waste rock will be processed in the washing plant.

SMC's has an established market of power plants, cement plants and other industries; tonnage between the local and foreign markets are almost the same.

A minimum of 20,000 DMTPD, and a maximum of 25,000 DMTPD will be analyzed in the investment analysis, with a middle value, 22,500 DMTPD considered most likely, in the base case. With these, the total project life will be 8 years for 20,000 DMTPD, and 7 years for both 22,500 DMTPD and 25,000 DMTPD.

Project costs have been derived from historical records of the Panian operations, with mining costs, depreciation, etc., estimated from obtained cost and other financial reports from 2012, 2013 and the first half of 2014.

Coal quality for selling has been well established in SMC, with guaranteed coal specifications; the company has the capability of blending, given the various seam sources. Washing has improved quality, even if washed coal comprises just around 20% of the sold coal.

Coal prices have been based on the Newcastle index but varies from buyer-to-buyer; thus a range from PhP 2,100 to PhP 2,300 per DMT.

13.4 Technical Aspects

13.4.1 Mining plans

a. *Mining method.* The current mining method at the Panian Pit is by trucks and excavators, with compliment bulldozers and payloaders. Bucketwheel excavators, which were used extensively at the Unong Pit are now confined to stacker-and-reclaimer functions at the stockpiles and waste dumps.

b. *Mine design / mining parameters / geotechnical parameters*

The Bobog Pit. Figure 5 below shows the footprint of the Bobog Pit in relation to the current Panian operations.

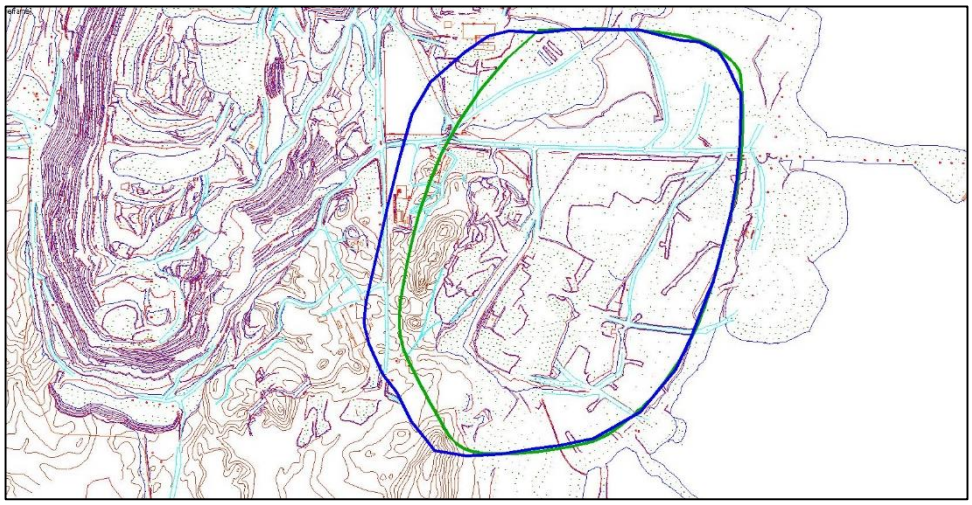

Figure 5. The Bobog Pit; the blue outline represents the pit limits with a west wall expansion; that of the green, without one; the current Panian operations are right to the west (left) of the projected Bobog pit. (Topography and site map was sourced from Semirara Mining Corporation.)

Affected infrastructure with well expansion. A closer look of the Bobog pit on the west wall (Please see Figure 6 on the next page) will show that an expansion will affect the coal washing plant, the offices and motorpool. As the Bobog deposit is being exhausted, and perhaps Himalian will have been started, it is anticipated that new facilities will have been constructed close to the latter location and whatever mineable coal underneath the said structures at the west wall can be recovered; thus the upside tonnage from the west wall expansion. The current produced coal stockpile areas to the north will not be affected.

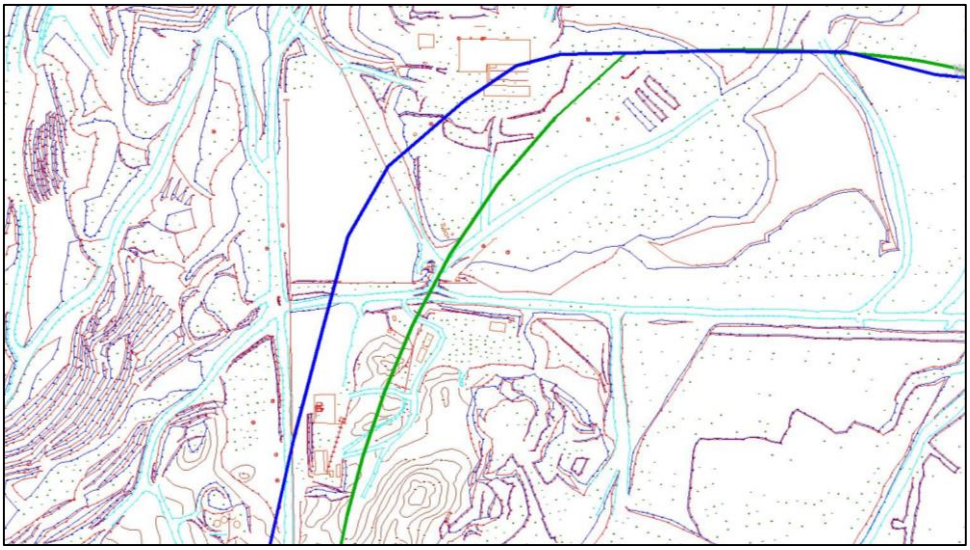

Figure 6. Infrastructure affected by Bobog pit west wall expansion; structures in orange outline (top center and left of lower center) represent the washing plant and offices and motorpool, respectively.

Pit dimensions. Figure 7 below gives the dimensions of Bobog Pit; on its longest axis, it is 2.55 kilometers along its longest axis; across, it is 1.82 kilometers wide. The pit depth is up to 320 meters below sea level.

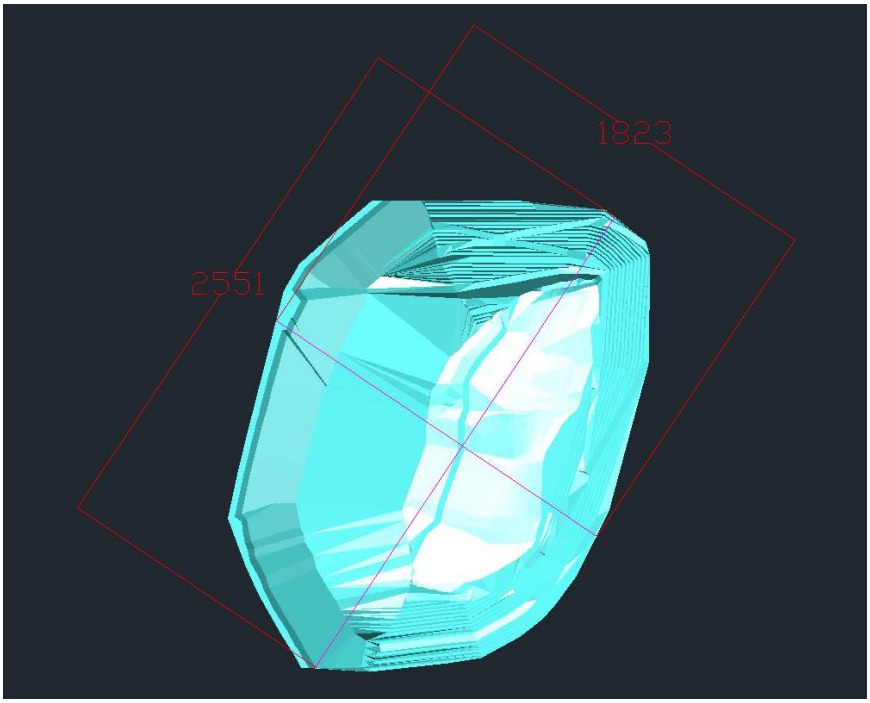

Figure 7. Bobog pit dimensions; north is towards the top of the picture.

Figures 8 and 9 below show vertical sections -- W-E, facing north and N-S facing east, respectively.

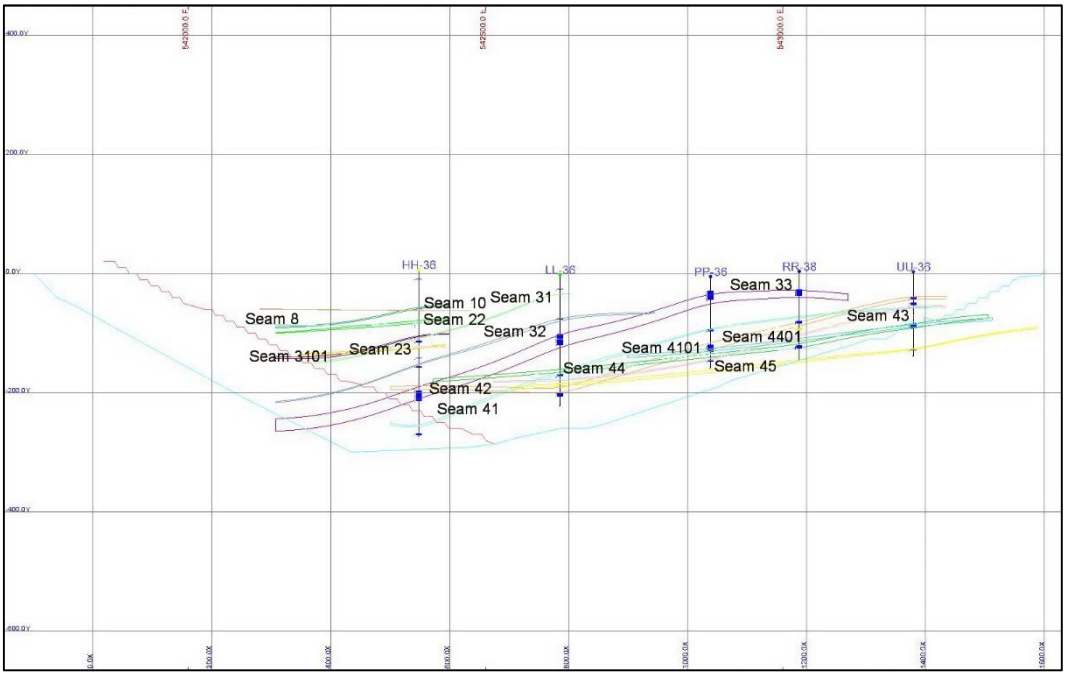

Figure 8. W-E vertical section looking north at 500N.

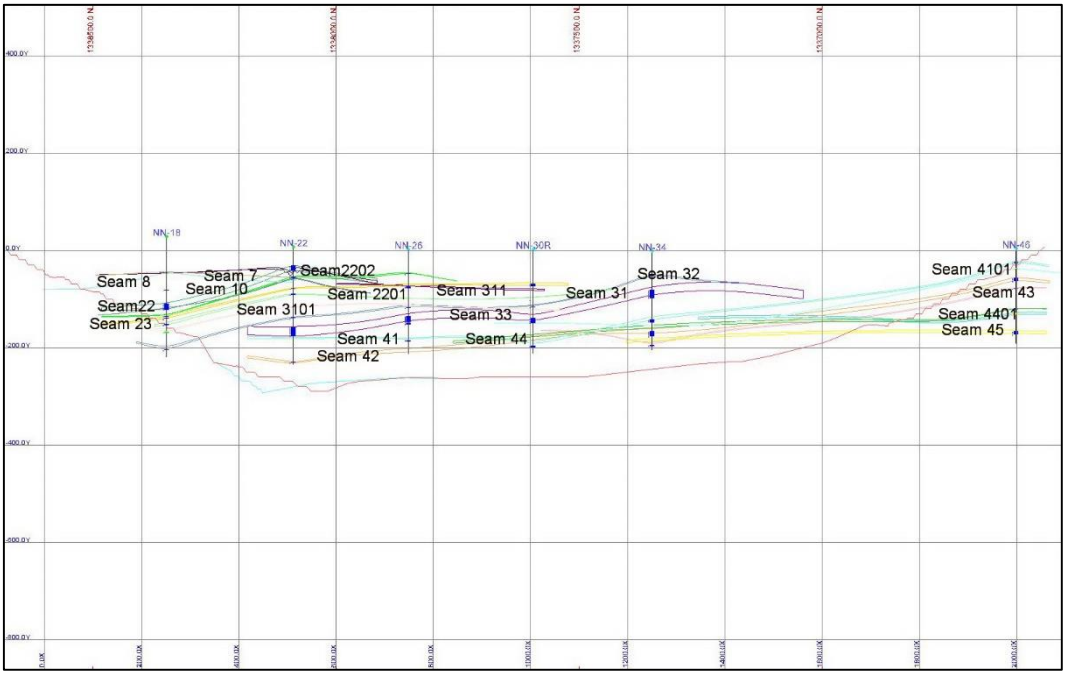

Figure 9. N-S vertical section looking east at 500E.

The Bobog Project will be adopting most operating parameters of the Panian operations; however, considering that the latter are closer to the sea, there is the additional challenge of more water inflow into the pit. This aspect has been well addressed with the company's application of the cut-off wall and improved pitwall stability monitoring and pit dewatering systems. The bench height (10 m), ramp width (30 meters), ramp slope (6%) and pit slopes (22-32 degrees) will be as experienced in Panian.

c. *Mining recovery, dilution and losses.* Overall mining recovery is estimated at an average of 90%; cut-off thickness is at 0.50 m, minimum calorific value (CV) is at 7,000 BTU/lb; maximum ash content is at 40%.

Waste rock is removed at the coal washing plant, leaving a low ash content for washed coal.

The same parameters have been planned to be used for the Bobog Project.

d. *Planned capacity / production schedule / estimated life of mine*. A nominal production capacity of 22,500 MTPD has been planned for the Bobog Project; this is the average of the capacities at the current Panian Pit, which has increased from 20,000 DMTPD to almost 25,000 DMTPD by the second half of 2014.

e. *Working schedule.* The current operating hours at the Panian Pit are 2 shifts of 12 hours each; the same will be adopted for the Bobog Project.

f. *List of mining equipment and auxiliary machinery / mine infrastructure.* The following table gives the main production equipment at the Panian Pit for the past three years; included in the table are the fleet size, volumes moved, availabilities, and number of trucks running at any one time. It can be noted that production for 2014 will reach new highs; this was brought about by higher productivity brought about by newly acquired equipment and continued high equipment availabilities ad utilization.

PRODUCTION EQUIPMENT	No of Units	Total BCM Moved	% Mech'l Avail	% Equipment Utilization		% Efficiency	Ave # Running at any One Time
				With Rain	Without Rain		
2014 (Jan to Oct)							
Off-road trucks	107	87,268,361	90.53	76.13	80.44	68.93	96.87
Excavators	22	87,268,360	92.17	79.87	95.68	73.62	
2013							
Off-road trucks	120	87,102,606	91.16	66.30	87.66	60.43	109.93
Excavators	26	87,102,607	93.28	73.85	88.61	68.88	
2012							
Off-road trucks	121	78,325,407	92.55	74.60	90.11	69.04	111.99
Excavators	20	78,325,407	91.19	71.20	89.87	64.96	

Table 3. Main production equipment for the Panian operations
(Source: Semirara Mining Corporation)

Support equipment parameters are presented in Table 4 on the next page.

SUPPORT EQUIPMENT	No of Units	% Mech'l Avail	% Utilization	% Efficiency
2014 (Jan to Oct)				
Crawler Tractors	14	80.93	80.58	65.22
Wheel Dozers	8	82.98	86.39	71.68
Motor Graders	6	78.76	84.53	66.57
Water Trucks	4	75.30	43.85	33.02
Small Power Shovels	27	67.94	59.13	40.17
COMBINED TOTAL	59	75.94	72.15	54.79
2013				
Crawler Tractors	17	83.63	70.68	59.10
Wheel Dozers	8	79.63	80.17	63.84
Wheel Loaders	2	97.79	31.12	30.43
Motor Graders	6	75.62	78.26	59.19
Water Trucks	6	78.61	34.63	27.22
Small Power Shovels	23	53.57	49.24	26.38
COMBINED TOTAL	62	71.98	63.10	45.42
2012				
Crawler Tractors	16	79.32	79.85	63.34
Wheel Dozers	10	81.92	83.15	68.11
Wheel Loaders	2	87.90	55.19	48.51
Motor Graders	8	68.99	83.37	57.52
Water Trucks	9	61.38	43.07	26.43
Small Power Shovels	19	56.62	50.83	28.78
COMBINED TOTAL	64	69.47	67.55	46.92

Table 4. Support production equipment for the Panian operations
(Source: Semirara Mining Corporation)

g. *Mine development plans and schedule.* Mine development prepares the ore deposit for eventual mining. In the case of Bobog, which is a multiple-bench, open pit mine, this involves gaining access to the coal seams, and preparing the infrastructures that will be used to bring out the coal and associated waste rocks to their respective stockpiles. As operating conditions will allow, waste rock may be returned to mined-out areas (in-pit waste dumping) for progressive rehabilitation, as currently being done at Panian now.

The proximity of Bobog to Panian will make development easier and can be done in a shorter time. For example, the Bobog loading conveyor, which runs to the east, has been established and shortens transport and loading costs.

Also, roads to the future Bobog pit will be connected to the current road system used for Panian. The coal washing plant will probably be in the same area; so will the clean coal and washed stockpiles. But these can be relocated as economics and operational conditions dictate.

h. *Bench and pit stability.* The maintenance of stability at both the bench and overall pit levels is of utmost importance to the mining operations. Given the proximity to the sea

and the presence of stratigraphic (coral reef debris) and structural (Panian and other major and minor faults) features, the stability of the benches and the pit as a whole becomes a critical factor in the safety, continuity and profitability of the operations.

History has proven this, and it includes the February 13, 2013 incident that caused a disruption of the operations.

After the incident, a study was commissioned by the company to do a study, the foremost aim is to analyze the geotechnical factors that led to the failure of the northwest wall. Geotechnica Corporation prepared a progress report entitled "Geotechnical / hydrogeological Back Analysis Northwest Wall Landslide" and dated February 13, 2012 [sic].

The main findings and applications include the following:

1) Newly appreciated weak planes of discontinuity; these have not been obvious in the past but patterns have become apparent, and these have been used to adjust working pit slopes;
2) The increase in water pressures in northern structures due to freshwater from the west and not from the sea, and saturation of the planes of weakness lowered the factor of safety of the slope; piezometers and dewatering wells have been installed to manage these; and,
3) Slope stability, as determined by rock mass strengths, have been monitored against destabilizing factors (e.g., gravity, groundwater pressure and earthquakes) by the use of displacement monitoring instrumentation.

Water inflow. Water in the pit and benches is known to cause instability due to increased pore pressure and lubrication of discontinuities. In Semirara, the combination of the at least three factors contribute to the inflow of sea water into the pit: (1) the proximity of the sea to the operations; (2) the sandstones and other high-porosity and –permeability sedimentary facies like reefal debris have been constant hazards to the operations; and (3) the presence of water-conducting faults.

Management of water inflow. The above factors have been experienced both in the Unong and Panain pits. In Unong, operations were forced to stop due to increased dewatering costs; this was in addition to depressed coal prices. In Panian, water inflow has been reduced considerably due to cut-off walls that were constructed ahead of mining; the placement of impermeable clay to replace loose and porous material have made possible the mining of coal to current depths and proximity to the sea.

Dewatering wells have been installed to manage seawater inflow into the pit walls. Most of these have been drilled and installed within the cut-off walls so that any water that passes through the cut-off walls are intercepted, thus preventing the saturation of the benches and lower the presence of water and make the benches more stable. Figure 9 below shows a dewatering well being drilled in the vicinity of the cut-off wall.

Figure 10. Drilling of dewatering well (lower right); the very permeable reefal debris can be seen as the white layer on the upper left part of the picture. (Source: GPPamintuan)

The installation of a cut-off wall at the north side of the pit is shown in Figure 11 on the next page.

Figure 11. Installation of cut-off wall on the north side of the pit
(Source: GPPamintuan)

The current Panian pit expansion has been made more impermeable to sea water inflow due to a system of cut-off walls outside the west, north and east walls. Shown in Figure 12 on the next page is the layout of cut-off walls in the Panian Expansion pit.

Said cut-off walls have already been planned and designed for the Bobog Project.

Bench and pit stability. Current monitoring and maintenance of the current Panian pit is done using GEOMOS, a total station-based, real-time displacement monitoring system. Bench-emplaced stations are monitored using the Leica Viva TS15 instrument, sensitive to 1 mm displacements. A computer-based software measures station movements in fixed time intervals and prompts the operator of any movements every hour; displacements of more than 10 mm per hour are flagged as critical and are expected to fail in a few hours, if not in the next shift.

This system has enabled the operations to increase recovery while reducing to a very low level unexpected incidents of bench and pit failures. The same has been planned at the Bobog Project.

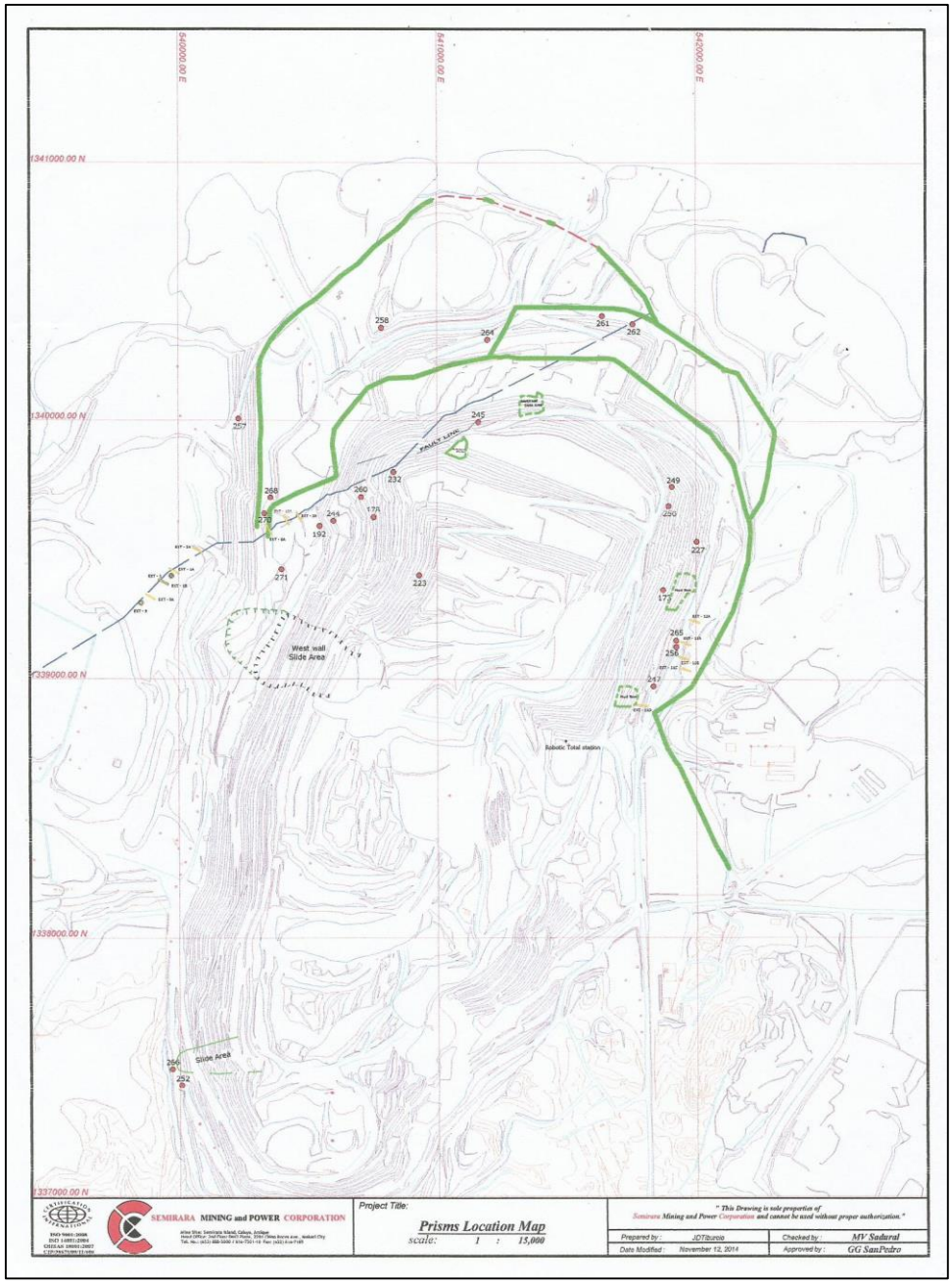

Figure 12. Cut-off walls at the Panian Expansion Pit (green lines; the red dots are the locations of the prism stations of the GEOMOS; please refer to Figure 8 on the next page). (Source: Semirara Mining Corporation)

The GEOMOS is seen in the collage of picture in Figure 13 below.

Figure 13. The GEOMOS. From top left, clockwise: the total station located at the east wall of Panian Expansion Pit; a view of the total station from a prism station (lower right picture); the Leica Viva TS15 inside the total station. (Source: GPPamintuan)

13.5.2 Coal washing plant

The coal washing plant at Semirara has enabled the removal of associated rock that has been mined with the coal; at the same time, improvement of overall coal quality (i.e., lowering of ash content) is achieved due to said removal of said waste rock and the physical washing of the coal.

Production statistics show that around 10-15% of produced coal has been washed. At a rated production capacity of 20,000 metric tons per day, this means an average of 2,500 tons daily washed coal. Figure 14 on the next page shows a panoramic view of the washing plant seen from the west.

Figure 14. The coal washing plant viewed from the west.
(Source: GPPamintuan)

13.5.3 Mine support services

Given that the current support services in the current operations, and perhaps the same production capacity will be adopted for the Bobog Project, it can be anticipated that there will be minimal changes in the power source, mechanical shops, assay laboratory, industrial water supply and other general services.

13.5.4 Environmental Programs

a. *Environmental impacts*. Being an open pit operations, the footprint of the Semirara coal mine is quite extensive; it is imperative for the company to have a comprehensive environmental management program to benchmark, plan, implement and maintain, if not improve, the physical conditions of the mine site and its surroundings. Being in an island, the mining operations have the additional challenge in keeping its impacts to a minimum.

b. *Environmental programs*. The company's environmental programs cover a lot of aspects:

Water management. The management of water resources are embodied in the construction and maintenance of the Sanglay and Casay Reservoirs at the west side of the island; designed to contain 2 and 4 million cubic meters, respectively,

the said containment structures have been made to provide domestic water requirements, especially in the dry months. A filtration facility prepares the water for distribution through refilling stations. Figure 15 below shows the Sanglay and Casay Reservoirs.

Figure 15. The Sanglay (upper photograph) and Casay (lower) Reservoirs. (Source: GPPamintuan)

Produced waters from the Panian Pit are pumped out in stages and are directed to the southwest of the pit where it is directed to a wetland. The wetland receiving Panian produced waters is shown in Figure 16 on the next page.

Figure 16. Wetland receiving Panian produced waters.
(Source: GPPamintuan)

Unong rehabilitation. The Unong Pit Lake has been re-vegetated and is undergoing developments meant to convert it into an eco-tourism attraction. Various studies and plans are being done formulated to convert the vast mine pit lake into a showcase of rehabilitation and post-mining use. Figure 17 on the next page shows a collage of pictures taken from Unong pit.

Panian pit progressive rehabilitation. Even if it is still in the production stage, the Panian Pit has been undergoing progressive rehabilitation, which includes, in-pit waste backfilling, re-contouring and afforestation. Notable is the tree-planting of beach agoho and other tree species, including dapdap, kalumpit, bamboo, coconut and ipil-ipil on the south, west and northwest of the current pit. Endemic species, which include balisayon, putat, tambalisa, talisai, fire tree, sibukao, salimbabatog, kalumpang and yucca, are also being tried. Figure 18 on the next page shows the southern parts of Panian rehabilitated and vegetated with beach agoho.

Figure 17. Unong Pit lake rehabilitation (top two photographs viewed from the Inoue Rock on the west; the proposed zipline tower at the west end; and a view from east shores of the lake showing various ornamental plants. (Source: GPPamintuan)

Figure 18. Rehabilitation of mined-out areas at Panian pit, including the south and west walls, have been started and on-going; looking north from the south of the Panian Expansion Pit. (Source: GPPamintuan)

Much earlier, high-value trees like narra have been planted in the Unong Pit Lake area; old trees in the island are also being protected. To date, almost 2 million trees have been planted. Other plants like napier grass (for grazing) are also being propagated.

Tabunan Marine Hatchery Laboratory and Sanctuary. At Tabunan Point, a marine hatchery has been constructed for various programs to ensure the protection and enhancement of marine resources. Most famous of these is the giant clam program, where all the seven species of giant clams in Southeast Asia are being grown and spawned. Also being done in the hatchery is the culturing of abalone, black-lipped pearl oysters, hard corals, moray eels and pawikan (sea turtle). Nearby, mangrove trees are maintained in an area where young clams are released to grow. Figure 19 below shows a collage of pictures from Tabunan.

Figure 19. Aquaculture at Tabunan (clockwise from top left): abalones; Gracilaria sp. (food for abalones); hard corals; black-lipped pearl oysters. (Source: GPPamintuan)

Tabunan is also known for having all the seven species of giant clams in Southeast Asia and is the only source of Hippopus porcellanus (China giant clam); it has also been successful in propagating the Tridacna gigas from Pangasinan. Shown in Figure 20 on the next page is a collage of pictures of giant clams in Tabunan.

Tabunan is a marine sanctuary where the successful aquaculture projects are released to the wild; it is also contains protected mangrove as in several sites in the island, and it is interesting to note that the sanctuary is very close to the mining operations. Figure 21 on the next page shows part of the Tabunan Marine Sanctuary.

Figure 20. Giant clam species of Tabunan. (Source: GPPamintuan)

Wildlife protection. Semirara is home to the Philippine macaque, fruit bat and monitor lizards; various endemic and resident birds also abound in the island, with seasonal migrant birds visiting during the year. A one-year long project has been undertaken to document some 124 bird species.

Figure 21. Tabunan marine sanctuary. (Source: GPPamintuan)

13.5.5 Socio-Economic Programs*

Semirara Mining Corporation's socio-economic programs have been embodied in a slide presentation entitled "Empowering Growth", dated 18 November 2014; most of the data and information presented in this sub-section have been obtained from said document.

a. *Social infrastructure*. Various infrastructure have been constructed and used to sustain economic activities and development. Figures 22 and 23 on the next page show some of the social infrastructure in Semirara.

Semirara airstrip. Travel into and out of Semirara on a regular basis has been facilitated by chartered flights; operations people, suppliers, contractors and consultants arrive and depart almost daily.

Piers. Mayflower and Bobog are the main coal loading points, while Dapdap and VIllaresis are for passenger boats.

*(Source: Semirara Mining & Power Corporation, Empowering Growth (Slide Presentation), 18 Nov 2014.)

Figure 22. Social infrastructure in Semirara, from top left: clockwise, brick housing; concreting of main road adjacent to the food court; the plaza with stage at the background, open stalls opposite the plaza.
(Source: GPPamintuan)

Figure 23. More social infrastructure in Semirara; from top left, clockwise, the food court, the church in front of the plaza, a playground near the plaza, and a multi-purpose hall near a housing cluster.
(Source: GPPamintuan)

Road network. A total of 270 kilometers of graded and graveled roads have been constructed from barangays Tinogboc to Semirara, making movement of personnel, materials and supplies easier.

Bank network access. The company has opened a bank with automatic telling machines (ATMs) through One Network Bank.

Other infrastructure; contracted work. The construction and maintenance of roads, buildings, housing units, sports and recreation facilities, landscaping, steelworks and equipment repair has spurred the growth of local contractors; from years 2008 to the first half of 2014, a total of PhP 457 million been spent for these.

Ice plant. An ice plant has been constructed in Dapdap to help augment fisher folk livelihood.

b. *Social programs***.** The social programs planned and implemented by the company in Semirara Island include employee housing, free electricity & water and free transportation to and from work; a total of 1,345 new houses in seven cluster, Molave (7 phases) and in Lebak, Kalamansig and Pinatubo.

Hospital and medical services. A company hospital takes care of the health and wellness of employees and neighboring communities; these include free annual mandatory examinations, barangay health worker training and medical missions.

Sports activities. Regular sports activities include weight training, mauy thai, volleyball, badminton, soccer, and table and lawn tennis; there are around 270 member in the various sports mentioned.

c. *Economic programs*

Mine employment. The company has around 2,370 employees (as of November 2013), 52% of which come from Semirara, Caluya and Panay Islands. The mine site payroll for 2013 was at PhP 827 million.

Fishing associations; ice plant. The company supports fisher folk by organizing them and helps preserve fish catch with the ice plant; the plant also provides for the needs of neighboring islands.

Bricks and other clay products. The occurrence of large amounts of clay has enabled the company to produce, albeit non-commercially as of this writing, bricks that has become a fixture in the many infrastructure in the island – houses, the

plaza, the food court. Studies for improving the brick quality are underway to make it a viable product in the future. Meantime, clay and other pottery products have been developed and produced; this can become a good source of revenue.

Food court. The food court houses 9 food and 4 dry goods stalls; it is also used as an indoor venue for social activities.

d. *Educational programs.* The company has helped in building 8 elementary and 4 high schools in the island, with a total of 102 classrooms; these include elementary schools in Bunlao, Sabang, Semirara, Tinogboc, Villaresis; high schools have been established in Semirara and Tinogboc, and the Divine Word Academy of Semirara.

Educational programs include teachers training, with various programs from 2002 to 2012; there is also a vocational training center that has seen the completion by more than 880 trainees, 62% of which have been employed by the company and the rest employed with affiliate companies, contractors and abroad.

e. *Culture and sports programs.* Cultural presentations are made in the various venues that the company has constructed, including a multi-purpose gym. Sports facilities include tennis outdoor & covered courts and indoor badminton & volleyball courts; an Olympic-size swimming pool is under construction.

13.5.6 Emergency preparedness

Being in the path of several typhoons that cross the country during the year; and having experienced supertyphoons, the company has undergone disaster preparedness programs to enable it to respond to these natural hazards; in May 2014 there were trainings held for planning and search-and-rescue.

13.5.6 Mine safety and health plan

Being a mining operation, safety is a paramount concern of the company. Safety orientation, emergency preparedness and accident prevention are part of the daily life of a worker; these have been systematized in every worker, not just in the workplace but also in his residence.

13.6 Financial Aspects

13.6.1 Total project cost estimates and assumptions

a. *Engineering study cost.* Cost and other financial reports for the years 2012, 2103 and the first half of 2014 have been reviewed and have provided the bases for the financial analyses in this report.

Overall, the cost structure for each year have been consistent in terms of cost contribution per type of activity, as shown in Table 5 and Table 6 below, and in the pie charts in Figures 24 to 26 on the next two pages.

There is the exception on the absolute and relative contribution for waste stripping and disposal costs, which have gone down drastically the past two years. This can probably be explained by the in-pit waste dumping that not only reduced hauling costs, but enabled the operations to start backfilling the Panian Pit.

PRODUCTION COSTS PER BCM:	2012	2013	1H 2014
Labor	7.84	6.79	5.83
Fuel	48.29	34.04	31.89
Lubricants	2.92	1.20	1.90
Materials & Parts	49.63	41.93	30.96
Contracted Services	17.62	12.14	10.83
Minesite Overhead	6.52	6.95	3.58
Depreciation	22.45	17.89	10.53
Amortization	0.00	0.00	0.00
PRODUCTION COST PER BCM	155.28	120.95	95.51
Less: Shiploading Costs	0.74	0.54	0.45
NET PRODUCTION COSTS PER BCM	154.54	120.41	95.07

Table 5. Production costs per BCM for Years 2012, 2013, and 1H of 2014
(Source: Semirara Mining Corporation)

PRODUCTION COSTS PER MT: (Saleable Coal)	2012	2013	1H 2014
Labor	79.79	85.81	66.47
Fuel & Lubricants	521.07	445.12	385.52
Materials & Parts	505.05	529.69	353.27
Contracted Services	179.30	153.42	123.62
Minesite Overhead	66.32	87.82	40.85
Depreciation & Amortization	228.48	226.04	120.13
PRODUCTION COSTS PER MT	1,580.01	1,527.89	1,089.86
Less: Shiploading Costs	7.53	6.84	5.09
NET PRODUCTION COSTS PER MT	1,572.48	1,521.05	1,084.78

Table 6. Production costs per DMT coal for Years 2012, 2013, and 1H of 2014
(Source: Semirara Mining Corporation)

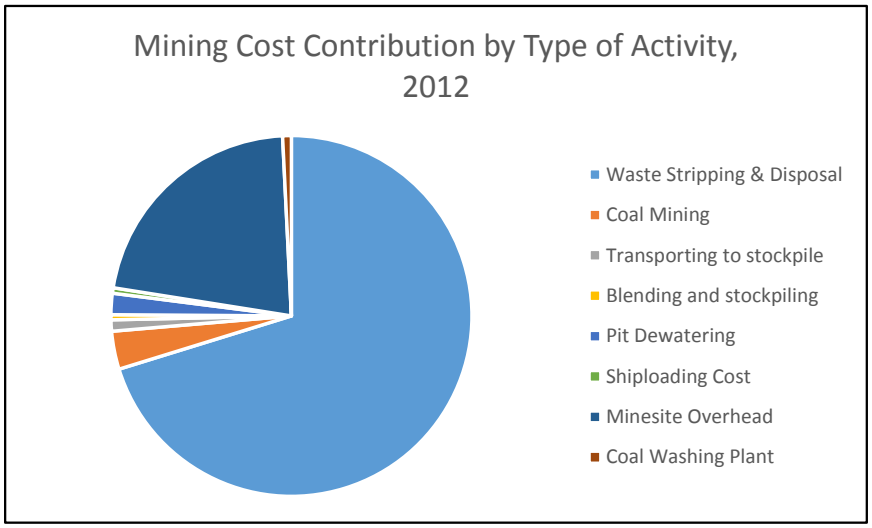

Figure 24. Cost contribution by type of activity for Year 2102 (Source: Semirara Mining Corporation)

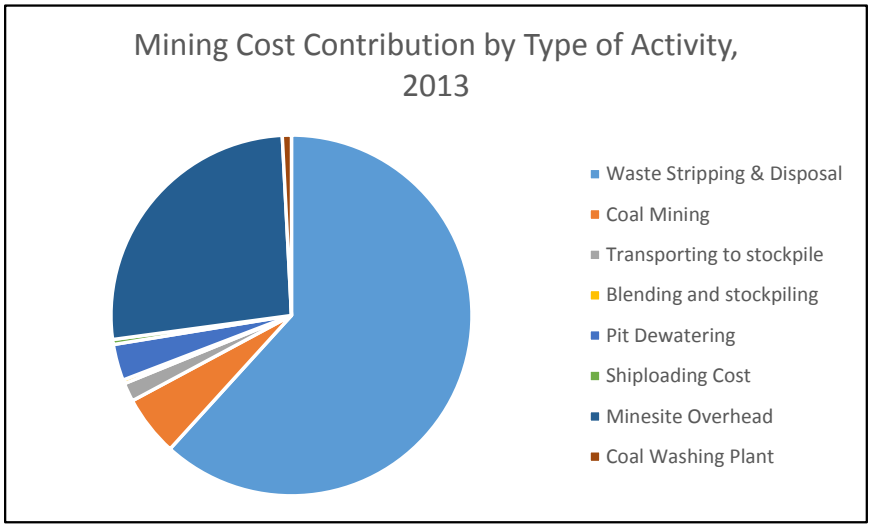

Figure 25. Cost contribution by type of activity for Year 2103 (Source: Semirara Mining Corporation)

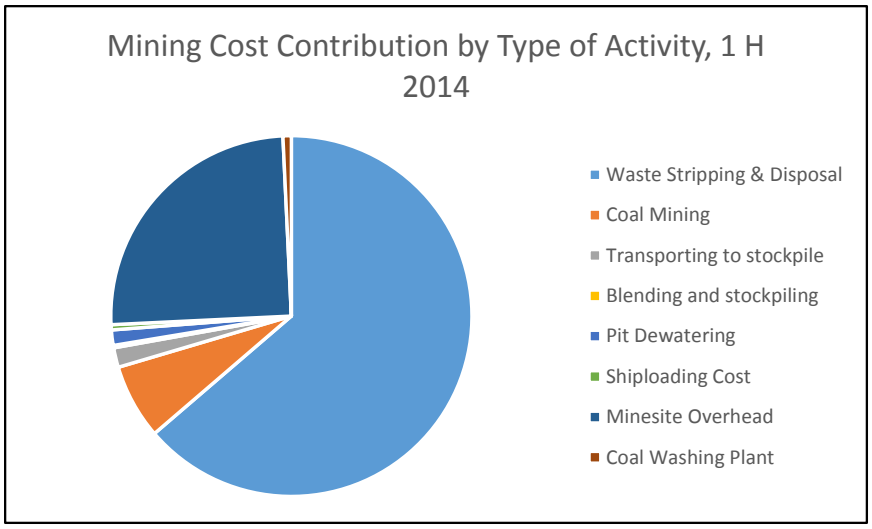

Figure 26. Cost contribution by type of activity for 1H of Year 2104 (Source: Semirara Mining Corporation)

As surface mining is sensitive not just on the stripping ratio but on the stripping costs, any improvement in either or both factors will lower mining costs, both in per material moved, or per ton coal mined. This is shown is Figure 27 below and Figure 28 on the next page.

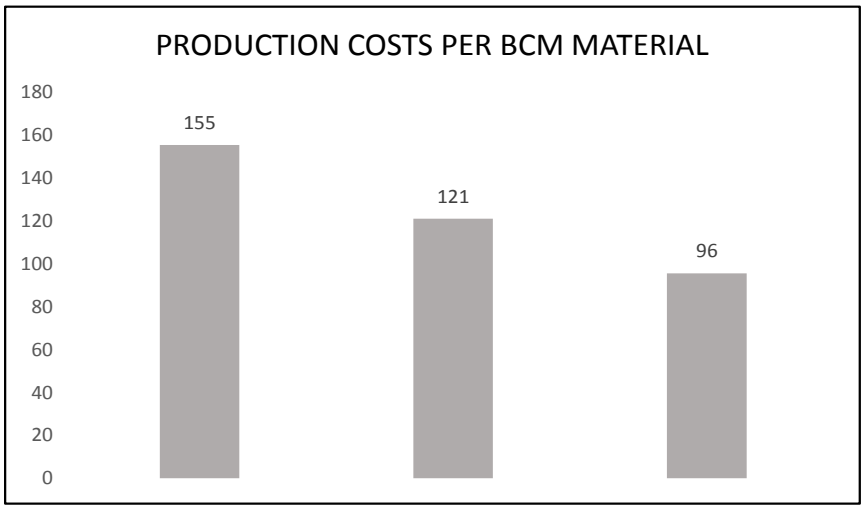

Figure 27. Costs per BCM moved for Years 2012, 2013 and 1H of 2014 (left to right, resp). (Source: Semirara Mining Corporation)

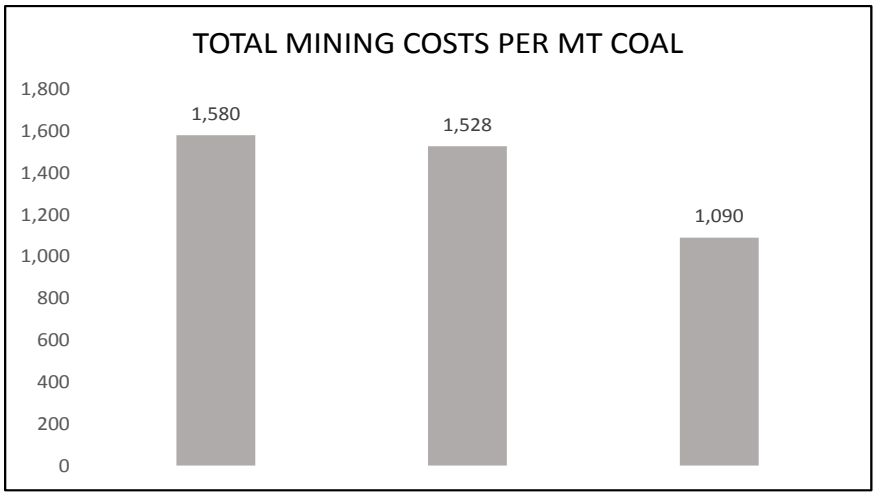

Figure 28. Graph showing costs per ton of coal mined for Years 2012, 2013 and first half of 2014 (left to right, resp). (Source: Semirara Mining Corporation)

Mining cost per DMT coal derived from historical stripping ratio and cost per BCM material. From Figures 27 and 28 on the previous page and above, respectively, it can be seen that the trend is towards a lower cost per material moved and cost per ton of coal mined.

In the financial projections, the average of years 2013 and 1H of 2014 for cost per BCM material moved will be used; specifically, this is PhP 107.74 (i.e., ½ of PhP 120.41 + PhP 95.07). This will give a cost of total material moved (waste and coal) equivalent to PhP 802.69, including depletion cost; to include the other costs of mining (transportation to stockpile, blending & stockpiling, pit dewatering, shiploading costs, mine overhead and coal washing plant), this will have a total mining cost of PhP 1,151.40 per DMT of coal.

This cost per DMT coal estimate is outlined on Table 8 below; the total mining cost per DMT coal of PhP 1,150 will be used in the financial projections.

Parameter	Bobog Pit
Cost / BCM	107.74
SR	6.40
Bcm coal	0.71
Total matl moved	7.11
Cost per DMT coal	766.49
Depletion cost	36.20
Subtotal material moved	803
Total mining cost per DMT coal	1,151

Table 7. Estimating cost per DMT coal for the Bobog Project.

b. *Exploration / development cost*. Except for pre-stripping costs, no exploration and development costs have been obtained on the Bobog Project, the fact that they have come up with a resource base says that they have invested in it. As observed from an initial visit, there has been pre-stripping done in the Bobog area. In fact, there have been moved some 19,941,356 in-bank cubic meters of waste; at a cost of PhP 130 per BCM, this is equivalent to PhP 2,592,376,280 pre-stripping cost and will be capitalized; this is expensed as depletion cost in the financial projections.

Also, the proximity of Bobog to the current Panian Pit will also make development of the former much easier to start and adjustments in operating parameters will be very minimal, considering that practically the same coal seams will be worked on, save for the Panian Fault that has displaced the Bobog deposit.

d. *Capital equipment and machinery.* Assuming most operating parameters in Panian will be adopted by the Bobog Project, it can be that the same types of equipment and machinery will be used in Bobog; perhaps new equipment will be needed to replace ageing ones. In the financial analysis that was done in this report, depreciation costs have been considered as equipment replacement costs, so as to simplify assumptions in equipment investments at the start of the project.

e. *Allied mine facilities and infrastructures*. Similarly, the same mine facilities and infrastructures being used in the Panian Project will be used in Bobog; thus, the used of Panian costs.

f. *Revenue sharing and taxes.* The revenue sharing and accounting treatment for tax purposes will be according to the scheme approved by the Department of Energy; Table 8 below shows this.

GROSS PROCEEDS		100.0% *
Less:	Cost Recovery (90% of Gross Proceeds or Actual Expenses whichever is lower)	90.0%
NET PROCEEDS		10.0%
Less:	Operator's Fees and Allowances	7.0%
	Basic Fee (40% of net proceeds)	4.0%
	Special Allowance (30% of net proceeds)	3.0%
GOVERNMENT SHARE		3%
	DOE/National Government Share (60% of Government Share)	1.8%
	Local Government Share (40% of Government Share)	1.2%
* Net of Commission and Brokerage/Delivery Expenses		

Table 8. Coal operating contract revenue scheme and accounting treatment (Source: Semirara Mining Corporation)

13.6.6 *Basis of revenue calculation.* The basis for revenue estimation for the financial analyses were the past coal price as sold by the company to its various buyers; prices were set at PhP 2,100, PhP 2,200 and PhP 2,300 per DMT to reflect range of the coal prices in the market.

13.6.7 *Financial analyses*

a. *Operating Parameters; Sensitivity Analysis.* Assumptions used for the base case are given in Table 9 below; also given are the upsides and downsides to the same parameters. An initial reserves total of 71.78 million DMT is considered for a scenario where the infrastructure to the west of the Bobog Pit will not be relocated, thus mining will be limited by said non-relocation.

OPERATING PARAMETERS	Minimum	Average	Maximum
Production Tonnage , Daily	20,000	22,500	25,000
Annual	7,200,000	8,100,000	9,000,000
Price Coal per DMT	2,100	2,200	2,300
Production Cost per DMT Coal	1,050	1,150	1,250

Table 9. Operating parameters and assumed minimum and maximum parameters

b. *Base Case Parameters and DCFROR & NPV*. The average set of operating parameters were be used as a base case; the sensitivity to changing production tonnage, coal price and production cost will be based on these parameters.

The operating parameters for the base case are given in Table 10 below.

BASE CASE		
Mineable Tonnage	71,783,407	DMT
Recoverable Tonnage	64,605,066	DMT
Coal Production per day	22,500	DMT
Coal Production per year	7,200,000	DMT
Production cost/DMT coal	1,150	PhP
Tax Rate	30%	

Table 10. Operating parameters for a base case

The financial projection for the Base Case in presented in Table 11 below:

BASE CASE						
Total Tonnage Recoverable	64,605,066					
Daily DMT Coal Produced &Sold	22,500					
DMT Coal Sold	8,100,000					
Coal Price per DMT	2,200					
Production Cost per DMT	1,150					
	cum tonnage	8,100,000	16,200,000	48,600,000	56,700,000	
PARAMETERS	Year 0	1	2	6	7	
REVENUES		17,820,000,000	17,820,000,000	17,820,000,000	17,820,000,000	
COST OF COAL RECOVERED AND SOLD		9,315,000,000	9,315,000,000	9,315,000,000	9,315,000,000	
GROSS MARGIN		8,505,000,000	8,505,000,000	8,505,000,000	8,505,000,000	
OPERATING EXPENSES						
Govt Share		2,551,500,000	2,551,500,000	2,551,500,000	2,551,500,000	
Gen. & Admin Exp		1,189,439,716	1,189,439,716	1,189,439,716	1,189,439,716	
OPERATING INCOME		4,764,060,284	4,764,060,284	4,764,060,284	4,764,060,284	
NET INCOME BEFORE TAX		4,764,060,284	4,764,060,284	4,764,060,284	4,764,060,284	
30% Tax rate		1,429,218,085	1,429,218,085	1,429,218,085	1,429,218,085	
NET INCOME AFTER TAX		3,334,842,199	3,334,842,199	3,334,842,199	3,334,842,199	
Depreciation & Amortization		1,345,086,000	1,345,086,000	1,345,086,000	1,345,086,000	9,415,602,000
Depletion		293,220,000	293,220,000	293,220,000	293,220,000	2,052,540,000
Total Non-Cash Deductions		1,638,306,000	1,638,306,000	1,638,306,000	1,638,306,000	
CASH FLOW	(11,468,142,000)	4,973,148,199	4,973,148,199	4,973,148,199	4,973,148,199	34,812,037,393
DCFROR	39.05%					
NPV @DCFROR	(11,468,142,000)	3,576,508,394	2,572,095,538	688,015,916	494,796,174	0.00
@15%	(11,468,142,000)	4,324,476,695	3,760,414,517	2,150,029,205	1,869,590,613	9,222,241,907

Table 11. Financial projections for the Base Case.

Results obtained for the average operating parameters are given in Table 12 below:

BASE CASE	
DCFROR	39.05%
NPV @ 15%, PhP	9,222,241,907

Table 12. DCFROR and NPV for a base case

c. *Sensitivity Analysis*. Varying the production tonnage, coal price and production cost from the average parameters gave results presented in Tables 13 and 14 on the next page; the summary is also presented on Table 15 on the next page:

PRODUCTION CAPACITY AT 20,000 DMTPD						
Total Tonnage Recoverable	64,605,066					
Daily DMT Coal Produced &Sold	20,000					
DMT Coal Sold	7,200,000					
Coal Price per DMT	2,200					
Production Cost per DMT	1,150					
	cum tonnage	7,200,000	14,400,000	50,400,000	57,600,000	
PARAMETERS	Year 0	1	2	7	8	
REVENUES		15,840,000,000	15,840,000,000	15,840,000,000	15,840,000,000	
COST OF COAL RECOVERED AND SOLD		8,280,000,000	8,280,000,000	8,280,000,000	8,280,000,000	
GROSS MARGIN		7,560,000,000	7,560,000,000	7,560,000,000	7,560,000,000	
OPERATING EXPENSES						
Govt Share		2,268,000,000	2,268,000,000	2,268,000,000	2,268,000,000	
Gen. & Admin Exp		1,057,279,747	1,057,279,747	1,057,279,747	1,057,279,747	
OPERATING INCOME		4,234,720,253	4,234,720,253	4,234,720,253	4,234,720,253	
NET INCOME BEFORE TAX		4,234,720,253	4,234,720,253	4,234,720,253	4,234,720,253	
30% Tax rate		1,270,416,076	1,270,416,076	1,270,416,076	1,270,416,076	
NET INCOME AFTER TAX		2,964,304,177	2,964,304,177	2,964,304,177	2,964,304,177	
Depreciation & Amortization		1,195,632,000	1,195,632,000	1,195,632,000	1,195,632,000	9,565,056,000
Depletion		260,640,000	260,640,000	260,640,000	260,640,000	2,085,120,000
Total Non-Cash Deductions		1,456,272,000	1,456,272,000	1,456,272,000	1,456,272,000	
CASH FLOW	(11,650,176,000)	4,420,576,177	4,420,576,177	4,420,576,177	4,420,576,177	35,364,609,416
DCFROR	34.37%					
NPV @DCFROR	(11,650,176,000)	3,289,735,489	2,448,178,508	558,796,383	415,849,025	0.00
@15%	(11,650,176,000)	3,843,979,284	3,342,590,682	1,661,858,323	1,445,094,194	8,186,370,555

Table 13. Financial projections for the 20,000 MTPD production.

PRODUCTION CAPACITY AT 25,000 DMTPD						
Total Tonnage Recoverable	64,605,066					
Daily DMT Coal Produced &Sold	25,000					
DMT Coal Sold	9,000,000					
Coal Price per DMT	2,200					
Production Cost per DMT	1,150					
	cum tonnage	9,000,000	18,000,000	54,000,000	63,000,000	
PARAMETERS	Year 0	1	2	6	7	
REVENUES		19,800,000,000	19,800,000,000	19,800,000,000	19,800,000,000	
COST OF COAL RECOVERED AND SOLD		10,350,000,000	10,350,000,000	10,350,000,000	10,350,000,000	
GROSS MARGIN		9,450,000,000	9,450,000,000	9,450,000,000	9,450,000,000	
OPERATING EXPENSES						
Govt Share		2,835,000,000	2,835,000,000	2,835,000,000	2,835,000,000	
Gen. & Admin Exp		1,321,599,684	1,321,599,684	1,321,599,684	1,321,599,684	
OPERATING INCOME		5,293,400,316	5,293,400,316	5,293,400,316	5,293,400,316	
NET INCOME BEFORE TAX		5,293,400,316	5,293,400,316	5,293,400,316	5,293,400,316	
30% Tax rate		1,588,020,095	1,588,020,095	1,588,020,095	1,588,020,095	
NET INCOME AFTER TAX		3,705,380,221	3,705,380,221	3,705,380,221	3,705,380,221	
Depreciation & Amortization		1,494,540,000	1,494,540,000	1,494,540,000	1,494,540,000	10,461,780,000
Depletion		325,800,000	325,800,000	325,800,000	325,800,000	2,280,600,000
Total Non-Cash Deductions		1,820,340,000	1,820,340,000	1,820,340,000	1,820,340,000	
CASH FLOW	(12,742,380,000)	5,525,720,221	5,525,720,221	5,525,720,221	5,525,720,221	38,680,041,548
DCFROR	39.05%					
NPV @DCFROR	(12,742,380,000)	3,973,898,215	2,857,883,931	764,462,129	549,773,526	0.00
@15%	(12,742,380,000)	4,804,974,105	4,178,238,352	2,388,921,339	2,077,322,903	10,246,935,452

Table 14. Financial projections for the 25,000 MTPD production.

A summary of the sensitivity analysis on production rate is given in Table 15 below.

SENSITIVITY TO CHANGES IN PRODUCTION RATE			
Coal production per day, DMT	**20,000**	**22,500**	**25,000**
DCFROR	34.37%	39.05%	39.05%
NPV@15%, PhP	8,186,370,555	9,222,241,907	10,246,935,452

Table 15. DCFROR and NPV for produced DMT coal changes

Sensitivity to price changes were made and results are given in Tables 16 and 17 on the next page.

PRICE AT PHP 2,100 PER DMT COAL						
Total Tonnage Recoverable	64,605,066					
Daily DMT Coal Produced &Sold	22,500					
DMT Coal Sold	8,100,000					
Coal Price per DMT	2,100					
Production Cost per DMT	1,150					
	cum tonnage	8,100,000	16,200,000	48,600,000	56,700,000	
PARAMETERS	Year 0	1	2	6	7	
REVENUES		17,010,000,000	17,010,000,000	17,010,000,000	17,010,000,000	
COST OF COAL RECOVERED AND SOLD		9,315,000,000	9,315,000,000	9,315,000,000	9,315,000,000	
GROSS MARGIN		7,695,000,000	7,695,000,000	7,695,000,000	7,695,000,000	
OPERATING EXPENSES						
Govt Share		2,308,500,000	2,308,500,000	2,308,500,000	2,308,500,000	
Gen. & Admin Exp		1,135,374,274	1,135,374,274	1,135,374,274	1,135,374,274	
OPERATING INCOME		4,251,125,726	4,251,125,726	4,251,125,726	4,251,125,726	
NET INCOME BEFORE TAX		4,251,125,726	4,251,125,726	4,251,125,726	4,251,125,726	
30% Tax rate		1,275,337,718	1,275,337,718	1,275,337,718	1,275,337,718	
NET INCOME AFTER TAX		2,975,788,008	2,975,788,008	2,975,788,008	2,975,788,008	
Depreciation & Amortization		1,345,086,000	1,345,086,000	1,345,086,000	1,345,086,000	9,415,602,000
Depletion		293,220,000	293,220,000	293,220,000	293,220,000	2,052,540,000
Total Non-Cash Deductions		1,638,306,000	1,638,306,000	1,638,306,000	1,638,306,000	
CASH FLOW	(11,468,142,000)	4,614,094,008	4,614,094,008	4,614,094,008	4,614,094,008	32,298,658,057
DCFROR	35.42%					
NPV @DCFROR	(11,468,142,000)	3,407,360,870	2,516,227,037	748,301,467	552,596,703	0.00
@15%	(11,468,142,000)	4,012,255,659	3,488,917,965	1,994,800,170	1,734,608,843	7,728,425,766

Table 16. Financial projections for the coal price at PhP 2,100 per DMT.

PRICE AT PHP 2,300 PER DMT COAL						
Total Tonnage Recoverable	64,605,066					
Daily DMT Coal Produced &Sold	22,500					
DMT Coal Sold	8,100,000					
Coal Price per DMT	2,300					
Production Cost per DMT	1,150					
	cum tonnage	8,100,000	16,200,000	48,600,000	56,700,000	
PARAMETERS	Year 0	1	2	6	7	
REVENUES		18,630,000,000	18,630,000,000	18,630,000,000	18,630,000,000	
COST OF COAL RECOVERED AND SOLD		9,315,000,000	9,315,000,000	9,315,000,000	9,315,000,000	
GROSS MARGIN		9,315,000,000	9,315,000,000	9,315,000,000	9,315,000,000	
OPERATING EXPENSES						
Govt Share		2,794,500,000	2,794,500,000	2,794,500,000	2,794,500,000	
Gen. & Admin Exp		1,243,505,157	1,243,505,157	1,243,505,157	1,243,505,157	
OPERATING INCOME		5,276,994,843	5,276,994,843	5,276,994,843	5,276,994,843	
NET INCOME BEFORE TAX		5,276,994,843	5,276,994,843	5,276,994,843	5,276,994,843	
30% Tax rate		1,583,098,453	1,583,098,453	1,583,098,453	1,583,098,453	
NET INCOME AFTER TAX		3,693,896,390	3,693,896,390	3,693,896,390	3,693,896,390	
Depreciation & Amortization		1,345,086,000	1,345,086,000	1,345,086,000	1,345,086,000	9,415,602,000
Depletion		293,220,000	293,220,000	293,220,000	293,220,000	2,052,540,000
Total Non-Cash Deductions		1,638,306,000	1,638,306,000	1,638,306,000	1,638,306,000	
CASH FLOW	(11,468,142,000)	5,332,202,390	5,332,202,390	5,332,202,390	5,332,202,390	37,325,416,730
DCFROR	42.62%					
NPV @DCFROR	(11,468,142,000)	3,738,687,669	2,621,390,649	633,551,593	444,216,359	0.00
@15%	(11,468,142,000)	4,636,697,730	4,031,911,070	2,305,258,240	2,004,572,383	10,716,058,048

Table 17. Financial projections for the coal price at PhP 2,300 per DMT.

A summary of sensitivity to changes in coal prices is given in the Table 18 below.

SENSITIVITY TO CHANGES IN PRICE			
Price, PhP/DMT coal	**2,100**	**2,200**	**2,300**
DCFROR	35.42%	39.05%	42.62%
NPV@15%, PhP	7,728,425,766	8,186,370,555	10,716,058,048

Table 18. DCFROR and NPV for price per DMT coal changes

Sensitivity to changes in production cost per DMT coal were made and results are given in Tables 19 and 20 below.

COST AT PHP 1050 PER DMT COAL						
Total Tonnage Recoverable	64,605,066					
Daily DMT Coal Produced &Sold	22,500					
DMT Coal Sold	8,100,000					
Coal Price per DMT	2,200					
Production Cost per DMT	1,050					
	cum tonnage	8,100,000	16,200,000	48,600,000	56,700,000	
PARAMETERS	Year 0	1	2	6	7	
REVENUES		17,820,000,000	17,820,000,000	17,820,000,000	17,820,000,000	
COST OF COAL RECOVERED AND SOLD		8,505,000,000	8,505,000,000	8,505,000,000	8,505,000,000	
GROSS MARGIN		9,315,000,000	9,315,000,000	9,315,000,000	9,315,000,000	
OPERATING EXPENSES						
Govt Share		2,794,500,000	2,794,500,000	2,794,500,000	2,794,500,000	
Gen. & Admin Exp		1,189,439,716	1,189,439,716	1,189,439,716	1,189,439,716	
OPERATING INCOME		5,331,060,284	5,331,060,284	5,331,060,284	5,331,060,284	
NET INCOME BEFORE TAX		5,331,060,284	5,331,060,284	5,331,060,284	5,331,060,284	
30% Tax rate		1,599,318,085	1,599,318,085	1,599,318,085	1,599,318,085	
NET INCOME AFTER TAX		3,731,742,199	3,731,742,199	3,731,742,199	3,731,742,199	
Depreciation & Amortization		1,228,122,000	1,228,122,000	1,228,122,000	1,228,122,000	8,596,854,000
Depletion		293,220,000	293,220,000	293,220,000	293,220,000	2,052,540,000
Total Non-Cash Deductions		1,521,342,000	1,521,342,000	1,521,342,000	1,521,342,000	
CASH FLOW	(10,649,394,000)	5,253,084,199	5,253,084,199	5,253,084,199	5,253,084,199	36,771,589,393
DCFROR	45.81%					
NPV @DCFROR	(10,649,394,000)	3,602,773,012	2,470,924,297	546,700,657	374,948,944	0.00
@15%	(10,649,394,000)	4,567,899,304	3,972,086,351	2,271,053,263	1,974,828,924	11,205,641,165

Table 19. Financial projections for the production cost of PhP 1,050 per DMT coal.

COST AT PHP 1,250 PER DMT COAL						
Total Tonnage Recoverable	64,605,066					
Daily DMT Coal Produced &Sold	22,500					
DMT Coal Sold	8,100,000					
Coal Price per DMT	2,200					
Production Cost per DMT	1,250					
	cum tonnage	8,100,000	16,200,000	48,600,000	56,700,000	
PARAMETERS	Year 0	1	2	6	7	
REVENUES		17,820,000,000	17,820,000,000	17,820,000,000	17,820,000,000	
COST OF COAL RECOVERED AND SOLD		10,125,000,000	10,125,000,000	10,125,000,000	10,125,000,000	
GROSS MARGIN		7,695,000,000	7,695,000,000	7,695,000,000	7,695,000,000	
OPERATING EXPENSES						
Govt Share		2,308,500,000	2,308,500,000	2,308,500,000	2,308,500,000	
Gen. & Admin Exp		1,189,439,716	1,189,439,716	1,189,439,716	1,189,439,716	
OPERATING INCOME		4,197,060,284	4,197,060,284	4,197,060,284	4,197,060,284	
NET INCOME BEFORE TAX		4,197,060,284	4,197,060,284	4,197,060,284	4,197,060,284	
30% Tax rate		1,259,118,085	1,259,118,085	1,259,118,085	1,259,118,085	
NET INCOME AFTER TAX		2,937,942,199	2,937,942,199	2,937,942,199	2,937,942,199	
Depreciation & Amortization		1,462,050,000	1,462,050,000	1,462,050,000	1,462,050,000	10,234,350,000
Depletion		293,220,000	293,220,000	293,220,000	293,220,000	2,052,540,000
Total Non-Cash Deductions		1,755,270,000	1,755,270,000	1,755,270,000	1,755,270,000	
CASH FLOW	(12,286,890,000)	4,693,212,199	4,693,212,199	4,693,212,199	4,693,212,199	32,852,485,393
DCFROR	33.01%					
NPV @DCFROR	(12,286,890,000)	3,528,434,975	2,652,736,089	847,503,998	637,167,599	0.00
@15%	(12,286,890,000)	4,081,054,086	3,548,742,684	2,029,005,147	1,764,352,302	7,238,842,648

Table 20. Financial projections for the production cost of PhP 1,250 per DMT coal.

A summary of sensitivity to changes in production cost per DMT coal Table 21 below.

SENSITIVITY TO CHANGES IN PRODUCTION COST PER TON COAL			
Production cost per DMT, PhP	**900**	**1,000**	**1,100**
DCFROR	45.81%	39.05%	33.01%
NPV@15%, PhP	11,205,641,165	8,186,370,555	7,238,842,648

Table 21. DCFROR and NPV for production cost per DMT coal changes.

d. *West wall expansion.* Given that there will be more tonnage to be mined if the infrastructures to the west of the Bobog pit can be relocated, another set of financial analyses were done to consider this option; assuming an additional cost of relocating (of PhP 300 million) at the last 2 years of the project, the financial projection for an expanded west wall is given in Table 22 below:

WITH WEST WALL EXPANSION						
Total Tonnage Recoverable	69,774,848					
Daily DMT Coal Produced &Sold	22,500					
DMT Coal Sold	8,100,000					
Coal Price per DMT	2,200					
Production Cost per DMT	1,338					
	cum tonnage	8,100,000	16,200,000	56,700,000	64,800,000	
PARAMETERS	Year 0	1	2	7	8	
REVENUES		17,820,000,000	17,820,000,000	17,820,000,000	17,820,000,000	
COST OF COAL RECOVERED AND SOLD		10,837,800,000	10,837,800,000	10,837,800,000	10,837,800,000	
GROSS MARGIN		6,982,200,000	6,982,200,000	6,982,200,000	6,982,200,000	
OPERATING EXPENSES						
Govt Share		2,094,660,000	2,094,660,000	2,094,660,000	2,094,660,000	
Gen. & Admin Exp		1,189,439,716	1,189,439,716	1,189,439,716	1,189,439,716	
OPERATING INCOME		3,698,100,284	3,698,100,284	3,698,100,284	3,698,100,284	
NET INCOME BEFORE TAX		3,698,100,284	3,698,100,284	3,698,100,284	3,698,100,284	
30% Tax rate		-	-	-	-	
NET INCOME AFTER TAX		3,698,100,284	3,698,100,284	3,698,100,284	3,698,100,284	
Depreciation & Amortization		1,564,978,320	1,564,978,320	1,564,978,320	1,564,978,320	12,519,826,560
Depletion		293,220,000	293,220,000	293,220,000	270,945,000	2,323,485,000
Total Non-Cash Deductions		1,858,198,320	1,858,198,320	1,858,198,320	1,835,923,320	
CASH FLOW	(14,843,311,560)	5,556,298,604	5,556,298,604	5,556,298,604	5,556,298,604	38,894,090,231
DCFROR	33.79%					
NPV @DCFROR	(14,843,311,560)	4,153,134,840	3,104,320,021	724,300,454	541,388,731	0.00
@15%	(14,843,311,560)	4,831,564,004	4,201,360,003	2,088,818,450	1,816,363,870	10,089,586,671

Table 22. Financial projections for Bobog with west wall expansion.

It can be noted that even at a mining cost of PhP 1,338 per DMT coal, the west wall expansion is still viable. The bottomline figures for the Bobog with west wall expansion are shown in Table 23 below:

WITH WEST WALL EXPANSION	
DCFROR	33.79%
NPV@15%, PhP	10,089,586,671

Table 23. DCFROR and NPV for the Bobog Pit with west wall expansion.

Breakeven coal price and production cost, of the base case. The breakeven coal price is given in Table 24, and that for breakeven production cost in Table 25, on the next page.

BREAKEVEN PRICE						
Total Tonnage Recoverable	64,605,066					
Daily DMT Coal Produced &Sold	22,500					
DMT Coal Sold	8,100,000					
Coal Price per DMT	1,583					
Production Cost per DMT	1,150					
	cum tonnage	8,100,000	16,200,000	48,600,000	56,700,000	
PARAMETERS	Year 0	1	2	6	7	
REVENUES		12,819,373,927	12,819,373,927	12,819,373,927	12,819,373,927	
COST OF COAL RECOVERED AND SOLD		9,315,000,000	9,315,000,000	9,315,000,000	9,315,000,000	
GROSS MARGIN		3,504,373,927	3,504,373,927	3,504,373,927	3,504,373,927	
OPERATING EXPENSES						
Govt Share		1,051,312,178	1,051,312,178	1,051,312,178	1,051,312,178	
Gen. & Admin Exp		855,660,633	855,660,633	855,660,633	855,660,633	
OPERATING INCOME		1,597,401,116	1,597,401,116	1,597,401,116	1,597,401,116	
NET INCOME BEFORE TAX		1,597,401,116	1,597,401,116	1,597,401,116	1,597,401,116	
30% Tax rate		479,220,335	479,220,335	479,220,335	479,220,335	
NET INCOME AFTER TAX		1,118,180,781	1,118,180,781	1,118,180,781	1,118,180,781	
Depreciation & Amortization		1,345,086,000	1,345,086,000	1,345,086,000	1,345,086,000	9,415,602,000
Depletion		293,220,000	293,220,000	293,220,000	293,220,000	2,052,540,000
Total Non-Cash Deductions		1,638,306,000	1,638,306,000	1,638,306,000	1,638,306,000	
CASH FLOW	(11,468,142,000)	2,756,486,781	2,756,486,781	2,756,486,781	2,756,486,781	19,295,407,467
DCFROR	15.00%					
NPV @DCFROR	(11,468,142,000)	2,396,945,027	2,084,300,023	1,191,705,303	1,036,265,481	0.00
@15%	(11,468,142,000)	2,396,945,027	2,084,300,023	1,191,705,303	1,036,265,481	(0.00)

Table 24. Financial projections for breakeven price per DMT coal.

BREAKEVEN COST						
Total Tonnage Recoverable	64,605,066					
Daily DMT Coal Produced &Sold	22,500					
DMT Coal Sold	8,100,000					
Coal Price per DMT	2,200					
Production Cost per DMT	1,615					
	cum tonnage	8,100,000	16,200,000	48,600,000	56,700,000	
PARAMETERS	Year 0	1	2	6	7	
REVENUES		17,820,000,000	17,820,000,000	17,820,000,000	17,820,000,000	
COST OF COAL RECOVERED AND SOLD		13,081,269,404	13,081,269,404	13,081,269,404	13,081,269,404	
GROSS MARGIN		4,738,730,596	4,738,730,596	4,738,730,596	4,738,730,596	
OPERATING EXPENSES						
Govt Share		1,421,619,179	1,421,619,179	1,421,619,179	1,421,619,179	
Gen. & Admin Exp		1,189,439,716	1,189,439,716	1,189,439,716	1,189,439,716	
OPERATING INCOME		2,127,671,701	2,127,671,701	2,127,671,701	2,127,671,701	
NET INCOME BEFORE TAX		2,127,671,701	2,127,671,701	2,127,671,701	2,127,671,701	
30% Tax rate		638,301,510	638,301,510	638,301,510	638,301,510	
NET INCOME AFTER TAX		1,489,370,191	1,489,370,191	1,489,370,191	1,489,370,191	
Depreciation & Amortization		1,888,935,302	1,888,935,302	1,888,935,302	1,888,935,302	13,222,547,114
Depletion		293,220,000	293,220,000	293,220,000	293,220,000	2,052,540,000
Total Non-Cash Deductions		2,182,155,302	2,182,155,302	2,182,155,302	2,182,155,302	
CASH FLOW	(15,275,087,114)	3,671,525,493	3,671,525,493	3,671,525,493	3,671,525,493	25,700,678,450
DCFROR	15.00%					
NPV @DCFROR	(15,275,087,114)	3,192,630,863	2,776,200,751	1,587,301,790	1,380,262,426	0.00
@15%	(15,275,087,114)	3,192,630,863	2,776,200,751	1,587,301,790	1,380,262,426	0

Table 25. Financial projections for breakeven production cost per DMT coal.

The price of coal will have to be at PhP 1,583 per DMT and production costs at PhP 1,615 per DMT coal to break even; the % difference from the base case are 28.06%, and 28.79%, respectively. Thus, the project is almost equally affected by coal prices and production costs. (Please refer to Table 26 below.)

BREAKEVEN ANALYSES	Base Case	Breakeven	% Difference
Price, PhP/DMT	2,200	1,583	28.06%
Production Cost, PhP/DMT	1,150	1,615	28.79%

Table 26. Breakeven analysis for coal price and production cost per DMT coal.

13.7 Project Schedule

Development of the Bobog Project can be done in a very short time once the decision to proceed is made; in fact, pre-stripping has started with almost 20 million bank cubic meters of waste moved. Its proximity to the Panian project will make development much easier.

14.0 COAL RESERVES ESTIMATE

14.1 Database used

The reserve estimation for the Bobog Project is the result of an analysis of the company's resource estimate, embodied in the Update Report dated October 15, 2013 by GBBaquiran and EJCrisologo.

14.2 Integrity of database

The database used in the resource underwent a very thorough analysis, not just in the geological logging and seam modeling, but also a statistical treatment. The criteria used included 90+% core recovery, 7000+ kcal/lb, minimum thickness of 0.50 meter, and maximum ash content of 40%.

14.3 Data verification and validation

Although there was no verification and validation of drill core data, it has been assumed that the integrity of the database used is of high level. The fact that the company did a re-drilling program is a sign on the high standard that the company keeps in terms of quality assurance.

14.4 Coal reserve estimation method used

The purpose of ore reserve estimation is to determine what part of the resource base can be converted to mineable reserves by modifying factors such as mining method, economics, and overall profitability of the project, with due consideration to the safety, social, health and environmental aspects of mining.

For an independent validation of the coal seam modeling and mineable reserves, the drill hole data set was acquired, together with the original topography of the Bobog area; also studied were the operating parameters of the Panian operations that are ongoing, including pit parameters, mining costs and coal prices.

14.5 Coal reserve estimations

14.5.1 Coal specific gravity

The coal ore specific gravity used is 1.40 tons per cubic meter.

14.5.2 Mining plans / mining recovery / dilution factor / mining losses

Based on the data and information provided by the technical staff, the seams were identified, correlated and modelled as volumes; an area of influence of 62.5 meters was used, one-half the drilling grid (125-m) after infill drilling of the initial 250-m grid.

An overall mining recovery of 90% has been considered, to include that of the upgrade of contaminated coal by a washing plant.

14.5.3 Relevant production costs considered

Production costs at Panian – which provide a Class 1 cost estimates – have been used for Bobog, although these become Class 2 in the sense that the coal deposit is not the same for geologic reasons; this however does not prevent the use of Panian costs for Bobog, in fact, it gives very good estimates, considering the proximity of the deposit. The company actually considers the Bobog Project as an extension of Panian.

14.5.4 Basis of Revenue calculation

Revenues have been based on current prices to buyers in the established market, composed mostly of power plants and cement plants.

14.6 Coal reserve classification used

The computed mineable coal reserves 71.78 million DMT have been reduced by 10% to 64.61 million DMT after overall mining recovery (including washing losses).

14.7 Coal reserve estimation

Modelling of mineable reserves. We modelled the entire Bobog coal deposit on a seam-by-seam basis based on the drillhole data in the Competent Person's Report on Bobog resources prepared by Messrs. George Baquiran and Elson Crisologo in October 15, 2013.

Seams 21 and 5 were excluded due to lack of data and information; more specifically, there was no data point at Seam 21 and for Seam 5, there were only two drill holes and two data points.

Resource Base. The computed volumes and tonnages for the resource are shown in Table 27 below.

	BOBOG RESOURCE	
1.4	Volume	Tonnage
Seam 33	17,458,730	24,442,222
Seam 42	9,604,616	13,446,463
Seam 44	6,692,321	9,369,249
Seam 41	4,138,954	5,794,535
Seam 10	3,653,941	5,115,518
Seam 4401	3,775,859	5,286,203
Seam 32	2,270,914	3,179,280
Seam 23	2,164,144	3,029,801
Seam 43	2,351,194	3,291,671
Seam 45	5,134,906	7,188,868
Seam 22	1,454,998	2,036,997
Seam 3101	1,373,500	1,922,900
Seam 31	1,230,130	1,722,182
Seam 4201	1,088,087	1,523,322
Seam 2202	987,756	1,382,859
Seam 311	924,659	1,294,523
Seam 4101	730,494	1,022,692
Seam 8	464,480	650,271
Seam 7	264,138	369,794
Seam 2201	42,129	58,981
Seam 21		-
Seam 5		-
	65,805,950	**92,128,330**

Table 27. Volume and tonnage of resource base.

We then prepared an optimum pit designed to maximize coal extraction based on operating parameters that have already been proven at Panian.

Drillhole spacing; proven and mineable reserves. In our view, the drill hole spacing of 250 meters with in-fill drilling spaced at 125 meters is close enough to warrant considering as proven and mineable all the seams inside the drilling grid that were intercepted and correlated. In view of this and considering that we chose not to include seams with inadequate data, there was no need to estimate any probable, or possible, reserves.

Table 28 on the next page gives the seam-by-seam summary of the mineable coal reserves:

		Bobog Pit		Bobog Pit w/ West Wall Expansion	
	1.4	Volume	Tonnage	Volume	Tonnage
1	Seam 33	13,748,924	19,248,494	15,918,525	22,285,935
2	Seam 42	8,655,294	12,117,412	9,604,616	13,446,463
3	Seam 44	4,248,503	5,947,904	4,529,888	6,341,843
4	Seam 41	3,614,528	5,060,339	3,743,788	5,241,303
5	Seam 10	3,568,243	4,995,540	3,569,208	4,996,891
6	Seam 4401	2,419,959	3,387,943	2,419,959	3,387,943
7	Seam 32	1,990,610	2,786,854	2,183,846	3,057,384
8	Seam 23	1,855,752	2,598,052	1,959,450	2,743,231
9	Seam 43	1,794,393	2,512,150	1,905,225	2,667,315
10	Seam 45	1,382,360	1,935,304	1,486,438	2,081,013
11	Seam 22	1,334,214	1,867,900	1,346,295	1,884,813
12	Seam 3101	1,243,064	1,740,289	1,244,890	1,742,846
13	Seam 31	1,084,393	1,518,150	1,118,027	1,565,237
14	Seam 4201	989,905	1,385,866	989,905	1,385,866
15	Seam 2202	987,075	1,381,905	987,075	1,381,905
16	Seam 311	924,659	1,294,523	924,659	1,294,523
17	Seam 4101	693,144	970,402	693,144	970,402
18	Seam 8	442,090	618,926	451,639	632,295
19	Seam 7	260,670	364,938	264,138	369,794
20	Seam 2201	36,083	50,516	36,149	50,609
21	Seam 21		-		-
22	Seam 5		-		-
		51,273,862	71,783,407	55,376,863	77,527,609

Table 28. Seam-by-seam mineable reserve tonnage for Bobog Pit and with west wall expansion.

Again, note that Seams 21 and 5 did not contribute to the tonnage; these were not modelled since the said seams did not have sufficient data, as mentioned earlier.

Mineable thickness. A review of the drill hole data (1,090 entries) shows only five (5) seam intercepts in three (3) seams in four (4) drill holes that are below 0.5 meter thick; specifically, these are:

- Seam 41 at drill hole LL-28 = 0.35 m
- Seam 41 at drill hole LL-28 = 0.45 m
- Seam 3101 at DH SS-19 = 0.4 m
- Seam 3201 at DH JJ-30 = 0.4 m
- Seam 4101 at DH VV-22R = 0.4 m

We included these in our resource estimates as we think that said thicknesses may be mineable depending on the skill of equipment operators; the coal can be mined and may include associated waste rock but can be brought to the washery for cleaning; on the other hand, the 90% overall mining recovery will take care of any mining losses if these will not be recovered (Please refer to discussion of Recoverable Coal Reserves on page 51).

Calorific values. The average calorific value for each seam is given in Table 29 for the 71.78 million DMT resources; the values show that only two seams, Seam 8 and 7, have CV values below the cut-off of 7,000 BTU/lb, that is, 6,814 and 6,652, respectively.

BOBOG PIT		Cumulative	Average CV	Average CV
SEAM	TONNAGE	Intercept	BTU/lb	kcal/kg
Seam 33	19,248,494	434.95	9,703	5,390
Seam 42	12,117,412	161.35	10,129	5,627
Seam 44	5,947,904	112.30	10,198	5,665
Seam 41	5,060,339	71.05	8,549	4,749
Seam 10	4,995,540	98.95	9,634	5,352
Seam 4401	3,387,943	50.10	9,962	5,535
Seam 32	2,786,854	41.90	9,341	5,190
Seam 23	2,598,052	48.45	9,158	5,088
Seam 43	2,512,150	28.88	9,474	5,263
Seam 45	1,935,304	88.65	10,311	5,728
Seam 22	1,867,900	29.95	7,962	4,424
Seam 3101	1,740,289	13.50	9,092	5,051
Seam 31	1,518,150	35.25	9,284	5,158
Seam 4201	1,385,866	9.00	9,992	5,551
Seam 2202	1,381,905	6.95	9,379	5,211
Seam 311	1,294,523	14.85	9,389	5,216
Seam 4101	970,402	2.75	6,814	3,786
Seam 8	618,926	1.45	6,652	3,696
Seam 7	364,938	2.25	7,957	4,420
Seam 2201	50,516			-
Seam 21	-			-
Seam 5	-			-
Total	71,783,407			
Average			9,560	5,311

Table 29. Seam-by-seam average CV for Bobog pit.

For the expanded west wall scenario, Table 31 on the next page gives the average CV values.

As in the mineable thickness, we have included all seams with respect to CV, as the required market CVs of 5300 kcal/kg (9540 BTU/lb) and 5600 kcal/kg (10080 BTU/lb) can be met using the proper grades from specific seams, and/or with blending with washed coal.

BOBOG PIT W/ WEST WALL EXPANSION SEAM	TONNAGE	Cumulative Intercept	Average CV BTU/lb	Average CV kcal/kg
Seam 33	22,285,935	434.95	9,703	5,390
Seam 42	13,446,463	161.35	10,129	5,627
Seam 44	6,341,843	112.30	10,198	5,665
Seam 41	5,241,303	71.05	8,549	4,749
Seam 10	4,996,891	98.95	9,634	5,352
Seam 4401	3,387,943	50.10	9,962	5,535
Seam 32	3,057,384	41.90	9,341	5,190
Seam 23	2,743,231	48.45	9,158	5,088
Seam 43	2,667,315	28.88	9,474	5,263
Seam 45	2,081,013	88.65	10,311	5,728
Seam 22	1,884,813	29.95	7,962	4,424
Seam 3101	1,742,846	13.50	9,092	5,051
Seam 31	1,565,237	35.25	9,284	5,158
Seam 4201	1,385,866	9.00	9,992	5,551
Seam 2202	1,381,905	6.95	9,379	5,211
Seam 311	1,294,523	14.85	9,389	5,216
Seam 4101	970,402	2.75	6,814	3,786
Seam 8	632,295	1.45	6,652	3,696
Seam 7	369,794	2.25	7,957	4,420
Seam 2201	50,609			-
Seam 21	-			-
Seam 5	-			-
Total	77,527,609			
Average			9,575	5,319

Table 30. Seam-by-seam average CV for the Bobog Pit with expanded west wall.

Recoverable Coal Reserves. A 90% overall mining efficiency is estimated; this includes geologic uncertainties from faulting and folding, mining inefficiencies and washery wastes. Thus, from the table of resources, the mineable reserves for the Bobog Pit is 71.78 million metric tons; with the west wall expansion, there is an upside of 5.74 million metric tons mineable reserves, equivalent to a recoverable reserves of 5.17 million DMT.

The net result of all this is that we came out with proven mineable reserves of 77.53 million DMT. This shows that from our own independent review, all the coal resources identified in the above-mentioned October 15, 2013 CP report by GBBaquiran and EJCrisologo can be fully mined in the proposed optimum pit design.

Based on experience at Panian, we estimate that, as a result of folding, faulting, mining inefficiency and coal washery losses, the mineable reserves will be reduced by 10%. Thus, the ultimate recoverable and marketable coal reserves is estimated at 64.61 million DMT; including the west wall expansion, it will be 69.77 million DMT.

Coal quality. In studying the seam thickness and calorific values we noted that only very few entries are below the cutoff thickness and cut-off CV. Thus, we included all of the seam intercepts in the overall averages. For the ash, sulfur and moisture content, the average of the values for the total resources are as follows: 10.0% for ash, 0.9% for sulfur and 12.1% for moisture content.

14.8 Total waste and stripping ratio

The total material moved from the Bobog Pit is 530.356 million cubic meters and the volume of the coal is 51.15 million cubic meters; this gives a total waste volume of 459.14 million cubic meters. At a specific gravity of 1.40, this gives a total coal tonnage of 71.61 million DMT. The average stripping ratio for the Bobog pit is 6.40.

The total material moved from the expanded west wall is 666.759 million cubic meters; the average stripping ratio with an expanded west wall is 7.63.

Table 32. Below shows the derivation of the average stripping ratios for both pits.

	BOBOG PIT		Cummulative		BOBOG EXPANDED PIT		Cummulative	
1.4	Volume	Tonnage	Tonnage	SR	Volume	Tonnage	Tonnage	SR
Seam 33	13,748,924	19,248,494	19,248,494	23.85	15,918,525	22,285,935	22,285,935	26.54
Seam 42	8,655,294	12,117,412	31,365,906	14.64	9,604,616	13,446,463	35,732,398	16.55
Seam 44	4,248,503	5,947,904	37,313,810	12.30	4,529,888	6,341,843	42,074,241	14.06
Seam 41	3,614,528	5,060,339	42,374,149	10.84	3,743,788	5,241,303	47,315,544	12.50
Seam 10	3,568,243	4,995,540	47,369,689	9.69	3,569,208	4,996,891	52,312,434	11.31
Seam 4401	2,419,959	3,387,943	50,757,631	9.05	2,419,959	3,387,943	55,700,377	10.62
Seam 32	1,990,610	2,786,854	53,544,485	8.57	2,183,846	3,057,384	58,757,761	10.07
Seam 23	1,855,752	2,598,052	56,142,538	8.18	1,959,450	2,743,231	61,500,992	9.62
Seam 43	1,794,393	2,512,150	58,654,688	7.83	1,905,225	2,667,315	64,168,307	9.22
Seam 45	1,382,360	1,935,304	60,589,993	7.58	1,486,438	2,081,013	66,249,319	8.93
Seam 22	1,334,214	1,867,900	62,457,892	7.35	1,346,295	1,884,813	68,134,132	8.68
Seam 3101	1,243,064	1,740,289	64,198,181	7.15	1,244,890	1,742,846	69,876,978	8.46
Seam 31	1,084,393	1,518,150	65,716,332	6.99	1,118,027	1,565,237	71,442,216	8.28
Seam 4201	989,905	1,385,866	67,102,198	6.84	989,905	1,385,866	72,828,082	8.12
Seam 2202	987,075	1,381,905	68,484,103	6.70	987,075	1,381,905	74,209,987	7.97
Seam 311	924,659	1,294,523	69,778,625	6.58	924,659	1,294,523	75,504,510	7.83
Seam 4101	693,144	970,402	70,749,027	6.49	693,144	970,402	76,474,911	7.73
Seam 8	442,090	618,926	71,367,953	6.43	451,639	632,295	77,107,206	7.67
Seam 7	260,670	364,938	71,732,892	6.40	264,138	369,794	77,477,000	7.63
Seam 2201	36,083	50,516	71,783,407	6.40	36,149	50,609	77,527,609	7.63
Seam 21		-	71,783,407	6.40		-	77,527,609	7.63
Seam 5		-	71,783,407	6.40		-	77,527,609	7.63
	51,273,862	**71,783,407**			**55,376,863**	**77,527,609**		
	volume above pit		530,355,868				666,758,739	
	pre strip		19,941,356				19,941,356	
	total volume of coal		51,273,862				55,376,863	
	total vol in pit, pre-stripped & mined		459,140,650				591,440,519	
	SR			6.40				7.63

Table 32. Waste and coal volumes moved, coal tonnages and striping ratios.

15.0 INTERPRETATION AND CONCLUSIONS

15.1 Company's capability

Given the role of Semirara Mining Corporation in providing 95% of the country's coal supply, and its continuing viability in the Panian Project, it is important for the company not just to continue playing its role, but to keep working on how to maximize the utilization of the coal resource endowment of the island.

Having overcome major hurdles like the management of inflow of water into the pit and maintaining pit wall stability, coupled with the decreasing mining costs, the company has been doing well in the continuous production of coal in the island.

Panian will be exhausted in a few years and there is the need to justify the implementation of the Bobog Project; thus the exercise done on the resource estimation, and this on reserves estimation. Looking further ahead, Bobog will perhaps be followed by Himalian, where probably drilling has started. Other areas in the island are also currently being studied, like the west of Panian.

The technical successes at Panian can be adopted at Bobog, like the cut-off wall and the GEOMOS; also, the company's cost-efficiency in mining, and the continuing safety, social, health and environmental programs will contribute to the viability of the project.

The established market for Semirara coal that will ensure the demand for the product and the increasing role that the company is playing in the country's power sector are incentives enough for the company to pursue Bobog and future projects.

The various financial scenarios to determine viability of the project show that Bobog is viable.

15.2 Adequacy of data, overall data integrity, and areas of uncertainty

The quality of the data used in both the resource estimation and this reserves estimation can be said to be high; the costs, prices and production capacity are well grounded in the sense that they are recent and will be similar to nearby Panian.

The main risks to the project are: (1) water inflow management, which have been lowered due to the experience already gained in Panian; there is however, the need to keep learning better ways, including combining these with dewatering, perhaps grouting, and the like; (2) maintaining stability of the pit walls, which has similarly been lowered with the use of GEOMOS; the company

has plans in getting better albeit more expensive monitoring systems; and (3) the need for a better understanding of the geology of the future pit, as there are reported previously unseen structures in Panian and Bobog; the February 2013 incident is a constant reminder of the importance to ensure stability of the pit walls because any disruption of production operations will impact not just the company's market, but the country as a whole, given the contribution of Semirara coal to our power needs.

The economy's requirement for power, and the share of coal in the power mix, will ensure the supply for coal in many years to come; thus coal, notwithstanding the negative things we hear about it, will be here to stay.

15.3 Overall conclusions of the CP

The Bobog Project is a viable one, based on the financial exercises made in this report; this is after estimating mineable reserves from drillhole data, operating parameters and incorporating current mining practices at Panian.

An analysis on the sensitivity to production capacity, coal price, mining costs show that the project is very viable under the economic conditions used in the financial exercise.

15.4 Meeting objectives of the study

As a whole, this report should satisfy the main objectives: how much coal is there in the Bobog and will it be viable to produce?

16.0 RECOMMENDATIONS

With the current success being experienced by the company in Panian, and surely for future projects like Bobog and perhaps Himalian, the maintenance of the safety, continuity and profitability of the operations cannot be overemphasized.

To sum it up, Figure 27 below perhaps captures a simple strength-weakness-opportunity-and-threat (SWOT) analysis of the Bobog Project, even if taken from the Panian pit operations: (1) the technical capability of the company to mine at a very low production costs, (2) the continuous need to stabilize the pit especially regarding the high-porous and permeable reefal debris layer and other structural discontinuities that may allow water to saturate and thus weaken the pit walls, (3) the continuing and increasing demand for fuel of a growing economy, and (4) the challenge by current drop in crude oil and petroleum products.

The pit stability aspect can be countered by a continuing study of the geology of the project site; learnings from Panian must be applied in Bobog.

On the threat of falling petroleum prices, the decreasing production cost of Panian and the future Bobog operations will ensure competitiveness of the project as a fuel source; cost-efficiency is the main strategy in mining, as product price is always market-driven and beyond the control of the company; but it also helps that there is an established set of buyers such as power plants and cement plants that will keep demand for a long time.

Looking at other opportunities like maximizing utilization of available resources (like the potential west wall expansion) will also help improve the viability of the Bobog Project, apart from maximizing the utilization of the coal resource endowment of the island.

Figure 29. Pit operations at Panian (Source: GPPamintuan)

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