MINERGY COAL: MASAMA COAL PROJECT, BOTSWANA: WEST BLOCK COAL RESOURCE, INDEPENDENT COMPETENT PERSONS REPORT

Report Prepared for:
Minergy Coal (Pty) Ltd.

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01 NOVEMBER 2016

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EXECUTIVE SUMMARY

GM Geotechnical Consultants CC (GM Geotech) was commissioned by Minergy Coal (Pty) Ltd (Minergy or Client), to prepare a resource estimate and competent persons report on the Coal Resources of the West Block (Focus Area) of the Masama Coal Project in accordance with the SAMREC Code (2016)[1] and applicable requirements of Section 12 of the Botswana Stock Exchange (BSE) Listing Requirements (2003)[4].

The document details the estimate of the Coal Resources as at 01 November 2016 and incorporates all valid exploration and other relevant data available up to this date, viz. historic Shell Coal Botswana (Pty) Ltd. data, information collected by Minergy during an exploration and drilling programme conducted during 2012 as well as the new information collected by Minergy during an exploration and drilling programme conducted during the first semester of 2016.

Project Outline

The Masama Coal Project is located in the Kweneng and Kgatleng Districts of eastern Botswana and lies approximately 50 km north of Gaborone (Fig.1). The larger Prospecting License (PL278/2012) area is outlined with a solid black line in Figure 1. Minergy has previously defined the West Block (WB), Central Block (CB) and East Block (EB) coal prospects outlined with purple stippled lines in Figure 1 and previously drilled and delineated Coal Resources on the WB and CB. Historically an area overlapping with the WB and CB and the area inbetween, was extensively exploded by Shell Coal Botswana (Pty) Ltd. between 1974 and 1982 (see Table 1). More recently Minergy has identified significant shallow Coal Resources in two coal seams within the “Focus Area” (outlined in red in Fig.1).

The prospecting licence (PL278/2012) for the Masama Coal Project, entitles Minergy Coal (Pty) Ltd. as the holder to the exclusive right to prospect for coal and coalbed methane and to access the land to which the prospecting licence relates. The licence covers an area of 697.1 km². The current licence is valid until 30 September 2017 and is renewable for a further two-year period (before extensions).

The entire licence representing the Masama project is in a category of land in Botswana called Communal or Tribal Land. Tribal land is administered by Land Boards who are empowered to grant, acquire, repossess and rezone tribal land.

The Directors of Minergy Coal (Pty) Ltd. has confirmed by means of a written statement that there are no pending or existing legal proceedings against the company that may have an influence on the current prospecting licence or the Company’s ability to apply for a mining licence.

Accessibility, Physiography and Infrastructure

Botswana has a well-developed transportation network and the Masama Project can be accessed by gravel roads with further access within the project areas by tracks. The project is located close to Botswana's main A1 highway, which also has a railway line, pipelines and power lines running parallel to it. Collectively this is often referred to as "Botswana's Infrastructure Corridor".

The project area is generally flat with one small drainage line. Vegetation in the area is classified as tree savannah. Land use in the area is predominantly for subsistence agriculture, livestock (cattle) and limited crop cultivation. Land in the area has been well utilised and the diversity of natural fauna tends to be low.

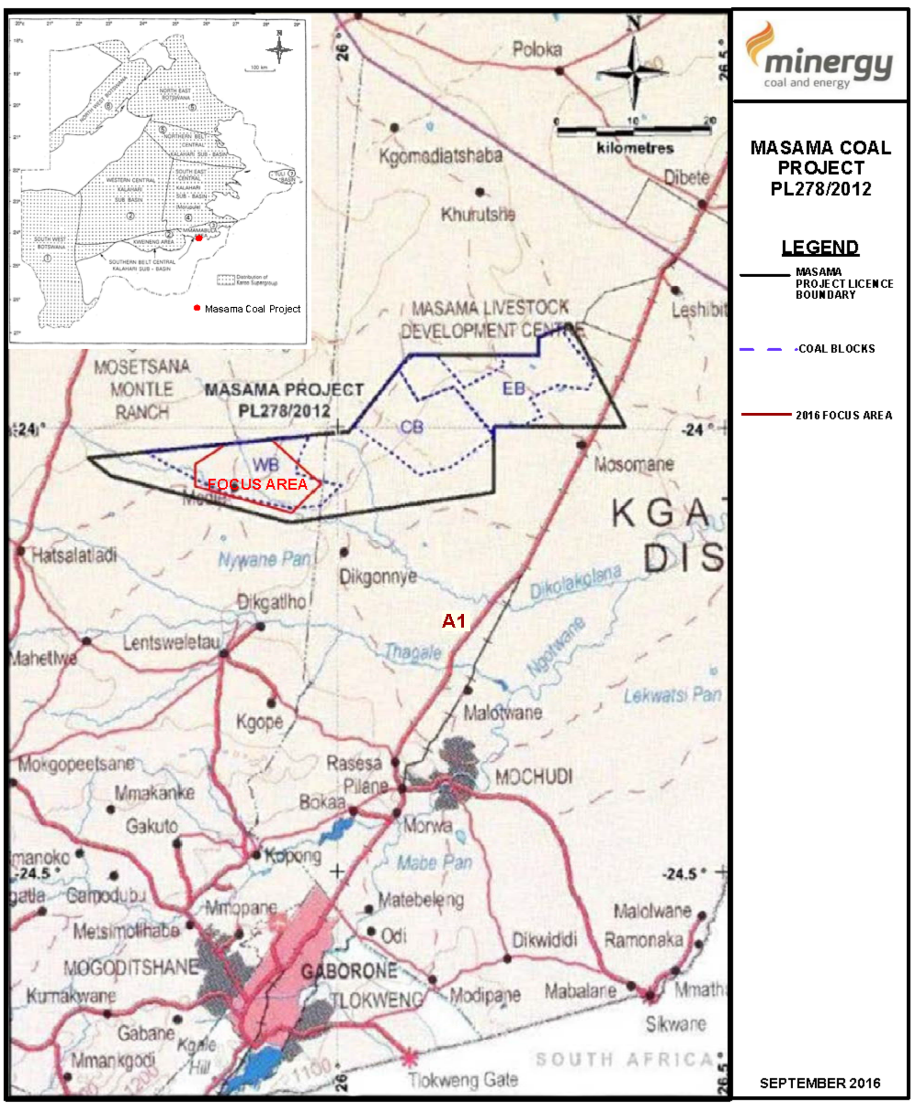

Figure 1: Masama Coal Project locality map. The Masama Project License (PL PL278/2012) area is outlined in solid black; the West Block, Central Block and East Block are outlined in stippled purple and the "Focus Area" in solid red.

One small village (Medie) is located within the "Focus Area". The Masama Coal Project and therefore the "Focus Area" is close to the existing transmission grid in Botswana.

Project History

Parts of the area representing the Masama Coal Project were previously explored by Shell Coal Botswana between 1974 and 1982. Shell confirmed the presence of high quality coal at shallow depths. Minergy was able to source much of the exploration data collected by Shell and have also verified their results.

In 2013 after initial exploration by Minergy, Coffey Mining estimated a 2.8 BT Inferred Coal Resource in accordance with the JORC Code (2012)[16] for five seams and in two areas of the project. The current report covers only two coal seams in a much smaller "Focus Area".

During 2014 Minergy conducted a Scoping Study (Coffey, 2014)[6] on a large export focussed opencast mine with Coffey Mining.

During 2015 and early 2016 Minergy conducted a concept Study on a 300 MW mine mouth Power Station at the Masama Project with Mott MacDonald (2016)[15].

Geological Setting and Coal Deposit Type

The Masama Coal Project is located within the Mmamabula Area of the Southern Belt of the Central Kalahari Sub-Basin of Botswana. The Mmamabula Coalfield is contiguous with and forms the western extension of the Waterberg Coalfield of South Africa.

Geologically the Masama Coal Project area is underlain by coal, coaly mudstone and sandstone of the Mmamabula Formation of the Ecca Group of the Karoo Supergroup (Fig. 2).

Five major coal seams and a coal sequence are developed in the Masama Coal Project area. These are from the base upwards, the E Seam, A Seam, A Sequence, A Upper Seam, K Seam and G Seam. In this report, coal resources were only estimated for the E Seam and A Seam in a Focus Area within the western portion (West Block) of the project area.

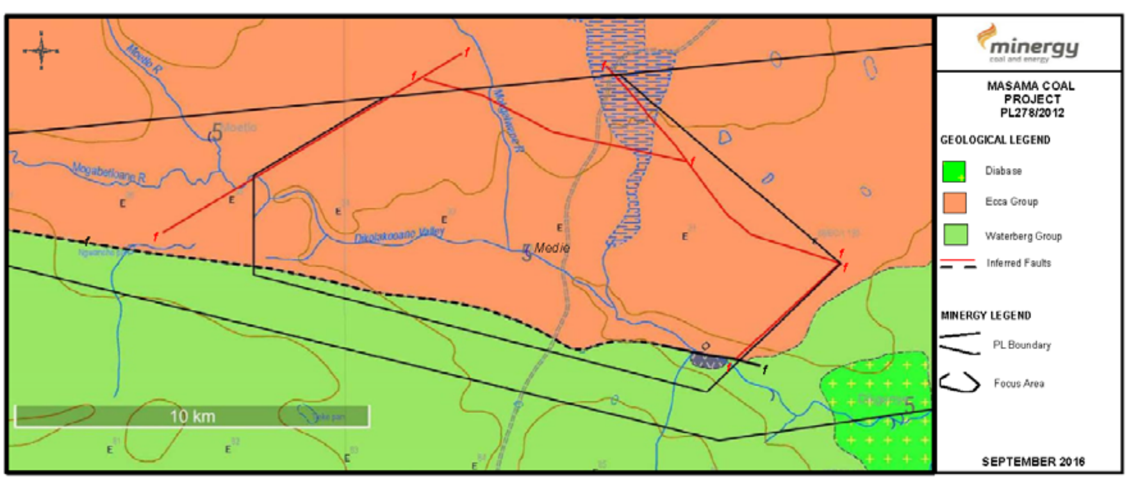

Figure 2: Regional geological map.

The strata in the Masama Coal Project area are generally flat, dipping gently at less than 3°. Two major "structural highs" were regionally identified by Shell in their exploration of the area. These are the large "Central High", which separates the West and the Central Blocks and also the smaller "South West High", which lies in the central area of the West Block. The current exploration focuses in the environs of the South West High as described by Shell. All coal seams pinch out over the "structural highs" and locally dip directions may vary away from these features. A few faults, trending northeast-southwest and northwest-southeast, were identified by Shell and more recently by GM Geotech. The southern boundary of the coal-bearing Ecca Group with the Waterberg Group is interpreted as a faulted-contact.

Exploration Data and Information

The past (1974 – 1982) and present (2012 and 2016) exploration drilling programmes conducted by Shell Coal Botswana (Pty) Ltd. and Minergy Coal (Pty) Ltd. respectively are summarized in Table 1.

Table 1: Summary of exploration programmes (historical reports and information provided by the Client).

COMPANY	DATE	No. OF BH	CORED	OPEN-HOLED	WIRELINE LOGGING	BH SPACING
Shell Coal Botswana (Pty) Ltd	1974-1975	4	3	1*	BPB	-
	1976	11	6	5	BPB	-
	1980	25	14	11	Mini-Logger	±2 – 2.5 km
	1981-1982	76	31	45	BPB	±1.2 – 2 km
Minergy Coal (Pty) Ltd.	2012	20*	20	0	Poseidon Geophysics	2.5 -3km
	2016	11	11	0	Poseidon Geophysics	±500 m.

*** West Block and Central Block boreholes**

Aeromagnetic data flown by the Fugro Airborne Surveys for, and on behalf of, the Botswana Government (DGS) in 1986 were used to identify major geological boundaries, structures and the presence of late Karoo aged intrusives affecting the Masama Coal deposit.

The main objectives of the exploration programmes were to verify the historic results and to infill the historic Shell and Minergy boreholes in order to estimate Inferred and Indicated Coal Resources on the Masama Coal Project in accordance with the guidelines of the SAMREC code (2016)[1] and SANS guide (SANS10320:2004)[2].

All the boreholes were drilled by Diabor Botswana (Pty) Ltd. as either HQ or TNW diameter core. All boreholes were drilled vertically.

Down-the-hole geophysical logging was conducted on most boreholes drilled by Shell (1982)[14] and on all boreholes drilled by Minergy. The typical suite of data collected was, long spaced density, short spaced density, gamma and calliper.

Core was logged and sampled in accordance with Minergy's protocols and samples were submitted to the SANAS accredited, SABS Secunda Laboratory (T0230), Noko Analytical Services (T0512) and Bureau Veritas Inspectorate (T0313) for coal quality analyses (float sink wash tests at a range of densities); and Letaba Civil Engineering Materials Laboratory (Pty) Ltd. (T0549) for foundation indicator analyses. Samples were prepared and analysed using SABS, ASTM and ISO standard methods.

Site visits were conducted by Gerhard Mulder (Geologist) and Pauline Venter (Technical Assistant) on 4, 5 and 31 May 2016 as well as 1 June 2016; by Dan Ferreira (Surveyor and Mine Planner) on 5 and 6 May 2016; and by D.S. Coetzee (Geologist) on 15 July 2016.

From the Effective Date of this CPR until the date this CPR was issued, the CP is not aware of any material changes that have occurred in relation to the Masama Coal Project. Work undertaken prior to the inspection by the Competent Person has been validated and the information can be relied on.

As far as the CP has been able to ascertain, the information provided by the Client was complete and not incorrect, misleading or irrelevant in any material aspect. The CP has no reason to believe that any material facts have been withheld.

Coal Resource Estimates

The Coal Resource estimate was conducted in accordance with the South African Code for Reporting of Mineral Resources and Mineral Reserves (SAMREC) Code (2016)[1], as well as considering the South African guide to the systematic evaluation of coal resources and coal reserves (SANS10320:2004)[2]. As part of the resource estimation process all available geological and geophysical data were reviewed in detail and during classification of the resource consideration was given to the consistency of the coal seam thicknesses and coal quality over the West Block as well as the larger Masama Coal Project Prospecting License area.

The consultants who have provided input to this CPR are listed alphabetically by name below:

Name	Professional Registration	Qualification	Professional Membership	Company	Discipline
Dan Ferreira		Mine Surveyor's Certificate of Competency	South Africa Institute of Mine Survey (SAIMS)	Dan Ferreira Technical Services cc	Mine Surveying and Mine Planning
Faan Coetzee	Pr. Sci. Nat.	BSc Geol.; BSc Hons Geol.; MSc Geology; PhD. Geology	MGSSA	GM Geotechnical Consultants	Structural & Coal Geology & Coal Resources
Gerhard Mulder		BSc Geol.	MGSSA	GM Geotechnical Consultants	Coal Geology and Geotechnical work
Pauline Venter				GM Geotechnical Consultants	CAD Operator and technical field assistant

The author and lead Competent Person responsible for this report is Prof. D.S. (Faan) Coetzee an experienced geologist and an associate of GM Geotech.

Golden Software Surfer® Version 11 and Model Maker® Version 12.02 were used for the structural, physical and quality modelling of the coal resource as well as for the mine design. Seam volumes were calculated in Surfer and utilized to calculate coal tonnages. Kriging was used to interpolate coal qualities and physical parameters.

Boundaries to the resource estimate took into account data derived from Shell Coal Botswana (Pty) Ltd.'s structural interpretation (Shell 1982)[14]; an interpretation of the southern faulted contact from the Botswana Government aeromagnetic data and published geological maps; the Prospecting License boundaries and recent structural as well as sub-outcrop interpretations by the author.

The seam thickness constraint applied for opencast operations of the A Seam was a minimum thickness of 0.5 m. The A Seam is foreseen to be mined by opencast methods in areas where the in situ strip ratio is less than 5:1 (cubic meters waste:tonnes coal). The remaining resource will be mined by underground methods.

The seam thickness constraint applied for underground operations of the E Seam and A Seam was a minimum thickness of 1.5 m.

The values of the critical coal quality parameters, namely calorific value, ash content, inherent moisture content and volatile matter content as reflected in the resource summary table (Table 2) implies that all the coal meets, or can be blended or beneficiated to meet the quality criteria of the specific relevant markets at acceptable yields, therefore no raw quality cut-offs are applied.

The proposed resource areas for the A Seam and the E Seam as defined in accordance with the current information are shown in Figure 3 and Figure 4 respectively.

The Masama Coal Resources were partly classified as Indicated Resources and partly as Inferred Resources in the areas as shown in Figure 3 and Figure 4. A discount of 30% was applied to the entire resource for unforeseen geological losses. This classification and the discount applied was done considering the confidence levels of drilling techniques, logging, drill sample recovery, sub-sampling techniques and sample preparation, quality of assay data, verification of sampling and assaying, location of sampling points, data density and distribution, database integrity, geological interpretation, seam deposit type, estimation and modelling techniques and consistency of physical coal parameters and coal qualities.

A summary of the Coal Resource estimate is presented in Table 2.

Technical Studies

Detailed technical studies have not yet been conducted on the Coal Resources reported in this report however some of the studies conducted as part of a Scoping Study (Coffey 2014)[6] are relevant as they cover similar areas.

Other Relevant data and Information

The Masama Coal Project is located near to Jindal Steel and Power's 2.4 BT Mmamabula East Coal Project and also proximate to the 670 Mt Mmamabula South and Central Coal Projects (Anglo Coal Botswana). Morupule Coal Mine, Botswana's only operating coal mine is located some 200 km northeast of Masama near the town of Palapye in southeast Botswana. The Waterberg Coalfield across the border to the east of Masama in the RSA hosts several operating coal operations including the Grootegeluk Coal Mine (Exxaro) as well as other advanced projects like Eskom's Medupi and Matimba coal-fired power stations, which have a combined capacity of ~8 000 MW.

Possible material and legal/environmental risk factors identified are:

- The local influence of large- and small-scale geological structures on the coal deposit;
- Drainage line and roads passing through the potential mining area; as well as the village of Medie that falls near opencast mining areas and on top of a potential underground within the potential mining area;
- The possible influence of mining operations on groundwater occurrences;
- Acid Mine Drainage from coal discards or from carbonaceous material that is backfilled into the pit voids.
- The depth of weathering and its impact on the exact position that opencast mining can commence.
- Variation in E Seam thickness impacting on underground mining
- Not all Inferred Resource are upgraded to Indicated Resources
- Insufficient power supply;
- Distance to some potential markets.

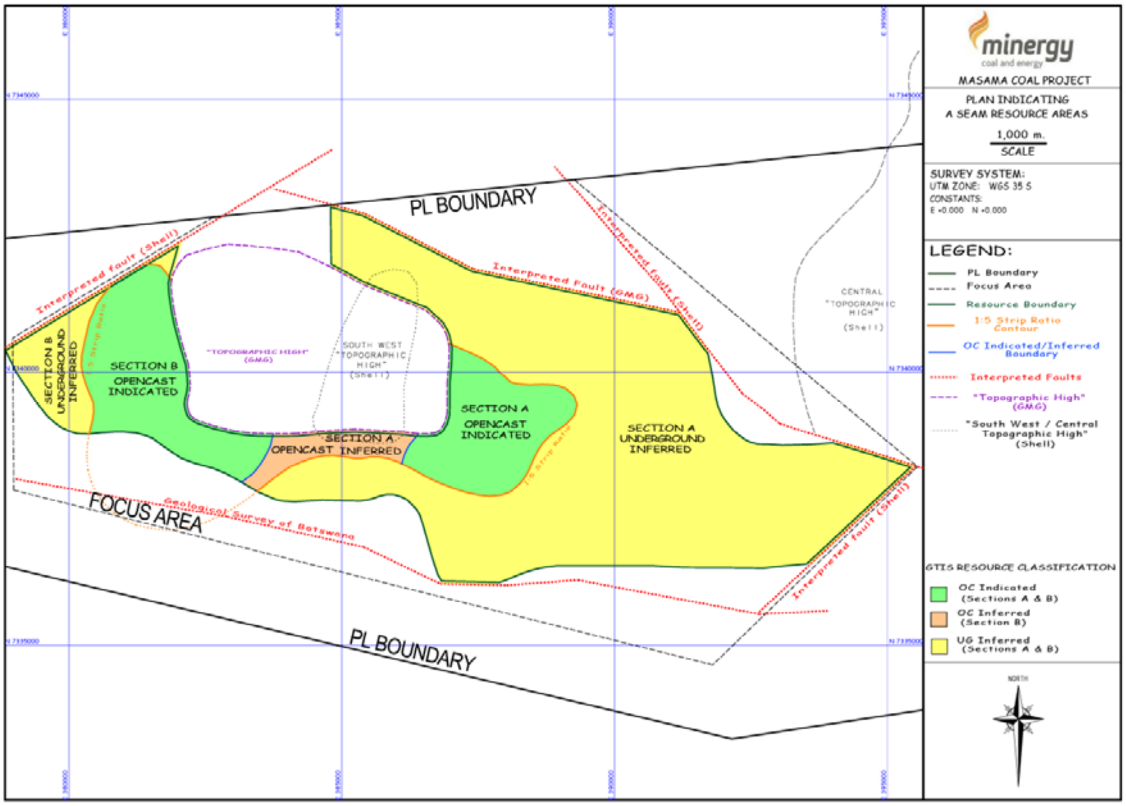

Figure 3: A Seam Resource Classification plan.

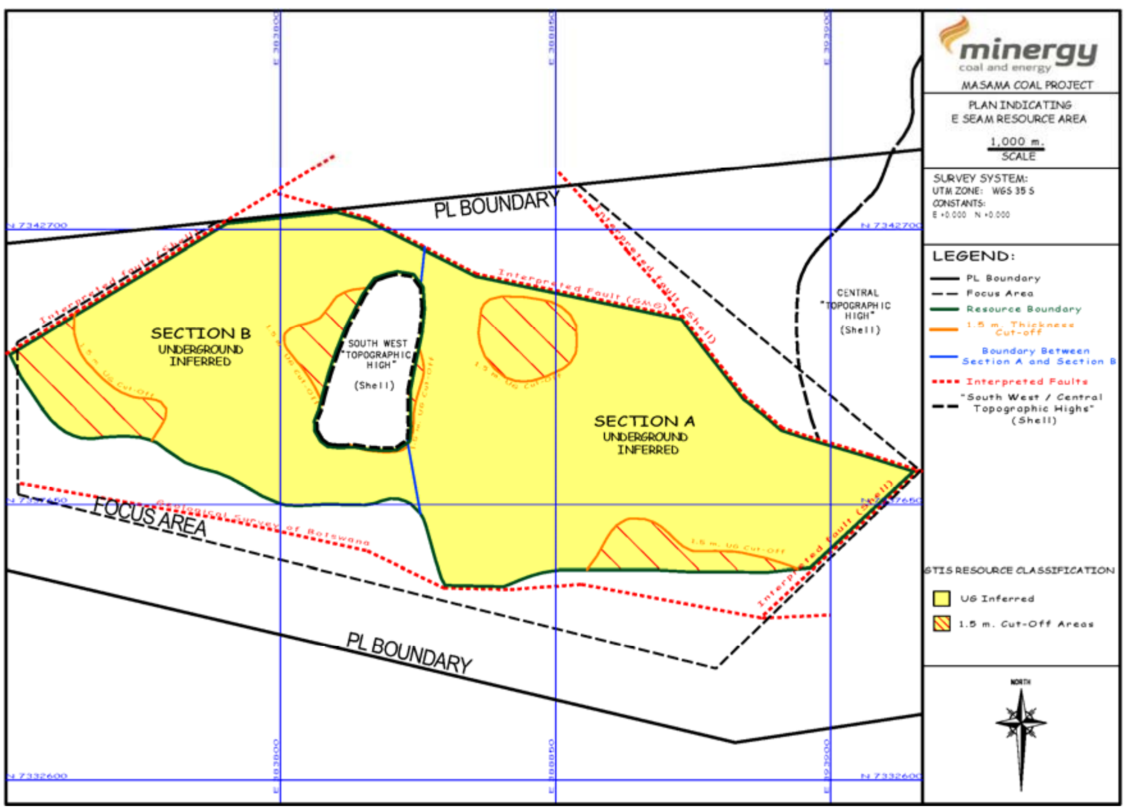

Figure 4: E Seam Resource Classification plan.

Table 2: Mineable Tonnes In Situ Coal Resource Summary – "Focus Area".

FOCUS AREA - MASAMA COAL PROJECT: BOTSWANA										
COAL RESOURCES					Raw Coal Qualities (Air Dried)					
SEAM	AREA	CLASSIFFICATION	Average Seam T (m)	MTIS Resource (Mt)	RD	C.V. (MJ/kg)	ASH (%)	IM (%)	V.M. (%)	TS (%)
A Seam	Opencast (Section A)	Indicated	4.88	25.15	1.49	22.62	18.6	6.3	25.5	1.65
A Seam	Opencast (Section B)	Indicated	5.40	36.54	1.53	21.57	19.5	6.7	24.1	1.63
TOTAL A SEAM	**Opencast (Sections A & B)**	**Indicated**	**5.19**	**61.69**	**1.51**	**22.00**	**19.1**	**6.5**	**24.7**	**1.64**
A Seam	Opencast (Section A)	Inferred	5.93	9.52	1.54	21.18	23.5	5.3	24.6	2.74
TOTAL A SEAM	**Opencast (Section A)**	**Inferred**	**5.93**	**9.52**	**1.54**	**21.18**	**23.5**	**5.3**	**24.6**	**2.74**
A Seam	Underground (Section A)	Inferred	4.68	166.62	1.51	22.34	20.6	5.3	24.6	2.11
A Seam	Underground (Section B)	Inferred	5.04	15.56	1.60	18.82	28.3	5.3	22.9	0.84
TOTAL A SEAM	**Underground (Sections A & B)**	**Inferred**	**4.71**	**182.18**	**1.52**	**22.04**	**21.3**	**5.3**	**24.5**	**2.00**
E Seam	Underground (Section A)	Inferred	1.68	52.41	1.44	24.57	16.4	5.2	27.0	1.28
E Seam	Underground (Section B)	Inferred	1.84	41.30	1.59	17.80	36.5	4.0	23.2	1.64
TOTAL E SEAM	**Underground (Sections A & B)**	**Inferred**	**1.75**	**93.71**	**1.51**	**21.59**	**25.3**	**4.7**	**25.3**	**1.44**
TOTAL A & E SEAMS	**Underground (Sections A & B)**	**Inferred**		**275.89**	**1.51**	**21.89**	**22.62**	**5.09**	**24.75**	**1.81**
TOTAL RESOURCE				**347.10**	**1.51**	**21.89**	**22.02**	**5.35**	**24.73**	**1.81**

Interpretation and Conclusions

A total Coal Resource of 347 Mt has been estimated for the E Seam and A Seam within the Focus Area of the West Block of the Masama Coal Project. This Resource can be further broken down as follows:

- 61.7 Mt Indicated Coal Resource in the A Seam within Opencast Section A and Section B;
- 9.5 Mt Inferred Coal Resource in the A Seam within Opencast Section A;
- 275.9 Mt Inferred Coal Resource in the E Seam and the A Seam within Underground parts of Section A and Section B.

Raw coal quality ranges for the E Seam and A Seam are as follows:

- E Seam Section A (U/G): CV 21.0 MJ/kg to 25.7 MJ/Kg, Ash 28.1% to 12.5%, Total Sulphur 1.2% to 2.8%
- E Seam Section B (U/G): CV 15.2 MJ/kg to 23.2 MJ/Kg, Ash 43.2% to 19.8%, Total Sulphur 0.5% to 2.7%
- A Seam Section A (O/C and U/G): CV 21.2 MJ/kg to 23.2 MJ/Kg, Ash 25.1% to 17.8%, Total Sulphur 0.8% to 2.8%
- A Seam Section B (O/C and U/G): CV 18.8 MJ/kg to 22.1 MJ/Kg, Ash 28.3% to 17.2%, Total Sulphur 0.6% to 2.6%

Wash results from borehole core for the Masama Coal Project indicate that different potential products could be produced for the E Seam and the A Seam at acceptable theoretical product yields as indicated below:

- For the E Seam (Section A, Underground), a product with an average CV of 26.8 MJ/kg (6,401 kcal/kg), with 10.4% ash and 0.52% TS could be produced at an average theoretical product yield of ~86%;
- For the E Seam (Section B, Underground), a product with an average CV of 25 MJ/kg (5,971 kcal/kg), with 14.5% ash and 0.47% TS could be produced at an average theoretical product yield of ~62%.
- For the A Seam (Section A, Opencast and Underground), a product with an average CV of 26.0 MJ/kg (6,210 kcal/kg), with 10.1% ash and 0.47% TS could be produced at an average theoretical product yield of ~63%.
- For the A Seam (Section B, Opencast and Underground), a product with an average CV of 25.0 MJ/kg (5,971 kcal/kg), with 11.5% ash and 0.26% TS could be produced at an average theoretical product yield of ~60%.

Recommendations

Only a small segment of the Masama Prospecting Licence area has been explored to date and there is potential to increase the Resource with further drilling.

Infill drilling is also recommended to upgrade the selected Indicated Resources to Measured Resources and the Inferred Resources to Indicated Resources and eventually Measured Resources.

It is highly recommended that a laser derived ground digital terrain model must be developed for the Masama Coal Project Focus Area prior to finalizing the mine planning.

The potential coal products that could be produced and their potential markets should be examined in more detail.

Low quality coal is present above the A Seam and would be extracted during opencast mining – potential uses for this coal should be investigated. This coal is not included in the Coal Resource estimate.

The Masama Coal Project represents an exciting opportunity for the development of a small to medium scale coal mine in Botswana and it is recommended that the project be advanced to a feasibility stage. In order to prepare the project for a Mining Licence application a comprehensive Environmental and Social Impact Study needs to be completed as prescribed under Botswana legislation.

Minergy has met its expenditure commitments and plans further exploration and related work for the Masama Coal Project as shown in Table 3.

Table 3: Masama Coal Project proposed work programme and budget.

Work Item	Cost ZAR	Comments
Fully cored (Diamond) Drilling 1000 m	4 500 000	Includes drilling, field costs, assays, DH geophysics, interpretation and updated resource estimates
Percussion Drilling 600 m	750 000	Includes drilling, field support, DH geophysics, and interpretation
EIA and water studies	3 415 000	Includes all aspects of the EIA studies as well as water studies
Feasibility Study	3 380 000	Includes all aspects of a Feasibility Study, Lidar Survey and geotechnical studies
Total	**12 045 000**	

This Executive Summary represents a true reflection of the content of the full report.

1. INTRODUCTION

1.1 Terms of reference and scope of work (1.1 (i); 9.1 (i), (ii), (iii); 10.1 (i), (ii))

GM Geotechnical Consultants CC (GM Geotech) was commissioned by Minergy Coal (Pty) Ltd. (Minergy or the Client), to prepare a resource estimate and competent persons report on the Coal Resources in the E Seam and A Seam of the West Block (Focus Area) of the Masama Coal Project utilising historic data as well as the new exploration information collected by the Client in collaboration with GM Geotech in 2016. This report was prepared in accordance with the South African Code for the Reporting of Exploration Results, Mineral Resources and Mineral Reserves (SAMREC) Code (2016)[1], as well as considering the South African Guide to the Systematic Evaluation of Coal Resources and Coal Reserves (SANS 10320:2004)[2]. This standard provides a detailed framework for reporting on coal resources and reserves for the purpose of the Securities Exchanges referred to herein, and define common terminology (Fig. 5) to be used in public reporting with the SAMREC Code. Applicable requirements of Section 12 of the Botswana Stock Exchange Listing Requirements (2003)[4] were considered and complied with.

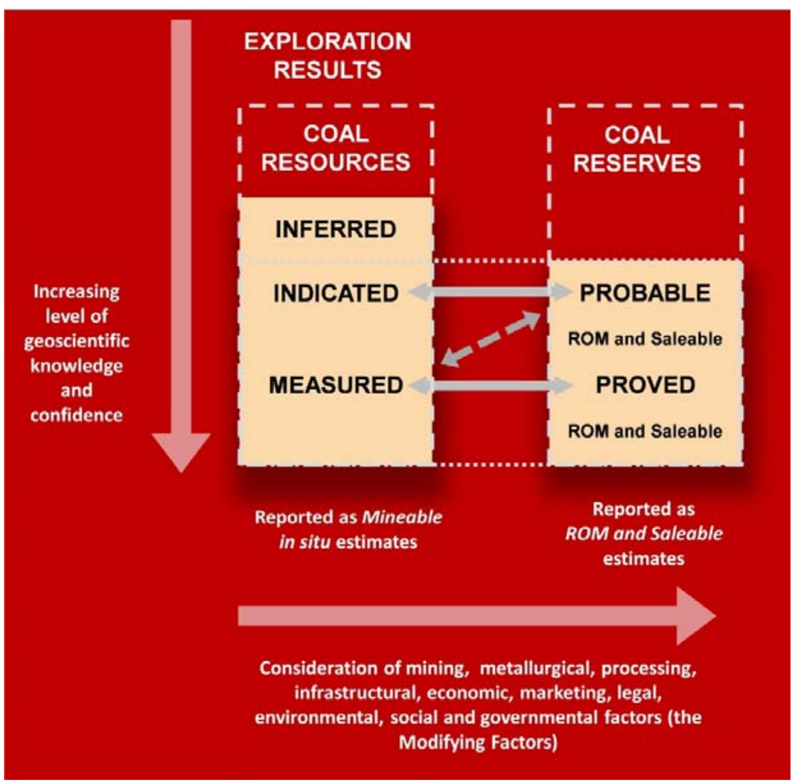

Figure 5: Relationship between Coal Resources and Coal Reserves.

This report was prepared in accordance with the requirements of the SAMREC Code (2016)[1] and all the relevant requirements of the SAMREC Code Table 1 have been complied with. A compliance checklist is provided in Appendix 2 of this report, which cross references the SAMREC Table 1 checklist to the content of this report.

The competent person with overall responsibility for reporting of Mineral Resources is D.S. Coetzee, PhD Geology; Pr. Sci. Nat. (400136/00); MGSSA (963564), who is an associate consulting geologist at GM Geotech. D.S. Coetzee has extensive experience in the field of geology. In addition, he has a demonstrated track record of undertaking independent technical assessments and audits of mineral resources, project evaluations and competent person's reports for exploration and mining companies.

Neither GM Geotech nor the author employed in the preparation of this report has any beneficial interest in the assets of Minergy Coal (Pty) Ltd. or any of its holding companies or parent companies.

The person responsible for estimating the coal resources is satisfied that, based on the information made available, the estimates presented in this report are reasonable and are appropriate for the type of deposit, its location and the current and proposed methods of exploitation.

The effective date of this report is 01 November 2016.

1.2 Sources of information (3.1 (iii))

Sources of information used to conduct the Coal Resource estimate described in this report include the following:

- Historic drilling data (including borehole logs, downhole geophysical logs, analytical data and interpretations including resource estimates) from Shell Coal Botswana;
- Historical reports by Shell Coal Botswana;
- Drilling data collected by Minergy (2012) and GM Geotech (2016) including borehole logs, downhole geophysical logs and analytical results and interpretations;
- Independent Competent Persons reports:
  - Coal Resource Estimate of the Masama Coal Project – Coffey Mining (Coffey 2013)[5];
  - Scoping Study – Mine A, Masama Coal Project – Coffey Mining (Coffey 2014)[6];
- Published geological maps and reports on the region and some on its coal deposits;
- Reports on adjacent properties;
- Aeromagnetic data collected by Fugro on behalf of the Department of Geological Survey of Botswana (DGS).

1.3 Units and currency (1.2 (i))

This report makes use of metric units, coal qualities are reported on an air dried basis.

References to currency in the report are in South African Rand (ZAR) unless otherwise stated.

All maps presented in this report either have co-ordinates in Longitude Latitude (WGS84) or metres using the UTM35S (WGS84) projection and datum, unless otherwise stated.

1.4 Site inspection and field involvement of CP (1.1 (iii))

Numerous site visits were conducted by various staff members of and associates of GM Geotech and also by the author. Gerhard Mulder (Geologist) and Pauline Venter (Technical Assistant) visited on 4, 5 and 31 May 2016 as well as 1 June 2016; Dan Ferreira (Surveyor and Mine Planner) visited on 5 and 6 May 2016; and D.S. Coetzee (CP) visited on 15 July 2016.

Activities during site visits included:

- Logging and sampling of fully cored exploration boreholes drilled during the 2016 drilling program;
- Examination of selected borehole core from the 2012 drilling program;
- Verification of collar positions of boreholes drilled by Shell and Minergy;
- Examination of surface geological exposures in the project area;
- Structural field mapping.

1.5 Disclaimers and reliance on other experts or third party information

This Independent Competent Person's Report was prepared by GM Geotechnical Consultants CC (GM Geotech) based on information largely provided by Minergy; as well as the results of the 2016 exploration drilling conducted under supervision of Minergy in collaboration with GM Geotech. The data supplied by Minergy includes independent third party technical reports along with other relevant published and unpublished third party information. Where possible, GM Geotech have verified the information from independent sources after making due enquiry of all material issues that are required in order to comply with the SAMREC Code (2016)[1].

The consultants who have provided input to this CPR are listed alphabetically by name below:

Name	Professional Registration	Qualification	Professional Membership	Company	Discipline
Dan Ferreira		Mine Surveyor's Certificate of Competency	South Africa Institute of Mine Survey (SAIMS)	Dan Ferreira Technical Services cc	Mine Surveying and Mine Planning
Faan Coetzee	Pr. Sci. Nat.	BSc Geol.; BSc Hons Geol.; MSc Geology; PhD. Geology	MGSSA	GM Geotechnical Consultants	Structural & Coal Geology & Coal Resources
Gerhard Mulder		BSc Geol.	MGSSA	GM Geotechnical Consultants	Coal Geology and Geotechnical work
Pauline Venter				GM Geotechnical Consultants	CAD Operator and technical field assistant

Neither GM Geotech, nor the author of this report, is qualified to provide extensive comments on legal facets associated with ownership and other rights pertaining to the Masama Coal Project.

GM Geotech and its associates accept no liability for any losses arising from reliance upon the information presented in this report. A final draft of this report was provided to Minergy, along with a written request to identify any material errors or omissions, prior to finalization.

2. PROJECT OUTLINE

2.1 Property description (1.1 (i); 1.2 (i))

The Masama Coal Project is an advanced exploration project located in south eastern Botswana and comprises PL278/2012, a prospecting licence granted to Minergy Coal (Pty) Ltd for Coal and Coalbed Methane. Minergy has been actively exploring the property for shallow coal resources since 2012 and has identified significant high quality coal resources at shallow depths on parts of the project. The project spans a vast area of 697.1 km^2 and has been divided into three large blocks, known as the West Block, Central Block and East Block (Fig. 6). The focus of most exploration has been the West Block, which covers an area of approximately 120 km^2. The Coal Resources defined in this report are from the A Seam and the E Seam within a portion of the West Block. At present studies are underway to evaluate an opencast coal mine and associated wash plant and other support infrastructure in the West Block of the project area.

2.2 Property location (1.2 (i); 1.3 (i); 3.1 (iv))

The Masama Coal Project is located in the Kweneng and Kgatleng Districts of eastern Botswana and lies approximately 50 km north of Gaborone (Fig.6). The larger Prospecting License (PL278/2012) area is outlined with a solid black line in Figure 6. Minergy has previously defined the West Block (WB), Central Block (CB) and East Block (EB) coal prospects outlined with purple stippled lies in Figure 6 and previously drilled and delineated Coal Resources on the WB and CB. Historically an area overlapping with the WB and CB and the area inbetween, was extensively exploded by Shell Coal Botswana (Pty) Ltd. between 1974 and 1982 (see Table 10). More recently Minergy has identified significant shallow Coal Resources in two coal seams within the “Focus Area” (outlined in red in Fig.6).

The Masama Coal Project is located near to Jindal Steel and Power’s 2.4 BT Mmamabula East Coal Project and also proximate to the 670 Mt Mmamabula South and Central Coal Projects (Anglo Coal Botswana). Morupule Coal Mine, Botswana’s only operating coal mine is located some 200 km northeast of Masama near the town of Palapye in southeast Botswana. The Waterberg Coalfield across the border to the east of Masama in the RSA hosts several operating coal operations including the Grootegeluk Coal Mine (Exxaro) as well as other advanced projects like Eskom's Medupi and Matimba coal-fired Power Stations, which have a combined capacity of ~8,000 MW.

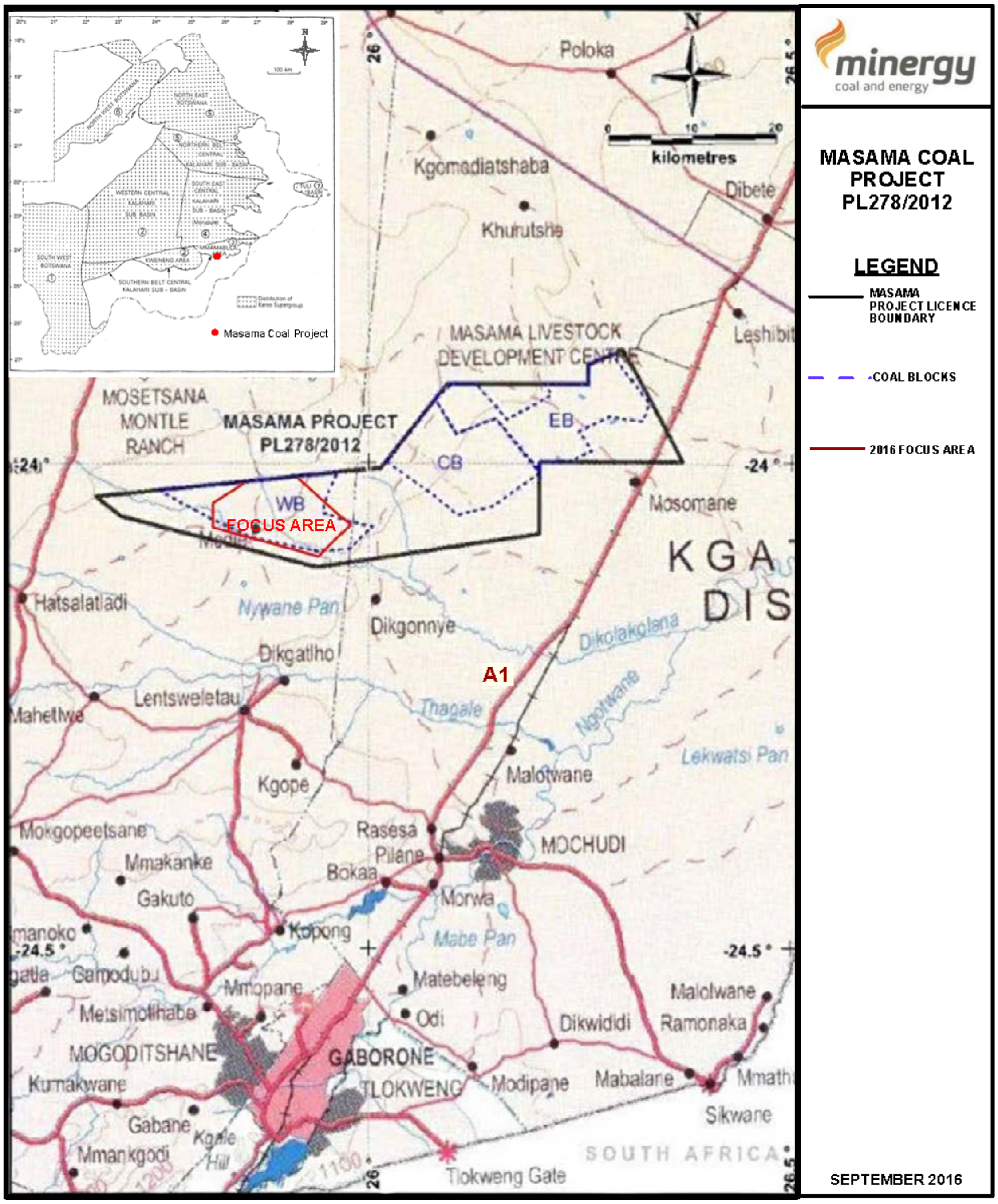

Figure 6: Location of the Masama Coal Project showing the Masama Prospecting Licence area (PL278/2012) outlined in Black; the West Block (WB); the Central Block (CB) and the East Block (EB) as previously defined outlined in purple; as well as the proposed "Focus Area" outlined in red.

2.3 Country profile (1.2 (ii))

Botswana, one of Africa's most stable countries, is a large (581,730 km^2), landlocked country. Botswana gained independence from Britain in 1966 and in the years that followed, supported by the discovery of diamonds, it has been one of the fastest growing economies in the world and moved into the ranks of upper-middle income countries. The country is the continent's longest continuous multi-party democracy. It is relatively free of corruption and has a good human rights record. Gaborone is the capital city of Botswana and the major languages are English (the official language) and Setswana.

Botswana is sparsely populated (~2 million people) and protects some of Africa's largest areas of wilderness. Safari-based tourism, which is tightly-controlled and often upmarket, is an important source of income.

Botswana has a well-established mining industry with many service providers located in Gaborone. A full range of modern banking, shopping, educational and recreational facilities are available within Gaborone. Most Government Ministries and Departments have their main offices in Gaborone.

Botswana is the world's largest producer of diamonds, which has transformed it into a middle-income nation. Botswana faces a key policy dilemma of how to grapple with the predicted decline in previously buoyant diamond revenues. Projections of future diamond revenues are uncertain. While diamonds may not be fully exhausted for another generation, output is already well past its peak. While Botswana has made some progress in reducing its dependence on diamonds in the past twenty years, the level of economic diversification needed to offset diminishing mineral revenues will remain a challenge. Information was obtained from the following websites:
http://www.bbc.com/news/world-africa-13040376[7]

http://www.worldbank.org/en/country/botswana/overview[8]

2.4 Legal aspects and permitting (1.2 (ii); 1.5 (i), (ii), (iii), (iv), (v); 5.5 (i), (ii))

Botswana has a modern mining law, which is comparable to some of the best mining legislation in the world.

A full list of legislation relevant to the project is provided below:

Legislation	Responsible Government Entity	Comments
Mines and Minerals Act, 1999 and regulations	Department of Mines	Provides guidance on the licensing procedure for extraction of all minerals including water.

Explosives Act, 1962	Department of Mines	To provide control of the manufacture, importation, sale, transport, storage, use and disposal of explosives
Mines, Quarries, Works and Machinery and Regulations	Department of Mines	Act to provide for safety, health and welfare of persons engaged in prospecting, mining and quarrying operations (including related works). Makes provision for inspection and regulation of mines, quarries, works and machinery used.
Tribal Land Act, 1968	Land Board	The Act governs access to and administration of land within all tribal areas of Botswana. It sets out regulations and procedures for land allocations. Land Boards handle the administration of land in tribal areas and oversee land allocation and development of all land in all their areas of jurisdiction.
Environmental Assessment Act, 2011	Department of Environmental Affairs (DEA)	The Act provides for the carrying out of an EIA for all projects that may have adverse effects on the environment. DEA is mandated to review the Scoping Report, Terms of Reference (TOR) and Final Report.
Monuments and Relics Act, 2001	Department of National Museum & Monuments	The Act ensures preservation and protection of ancient monuments, ancient workings, relics and other objects of aesthetic, archaeological, historical or scientific interest. It requires that any activity, which may result in the disturbance of the land through excavation and extraction, should be subjected to an Archaeological Impact Assessment to ensure that no archaeological sites are destroyed during excavation. A detailed AIA for the Masama Project will be undertaken.
The Forest Act, 1968	Department of Forestry and Range Resources	The Act provides for the utilization and protection of forest produce. It serves to declare certain areas as forest reserves and provides for regulations for such reserves. Recognition is given to the use by local communities of forest resources for firewood, building materials, medicine and utensils through the forest. The project implementation will ensure adequate protection of the forests within the project area
Water Act, 1968	Department of Water Affairs	The Act defines the ownership of any rights to the use of water and provides for the grant of water rights and servitudes. The Act states that there will be no right of property in public water including groundwater and water in any natural streams, rivers, lakes and dams. It covers all aspects of water abstraction and disposal of effluent into natural streams.
Wildlife Conservation and National Parks Act, 1992	Department of Wildlife and National Parks.	The Act provides for the protection of wildlife and conservation of National Parks. Even though most of the District supports more livestock than wildlife.
Waste Management Act, 1998	Department of Waste Management and Pollution Control	The Act provides for the minimization of pollution of the environment, and the conservation of natural resources; the planning, facilitation and implementation of advanced systems for the regulation of trans-boundary movements of waste and its disposal. Any waste produced during the project should be managed in accordance with the Act.
Herbage Preservation (Prevention of Fires) Act, 1977	Department of Forestry and Range Resources	This Act aims to prevent and control bush and other fires with Sections (4, 6 and 9) concerning fire control and firebreaks, and the penalties for contravention (Section 14). Since the project is implemented in a bushy area, it is important that the provisions of this Act are followed in order to prevent bush fires
Agricultural Resources (Protection) Act, 1973	Department of Forestry and Range Resources	The Act provides for the protection of Botswana's agricultural resources, which are defined as animals, birds, plants, soils, vegetation, veld products, fish etc. There will be vegetation clearing during project development and therefore the Act applies.
Borehole Act, 1956	Department of Water Affairs	Provides guidelines on the manner in which boreholes in the country need to be drilled and the extraction rates.
Road Traffic Act, 2008	Department of Road Transport and Safety	Many sections of this Act are relevant to the proposed development just as they are to everyday life on the roads of Botswana, with general compliance clearly essential to the health and safety of all road users including project contractors.
Atmospheric Pollution (Prevention) Act, 1971	Department of Waste Management and Pollution Control	The Act provides a regulatory framework for industrial activities and other activities that have emissions into the atmosphere in order to reduce pollution. Since the proposed project involves excavation for mining it must be implemented within the provisions of the Act to minimize the dust impact

The various types of mineral licences are briefly explained below:

- Prospecting Licence
    - A prospecting licence is valid for an initial three year period with two renewals each not exceeding two years. Further extensions may be granted. The maximum size for a prospecting licence is 1,000 km^2 and the area must be reduced by half at the end of each renewal or at a lower proportion as the Minister may agree.
    - Applicants for a prospecting licence must have access to adequate financial resources and technical competence to carry out effective prospecting.
- Retention Licence

- A holder of a prospecting licence may apply for a retention licence in relation to an area and a mineral after carrying out a feasibility study in respect of the deposit and the study has established that the deposit cannot be mined profitably at the time of application
- A retention licence is valid for three years, renewable once for a further three years.

➢ Mining Licence

- A holder of a prospecting licence, retention licence or a waiver may apply for a mining licence.
- A mining licence can be granted for a period not exceeding twenty-five years, with unlimited renewal periods not exceeding twenty-five years each.

Minergy's Prospecting Permit (PL278/2012)

The prospecting licence (PL278/2012) for the Masama Coal Project, Minergy Coal (Pty) Ltd. as the holder to the exclusive right to prospect for coal and coalbed methane. The licence covers an area of 697.1 km². The first term of the licence period for PL278/2012 commenced on 1 October 2012 and expired on 30 September 2015, a period of three years. The licence was then renewed for a two-year period from 1 October 2015 to 30 September 2017. The licence is renewable for a further two-year period, giving a total exploration period of seven years (before extensions). A prospecting licence confers various rights to its holder, including that the holder may enter upon any land to which his prospecting permit relates together with his servants and agents.

Minergy plans to apply for a mining licence prior to the end of the standard seven-year exploration period. In order to apply for a mining licence Minergy will need to complete an Environmental Impact Assessment and Environmental Management Plan, which are to be approved by the Department of Environmental Affairs. In addition, Minergy is required to complete a feasibility study on the Masama Coal Project. Minergy is not aware of any governmental or statutory requirement that would prevent it from applying for a mining licence.

Surface Rights

A prospecting licence confers various rights to its holder, including that the holder may enter upon any land to which his prospecting permit relates together with his servants and agents, and may, prospect thereon for the mineral(s) to which his prospecting licence relates, drill boreholes and make such excavations as may be necessary, and erect camps and put up temporary buildings for machinery necessary for prospecting purposes.

These rights are accordingly conferred to Minergy in terms of PL278/2012.

The entire licence representing the Masama Coal Project is in a category of land in Botswana called Communal or Tribal Land in accordance with Botswana's Tribal Land Act Chapter 32.02, 2008 (1968)[9], and none of the Masama Coal Project area falls in a national conservation area or similar. Tribal Land is vested in various Land Boards (regulated organisations of the state in terms of the Tribal Land Act) in trust for the benefit and advantage of the citizens of Botswana. The Tribal Land category represents ~70% of all land in Botswana (State Land and Freehold represents the difference), mainly consisting of rural areas, which are not free hold title. Each land board has a specific area of jurisdiction and subject to approval of the Ministry of Lands and Housing has the power to allocate (free of charge) use of land (evidenced by a section 13 certificate of grant from the land board), but not ownership to citizens and non-citizens in accordance with a prescribed process. In the Masama Coal Project area existing land allocations have mainly been for cattle posts and low productivity ploughing fields. Land Boards are empowered to acquire, repossess and rezone tribal land where any customary land rights (e.g. ploughing field) have been granted, and compensation is calculated in accordance with a published schedule which categorises the nature of the buildings or similar relating to the applicable area. Once the Land Board has cleansed the area of any customary land rights, the "Surface rights" to the planned mine at Masama are to be secured mainly by way of Agreement of Grant of Lease (which is a Common Law Grant of lease) between Minergy and the Land board. An Agreement of Grant of Lease may be granted for a period of up to ninety-nine years. The Agreement of Grant of Lease is to be registered with the Deeds Registry, upon the approval by the Director of Surveys and Mapping of various prescribed surveys, plans, diagrams and maps to be completed by a registered surveyor.

Legal Proceedings

From the Effective Date of this CPR until the date this CPR was issued, the CP is not aware of any material changes that have occurred in relation to the Masama Coal Project. Work undertaken prior to the inspection by the Competent Person has been validated and the information can be relied on.

The Directors of Minergy Coal (Pty) Ltd. has confirmed by means of a written statement that there are no pending or existing legal proceedings against the company that may have an influence on the current prospecting licence or the Company's ability to apply for a mining licence.

2.5 Royalties and liabilities (1.2 (ii); 1.6 (i); 1.7 (i))

In Botswana the holder of a Mining Licence is liable to pay royalties on a monthly basis to the government. The royalties are calculated as a percentage of gross market value (defined for the purposes of the royalty calculation as the sale value receivable at the mine gate in an arm's length transaction without discounts, commissions or deductions) and are as follows for different commodities:

- 10% Precious Stones
- 5% Precious Metals
- 3% Other Mineral or Mineral Products

Coal products produced at Masama would incur a 3% royalty.

Botswana mining companies (for all minerals other than diamonds) are using the following formula to determine tax due:

Annual Tax Rate = 70 – 1500/x
Where x = taxable income/gross income

An effective corporate tax rate of 22% of profit will be applicable.

Mining activities by their nature create changes to the local environment and once mining operations are complete the areas affected will need to be rehabilitated. Minergy intends to conduct progressive rehabilitation of the mined out areas as mining progresses. Currently in Botswana there is not a requirement to make a financial provision for mine closure, however, it is understood that as a matter of policy the regulator requires a closure plan as part of the EMP for the project.

3. ACCESSIBILITY, PHYSIOGRAPHY, CLIMATE, LOCAL RESOURCES AND INFRASTRUCTURE

3.1 Access (1.1 (ii), 1.2(i); 5.4 (i))

Botswana has a well-developed transportation network with good quality paved roads as well as numerous gravel roads providing access to most of the country.

The road running north from Gaborone to Lentsweletau and on to Medie provides access to the West Block of the Masama Coal Project, while the A1 highway from Gaborone to Francistown provides access to the east of the Masama Coal Project licence area (refer to Fig. 6). The road from the A1 to the village of Dikonnye provides access to the Central portion of the project area. Running parallel to the A1 highway, are a railway line, pipelines and power lines. Collectively this is often referred to as “Botswana’s Infrastructure Corridor”.

Secondary roads and tracks as well as new drilling tracks provide access within the Masama Coal Project area. Notably several of the old north-south and east-west lines cleared by Shell in the 1970’s and 1980’s, are still visible and in many cases are still in use as field tracks. At present the Masama Coal Project base camp and core shed are located in the village of Medie.

Access to the Masama Coal Project area is possible throughout the year. However, during the summer when most rainfall occurs, some of the secondary gravel roads may become muddy at times. The smaller sandy tracks present throughout the Masama Coal Project area remain driveable at all times as the rainwater drains away quickly in the sandy soil.

3.2 Topography, elevation, fauna and flora (1.1 (ii), 1.2 (iii))

The Masama Coal Project area is generally flat with elevation ranging from ~900 to ~1100 m above mean sea level (Fig. 7). One small drainage line, the Dikolakolana drainage runs through the west of the area with only very minor drainage lines elsewhere. Most of the area is underlain by sandy soil and rainwater tends to drain away very quickly.

Vegetation in the Masama Coal Project area is classified as tree savannah and more specifically, arid sweet bushveld and northern Kalahari tree and bush savannah.

Land use in the area is predominantly for subsistence agriculture, livestock (cattle) and limited crop cultivation. Land in the area has been well utilised and the diversity of natural fauna tends to be low.

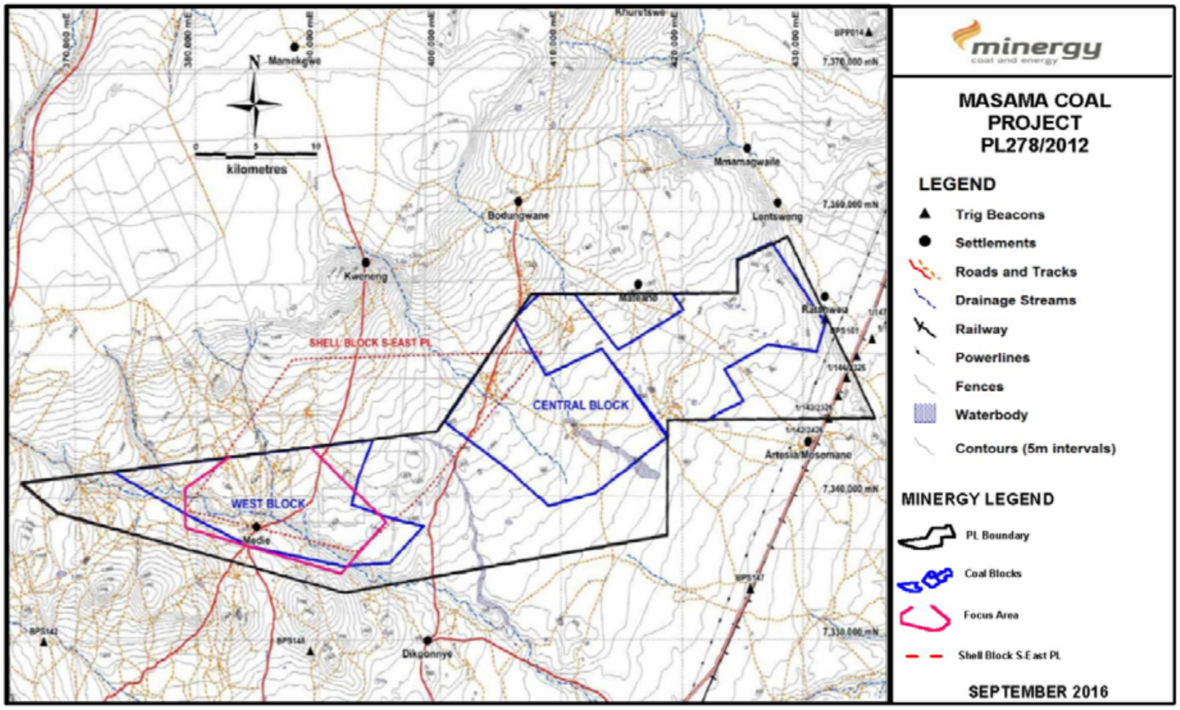

Figure 7: Detailed location of the Masama Coal Project showing project boundaries; coal blocks and topo-cadastral information with 5 m interval contour lines.

3.3 Climate (1.1 (ii); 1.2 (iii))

The south eastern parts of Botswana have a hot semi-arid climate and fall within the subtropical zone. The winter period is between May and August while the summer is usually from October to March, with April and September as autumn and spring transition months respectively. Droughts are common and vary spatially and temporally.

The annual rainfall in the south eastern parts of Botswana, where the Masama Coal Project area is located, is ~500 mm, with most falling in the summer months.

Temperatures are high during the summer months with a mean maximum temperature of 27°C, winter temperatures are relatively low with an annual mean minimum of 11°C.

Winds in Botswana are generally light and predominantly from the east or north-east, but become gusty and fairly strong towards the end of winter. Strong winds also occur in association with summer thunderstorms (Botswana National Atlas, 2001)[10].

3.4 Proximity to population centres (1.1 (ii), 1.2(i))

The Masama Coal Project lies approximately 50 km north of Gaborone, Botswana's capital city and main population centre (population 231,592 in 2011). Smaller villages are present near to and within the project area, the village of Lentsweletau (population 4,916 in 2011) lies approximately 20 km south of the western part of the project and Dikgonnye (population 552 in 2011) is located just south of the central part of the project area. The village of Medie with a population 424 in in 2011 (Botswana Census, 2011)[11] lies within the "Focus Area" of the project area

3.5 General infrastructure (1.1 (ii))

The Masama Project is close to the existing transmission grid in Botswana, which links into the regional SAPP Grid. The Isang Substation in south east Botswana (with transmission lines up to 400 kV) is located ~20 km from the Masama Coal Project. A set of three 220 kV power lines run just south of the project area (one line operational with two under construction). The village of Medie is not currently connected to the local power grid, but Dikgonnye is connected.

Both villages of Medie and Dikgonnye have water supply systems. In addition to this, there are numerous water boreholes in the area, which indicate the presence of extensive groundwater aquifers.

4. PROJECT HISTORY

4.1 Previous ownership (1.4 (i), 3.1 (iv))

During the period between1974 and 1982, Shell Coal Botswana held prospecting licences (Shell, 1979[12]; 1981[13]; and 1982[14]) that substantially overlapped with the western portion of PL278/2012. During this period Shell Coal Botswana initially conducted regional exploration involving the drilling of wide spaced diamond boreholes over a large area and later focused on a smaller area with detailed drilling and exploration that overlaps with the current West Block of the Masama Coal Project as indicated in Figure 8.

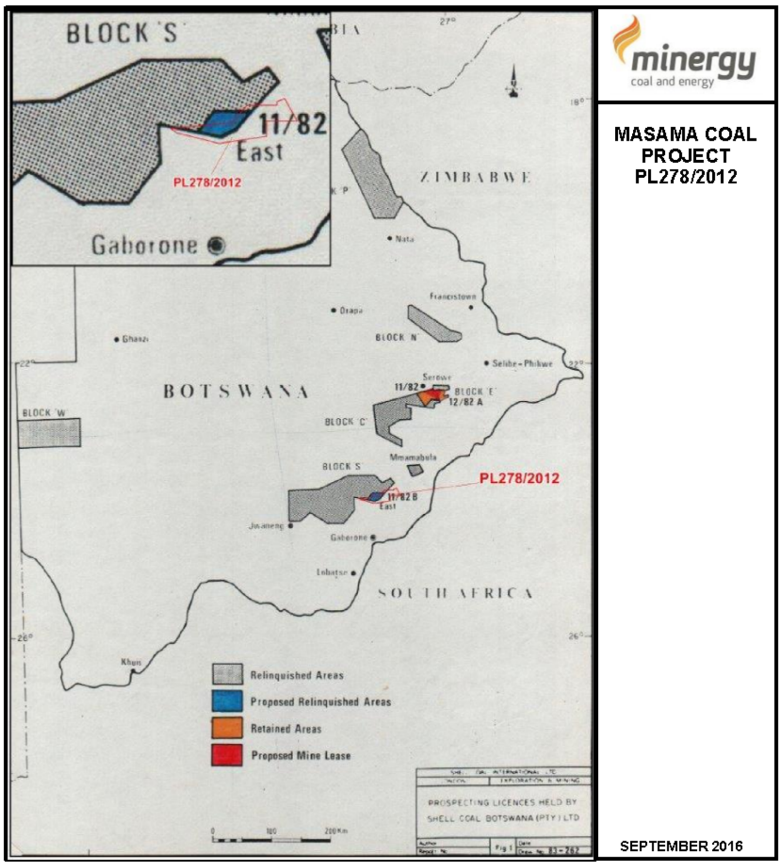

Figure 8: Historic Prospecting Licences held by Shell Coal Botswana, one of which overlaps with Minergy's PL278/2012 (after Shell, 1982)[14].

During the period between 1982 and when PL278/2012 was granted in 2012 there is no record of any company holding prospecting licences for coal or conducting exploration in the Masama Coal Project area.

4.2 Previous exploration development (1.4 (ii))

The only exploration known over the Masama Coal Project (PL278/2012) is that conducted by Shell on their "Block S" (Shell, 1979[12]; 1981[13]; and 1982[14]). Minergy has sourced much of the information from this work including borehole geological logs, geophysical logs, analytical results and some of the relinquishment reports filed with the Department of Geological Survey (DGS).

Between 1974 and 1979, Shell conducted wide spaced (regional) drilling on Block S and defined several “reserves” that met their specifications. In excess of one hundred mostly fully cored boreholes were drilled in this phase (Shell 1979[12]; and 1981[13]). A handful of these “regional” exploration boreholes fall within the Masama Coal Project and Minergy has managed to source geological logs, downhole geophysics and analytical data for these boreholes.

In Shell’s “Block S-East” (Fig. 8) a focused exploration programme took place from 1980 to 1982. During this phase Shell drilled a further one hundred and one boreholes, of these forty-five were fully cored and fifty-six percussion boreholes. All of the boreholes were geophysically logged, but only the fully cored boreholes were sampled, targeting the A Seam and E Seam (with an emphasis on the E Seam). Minergy has sourced the geophysical data for these holes as well as Shells’ interpretations, cross sections, resource estimates and summarized coal quality data for the E Seam in their final report compiled by Shell geologists entitled “An assessment of the geology and coal reserves of Block S-East Botswana” (Shell, 1982)[14].

Shell also conducted ground geophysical surveys, magnetics and gravity as well as some electrical resistivity survey; however, Minergy has not yet been able to source results or the raw data for this work.

Other than the work conducted by Shell, described above, no further exploration is known to have taken place over the Block S-East areas. There is also no record of historic, systematic, coal exploration on the remainder of the Masama Coal Project area. The DGS borehole database records only a few boreholes in the Masama Coal Project area other than those drilled by Shell. One borehole (believed to be part of a fully cored exploration program) drilled in the middle of the East Block, recorded a 9 m intersection of “Coal and Carbonaceous Coal” and stopped in a dolerite intrusion immediately below the coal.

During 2014 Minergy conducted a positive Scoping Study on the Masama Coal Project looking at a 7.8 Mt per annum ROM export focussed opencast mine (Coffey Mining, 2014)[6]. This study looked at mining a portion of the West Block termed “Mine A” in a large opencast Mine. Mining targeted the E Seam, A Seam and AU Seam over a twenty-five-year life of mine. The shallow portions of the “Mine A” Area completely overlap with the “Section A” area referred to in this report.

The Scoping Study concluded that “Mine A” at the Masama Coal Project is an attractive twenty-five-year project with an estimated NPV of US$417.1 M at a discount rate of 8% and an IRR of 20.24% with a mine development and sustaining CAPEX of US$272.7 M and US$20 M of mine closure costs for the project at the end of the LOM. These numbers are dependent on the ability to sell the thermal coal into the domestic market. However, the A Upper seam could be washed to an export specification instead, and sold into the international seaborne thermal coal market along with the E and A seam product. It is estimated that this all export option will yield an NPV of US$405 M with an IRR of 19.92% with a mine development and sustaining CAPEX of US$273.3 M and US$20 M of mine closure costs at the end of the LOM.

Coffey recommended that the project should be pursued further.

During 2015 and early 2016 Minergy conducted a concept Study on a 300 MW mine mouth Power Station at the Masama Project (Mott MacDonald, 2016)[15]. This study covered the three aspects related to the building of a power station;

- Markets and Power Transmission
- Environmental Study
- Power Plant Concept and Economics

The Study concluded the following:

- The Masama Power Project (MPP) has a favouable development location and regulatory framework
- There are no Environmental Fatal Flaws for the development of the MPP
- The MPP is near to existing power evacuation routes to large undersupplied power market
- MPP has attractive economics and represents a significant power generation opportunity in the region
- The MPP has a low risk profile which should give a competitive advantage for securing development finance on favourable terms
- The MMP has several competitive advantages which also lower project risk

Although this study did not specifically cover any new geological or resource work on the project it is mentioned here in the interest of full disclosure.

The Scoping Study and Concept Study referred to above are based on preliminary technical and economic assessments. They are preliminary in nature, and included Inferred Mineral Resources which are insufficient to provide certainty that the conclusions of the Scoping Study or Concept Study will be realised. No Historical estimates, Exploration Results or Exploration Targets were included in the Scoping Study or Concept Study.

4.3 Previous Coal Resource estimates (1.4 (iii))

In 1982 Shell estimated an in-situ coal tonnage of 325.8 Mt for the E2B Seam (E Seam) in their Block S East as indicated in Table 4 below, which is extracted from Shell's 1982[14] final report. Although Shell referred to the estimate as "Reserves" this terminology would not be consistent with any modern reporting code and would more closely reflect currently defined Resources rather than Reserves according to modern codes. Shell also reported average coal quality for this seam at float density of 1.5 and on a dry basis.

Table 4: In situ tonnage estimate of Lower Seam (E2B) (E Seam) and average Coal Quality at F1.5 (calculated on a dry basis); (after Shell, 1982[14]).

SEAM E2B							
AREA	R.D. RAW COAL	IN SITU TONNAGE RAW COAL x10^{6}t	AVERAGE QUALITY FLOAT 1.5 (d.b.)				
			ASH %	V.M. %	GCV MJ/kg	Total S %	YIELD %
A	1.45	82.3	9.6	31.2	28.70	0.43	84
C	1.55 1.44	125.6	8.8	30.7	28.49	0.42	69
D1	1.42	74.0	9.8	30.5	28.77	0.37	79
D2	1.46	43.9	9.1	31.3	28.91	0.44	60
TOTAL		**325.8**	**9.3**	**30.9**	**28.66**	**0.41**	**74**

Shell also reported coal quality ranges for the G1 Seam (Minergy's A Seam), as indicated in Table 5 below also extracted from Shell's 1982[14] final report. Shell's exploration was focussed on the E2B (E Seam) and no tonnages for the G1 Seam (A Seam) were reported.

Table 5: Seam G1 (A Seam) – Quality Range and Average Float 1.5 (d.b.) Areas C and D (after Shell, 1982[14]).

RANGE (d.b.)					
AREA	ASH %	V.M. %	GCV MJ/kg	Total S %	YIELD %
C	9.0 – 10.8	26.6 – 30.1	27.71 – 28.54	0.28 – 0.69	40.3 – 59.8
D	8.2 – 10.4	26.9 – 30.6	27.54 – 29.06	0.25 – 0.46	45.8 – 66.5
AVERAGE (d.b.)					
C	9.8	28.3	28.12	0.39	50.0
D	9.2	28.5	28.37	0.33	54.7

Following the drilling program conducted by Minergy in 2012, Coffey Mining conducted a Coal Resource estimate in accordance with the JORC Code (2012)[16] (Coffey Mining, 2013)[5]. Resources were estimated for both the West and Central Blocks for the following seams, E Seam, A Seam, AU Seam, K Seam and G Seam. A total in situ Coal Resource of 2.8 BT was estimated for both blocks as indicated in Table 6 below.

Table 6: Coal Resource estimate for the West Block and Central Block of the Masama Coal Project by Coffey Mining (2013)[5].

Masama Coal Project West Block - In-situ Coal Resource and Raw Coal Qualities (air-dried basis) 31 January 2013 (JORC 2012)[16]										
Coal Seam	Volume Mm³	Thick-ness m	Area ha	RD t/m³	Ash %	CV MJ/kg	VM %	GTIS Mt	Geol. loss %	TTIS Mt
E Seam	164.377	1.55	10,604	1.51	19.60	23.10	26.00	248	20	199
A Seam	529.231	5.00	10,584	1.52	21.70	21.60	24.50	804	30	563
AU Seam	125.512	1.60	7,845	1.64	31.90	18.80	23.40	205	30	144
K Seam	124.680	3.45	3,614	1.66	31.00	19.10	28.40	207	30	145
G Seam	266.975	18.10	1,475	1.83	46.20	14.00	21.90	489	30	342
Total								1,954		1,393

Masama Coal Project Central Block - Total Gross In-situ Coal Resource based on air-dried basis 31 January 2013 (JORC 2012)[16]										
Coal Seam	**Volume Mm³**	**Thick-ness m**	**Area ha**	**RD t/m³**	**Ash %**	**CV MJ/kg**	**VM %**	**GTIS Mt**	**Geol. loss %**	**TTIS Mt**
E Seam	80.695	1.65	4,891	1.51	18.70	23.50	27.30	122	30	85
A Seam	235.073	7.50	3,134	1.70	36.20	15.90	21.40	400	30	280
AU Seam	50.257	1.60	3,141	1.67	34.60	17.70	22.00	84	30	59
K Seam	168.347	3.80	4,430	1.71	31.00	19.10	28.40	288	30	202
G Seam	641.705	11.40	5,629	1.77	43.70	14.30	22.00	1,136	30	795
Total								**2,029**		**1,421**

Coffey Mining also reported washed coal qualities for the various seams.

4.4 Previous Coal Reserve estimates (1.4 (iii))

No historic Coal Reserves that would be compatible with modern codes have been reported for the project area.

4.5 Previous production (1.4 (iii))

There has been no previous coal production from the Masama Coal Project area.

5. GEOLOGICAL SETTING AND COAL DEPOSIT TYPES

5.1 Geological setting (10.2 (i), (ii))

5.1.1 Regional geological setting (2.1 (i))

The Karoo Supergroup underlies approximately sixty percent of Botswana (Clark et al. 1986)[17]. The Karoo Supergroup rests with a major unconformity on a Precambrian basement of various ages and types of rock. The Karoo Supergroup is overlain by the Kalahari Group sediments. Coal of Permian age occurs mainly in the middle to lower parts of Karoo Supergroup in the Ecca Group. The regional sub-outcrop geology of the Masama Coal Project area and its environs is shown in Figure 9.

The base of the Karoo Supergroup comprises the Dwyka Group, which is represented mainly by Dukwi Formation (diamictites, pebbly mudstones, siltstones and sandstones). Above this the Ecca Group in the different areas can have thickness ranging from 40 m to 135 m. Within the Ecca Group the five major coal seams are developed. The Ecca Group is overlain by massive, non-carbonaceous mudrocks (Thabala Formation). This formation is succeeded unconformably by Upper Karoo reddish siltstone and sandstone (Lebung Group) and volcanics (Stormberg Lava Group). Figure 10 displays the location of the Masama Coal Project in relation to the Waterberg and Mmamabula Coalfields and to the various areas of the Karoo Supergroup in Botswana.

In accordance with Smith's (1984)[18] divisions, the Masama Coal Project is located within the Mmamabula Area of the Southern Belt of the Central Kalahari Sub-Basin as shown in Figure 11. The Mmamabula Coalfield is contiguous with and forms the western extension of the Waterberg Coalfield of South Africa.

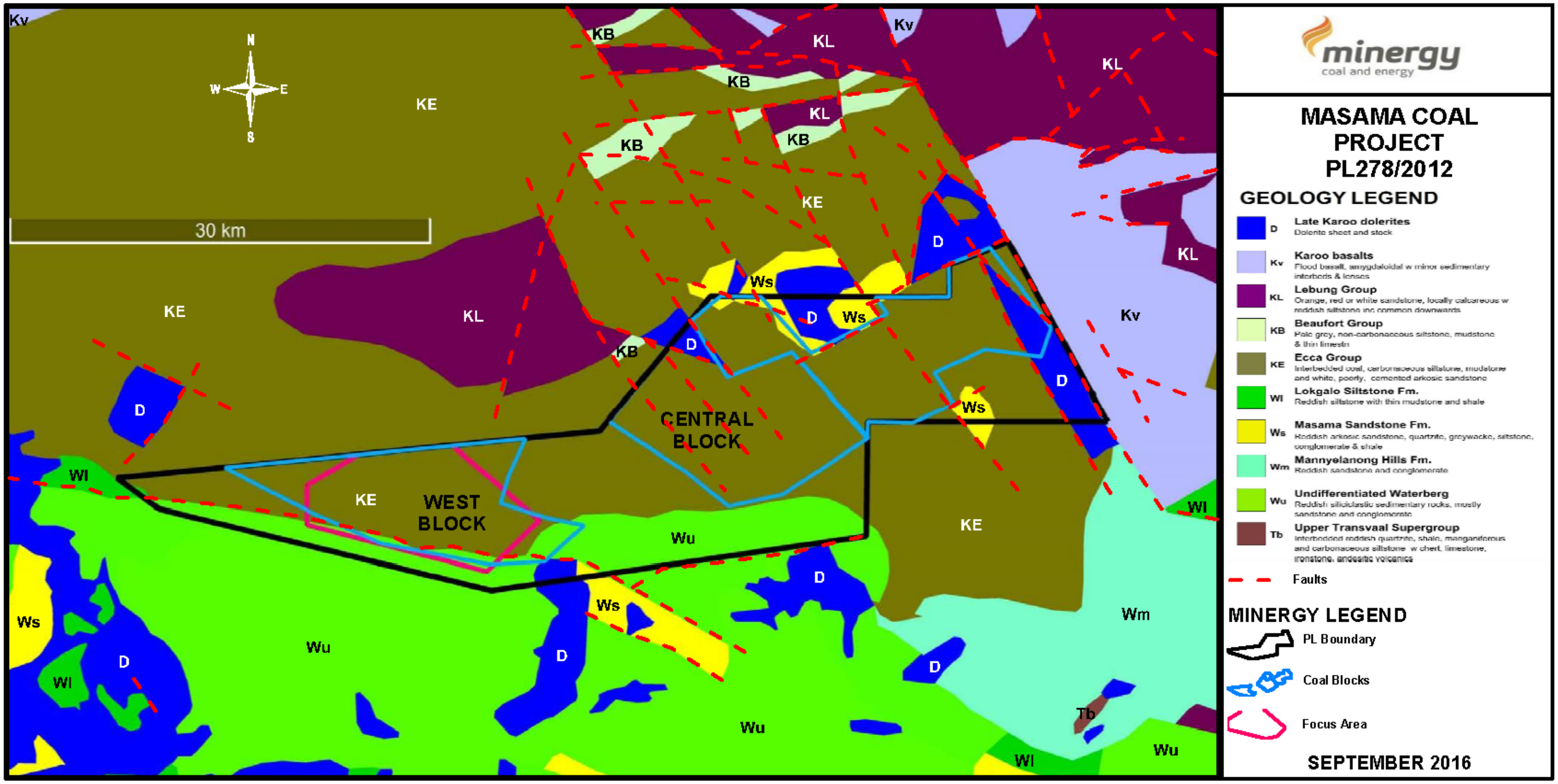

Figure 9: The regional sub-outcrop geology of the Masama Coal Project and its environs.

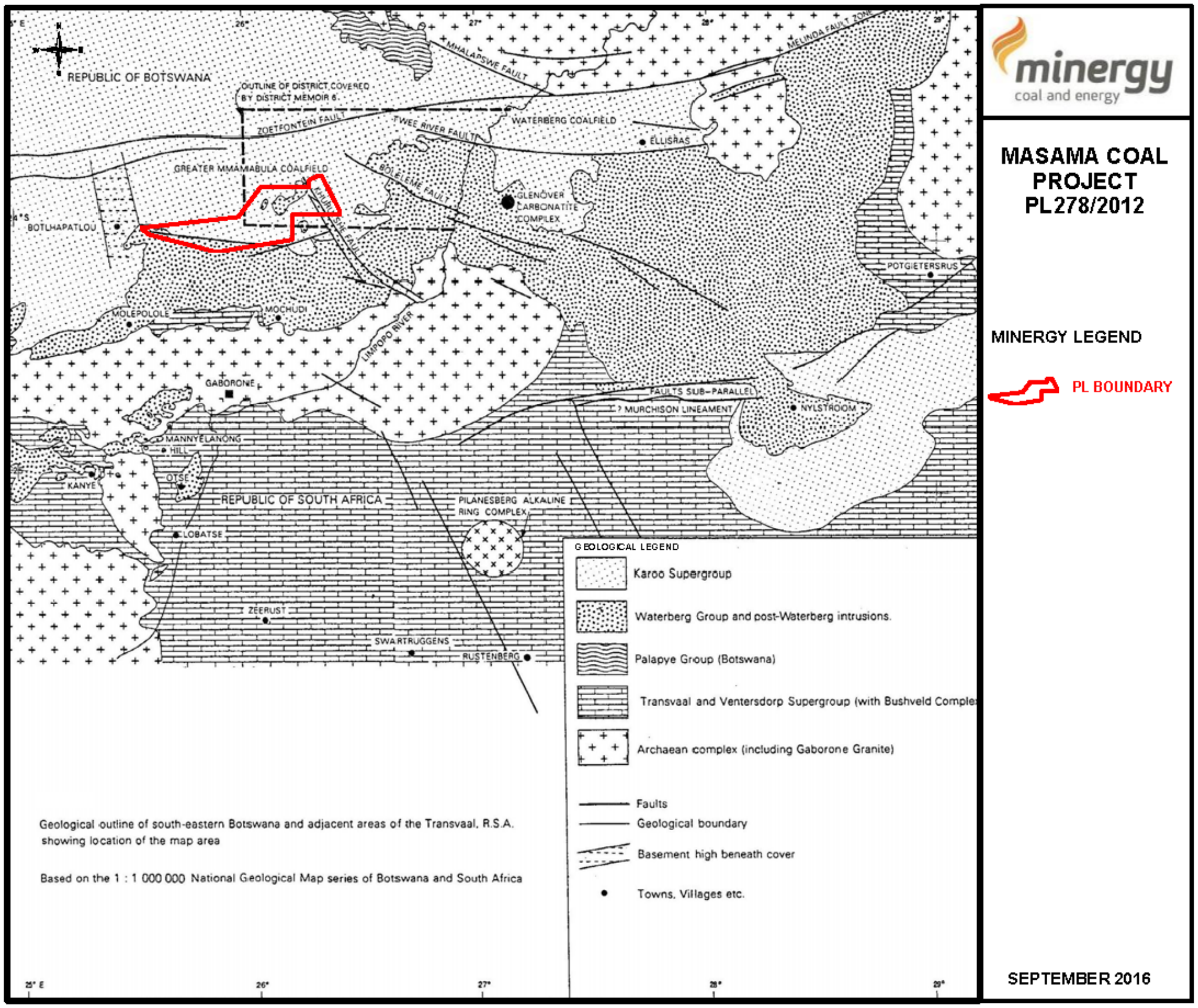

Figure 10: Geological Map showing the Karoo Supergroup in southeast Botswana. The location of the Masama Coal Project in relation to the Waterberg and Mmamabula Coalfields and to the various areas of the Karoo Supergroup in Botswana is shown. (after Williamson, 1996)[19].

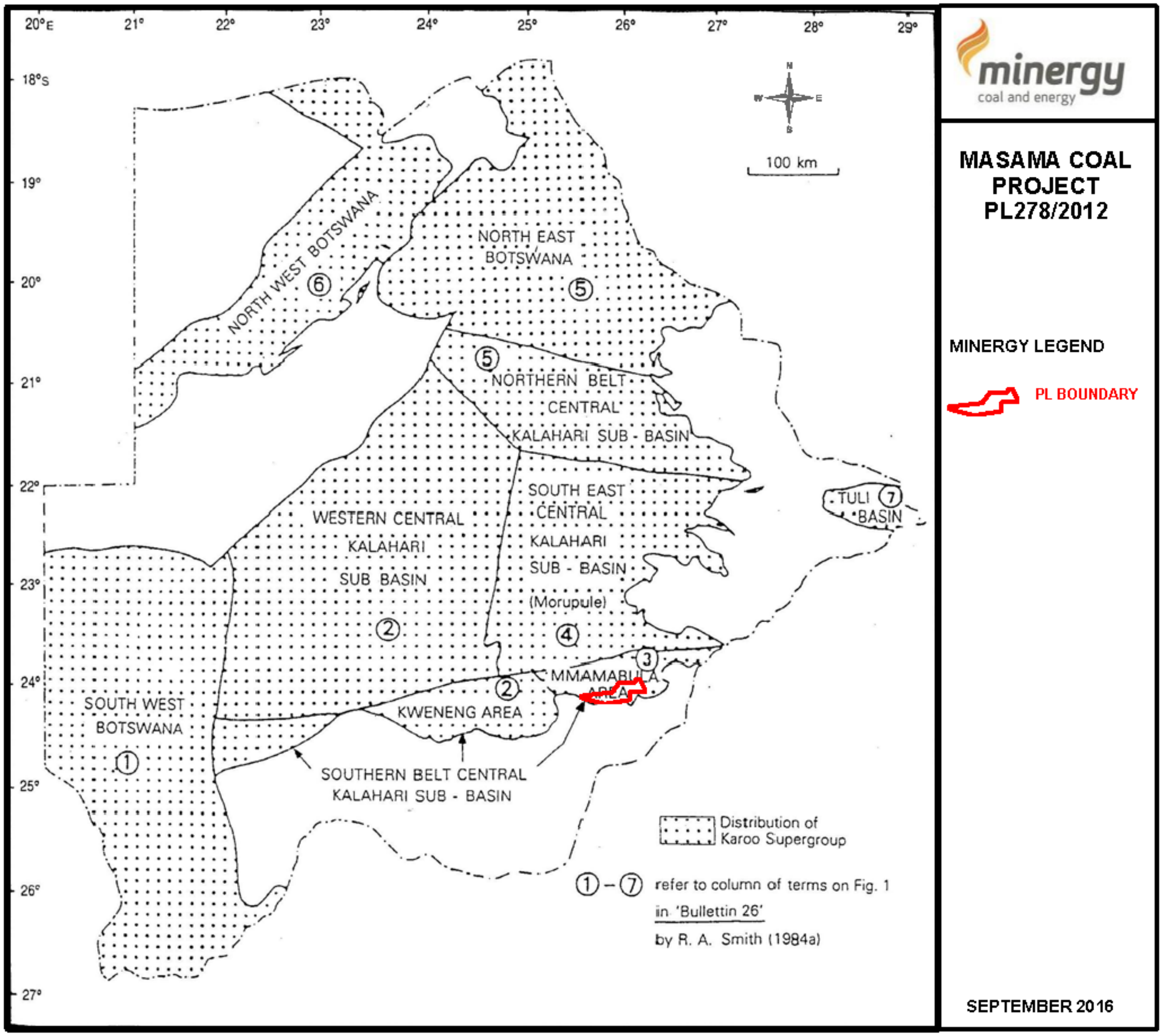

Figure 11: Separate Areas of the Karoo Supergroup in Botswana. The location of the Masama Coal Project is shown after Smith, 1984[18].

Figure 12 shows the stratigraphy of the Waterberg and the Eastern Mmamabula coalfields. Although differences occur in the stratigraphic nomenclature, the stratigraphic profiles are similar. The coal distribution, thickness and quality have been controlled by a combination of pre-Karoo palaeo-topography, penecontemporaneous depositional processes (occurring immediately after the deposition of a particular stratum), post Permian faulting and subsequent erosion.

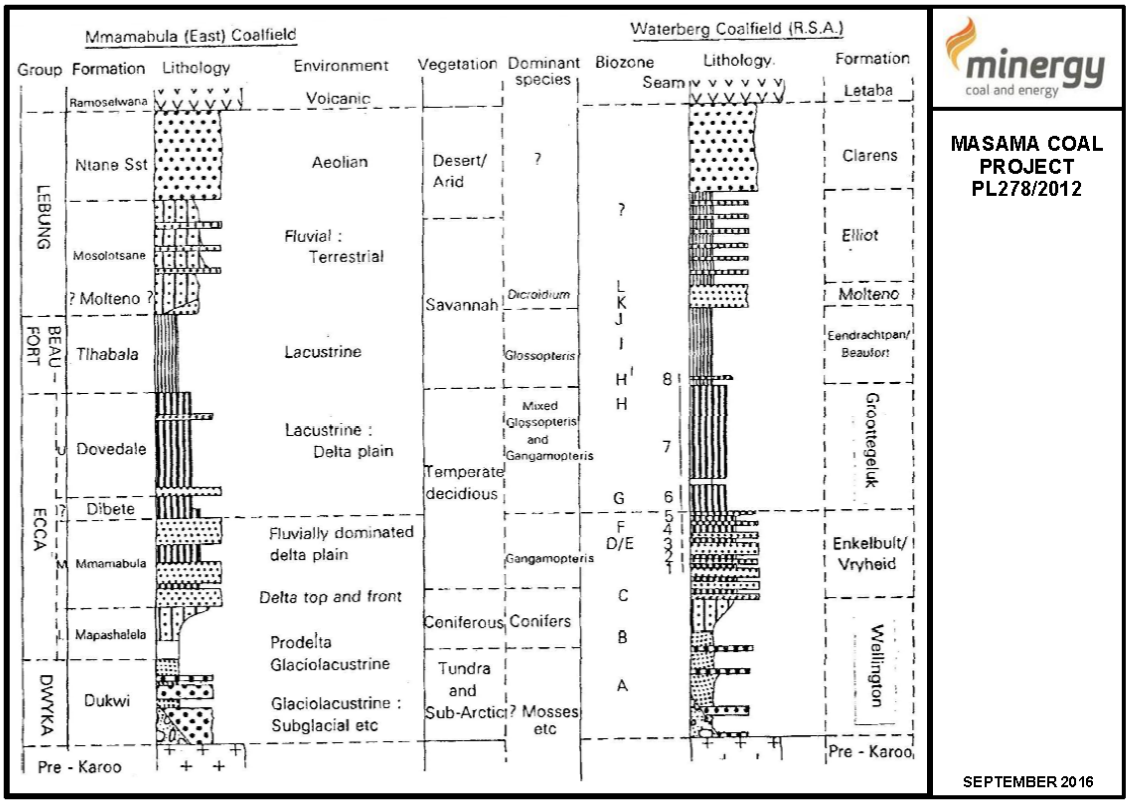

Figure 12: Stratigraphic Correlation of the Waterberg and Mmamabula Coalfields (after Williamson, 1996)[19].

5.1.2 Project geology (2.1 (ii))

In the greater Masama Coal Project area the surface geology is dominated by the presence of Kalahari Sands, which mask the bedrock geology. Only occasional outcrops of the Ecca Group mudstones and sandstones have been observed in the field. In the West Block of the Masama Coal Project area, Kalahari Sands regionally ranges in thickness from 0 m to 15 m and in the Focus Area the sand cover is generally in the region of 5 m to 10 m thick.

Geologically the West Block of the project area is underlain by coaly mudstone and sandstone of the Mmamabula Formation of the Ecca Group ("Middle Ecca") of the Karoo Supergroup (Fig. 13).

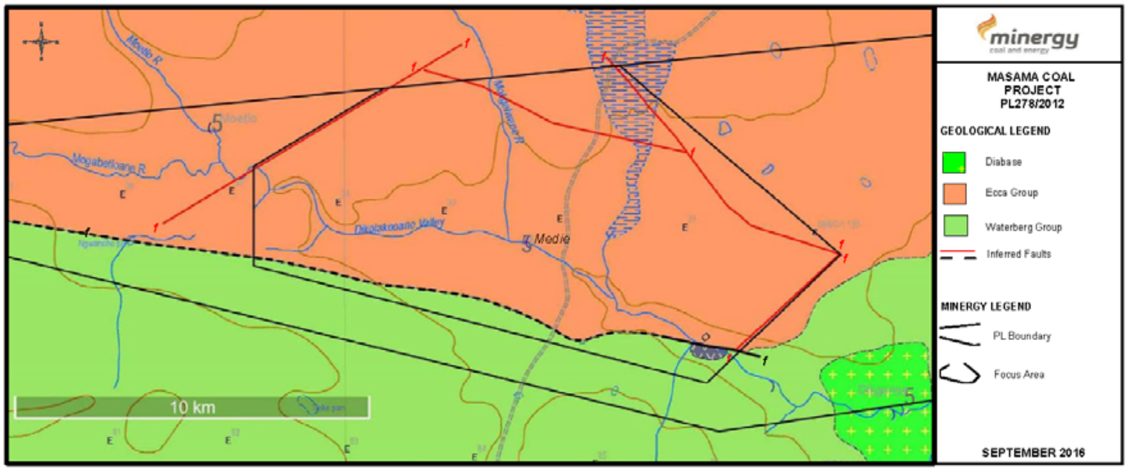

Figure 13: Published 1:125,000 geological map of the Masama Coal Project Focus area.

5.1.3 Stratigraphy and coal seams (2.1 (ii), (v), (vi))

The subsurface geology in the Masama Coal Project in the Focus Area and its immediate environs has been defined with reference to some ninety boreholes drilled since 1974. Five major seams are developed in the Masama Coal Project area and they have been named from a bottom to a top as follows: E Seam, A Seam, A Sequence, A Upper Seam, K Seam and G Seam. The coal of Permian age occurs mainly in the Mmamabula Formation of the Ecca Group ("Middle Ecca") of the Karoo Supergroup. A generalised stratigraphic column is presented in Figure 14 and a summary of each geological unit and coal seam is presented below. Although the E and the A Seams in the West Block are the primary focus of this report, the other seams present and the occurrence of the E and A Seams in the Central Block is also mentioned here for completeness.

5.1.3.1. Dukwi Formation (KDBT and KDBS) (2.1 (ii), (v), (vi))

The Dukwi Formation consists of tillite, siltstone and fine sandstone. It represents the equivalent to the Dwyka Group in South Africa.

5.1.3.2. Lower Mmamabula Sandstone (KELM) (2.1 (ii), (v), (vi))

The Lower Mmamabula sandstone is predominantly a feldspathic sandstone unit with some siltstone and underlies the E Seam.

5.1.3.3. The E Seam (KEES) (2.1 (ii), (v), (vi))

The E Seam represents the lowermost robust coal seam in the succession and is dominated by alternating bright and dull coal layers. In some places minor sandstone partings are present in the E Seam. The E Seam is the highest quality seam present and represents a predominantly underground mining target. It is however possible that in some areas the E Seam could be mined opencast (this would be after opencast mining of the A Seam in the same area). Coal Resources have been defined for the E Seam within the Focus Area covered in this report.

The E Seam in the Focus Area consists of a single seam ranging from 0.4 m to 2.8 m thick with an average thickness of 1.7 m. Borehole S318 is excluded from the data used to create the geological model due to the intersection being weathered as seen on the geophysical log.

High quality E Seam is also present in the Central Block (Coffey Mining, 2013)[5], but no Coal Resources for the E Seam in this area have been estimated in this report.

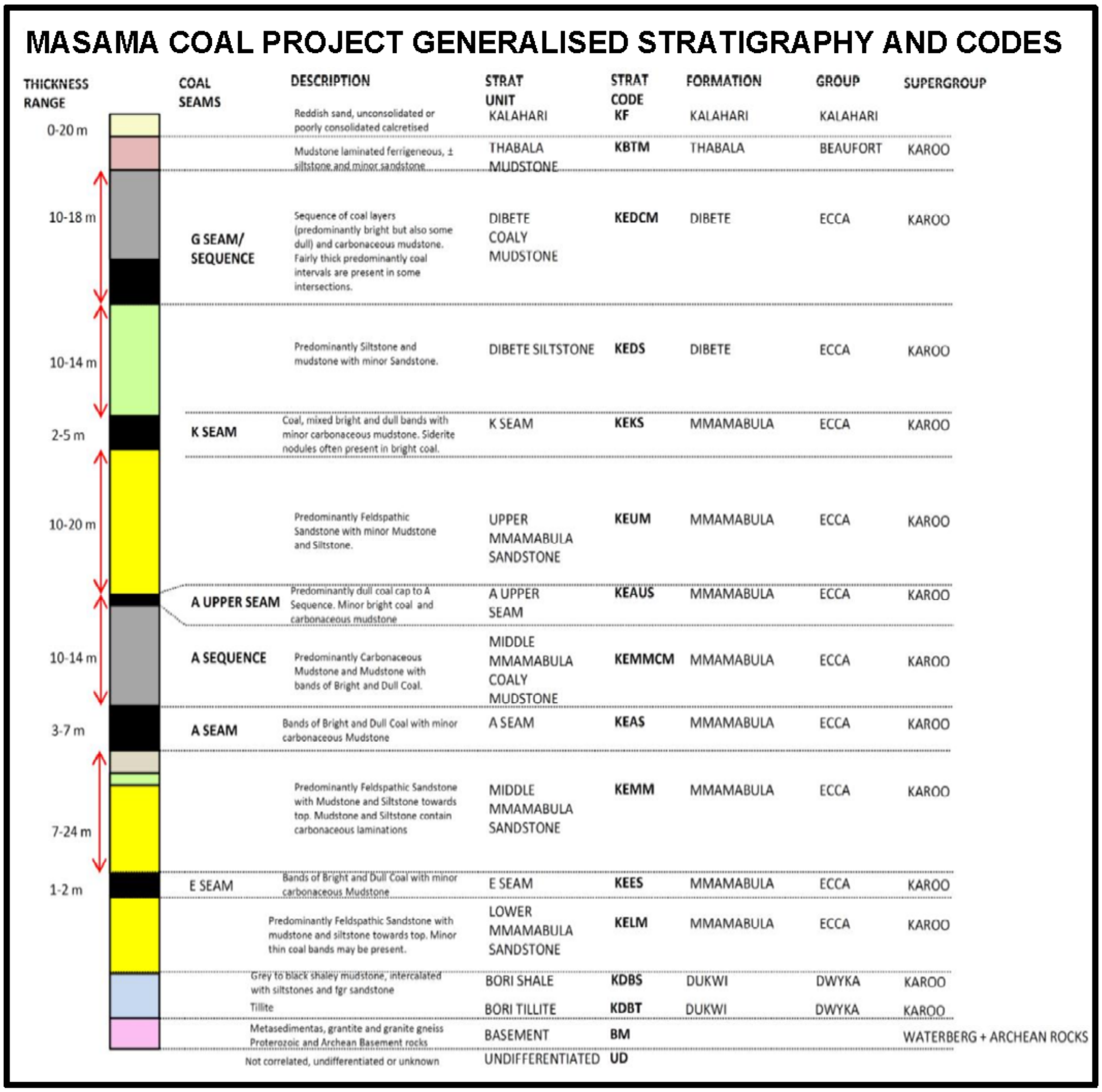

Figure 14: Generalized stratigraphic column for the Masama Coal Project area.

5.1.3.4. Middle Mmamabula Sandstone (KEMM Unit - E to A Seam Interval) (2.1 (ii), (v), (vi))

The Middle Mmamabula Sandstone unit comprises feldspathic sandstone with occasional carbonaceous mudstone and siltstone towards the top.

The thickness of the Middle Mmamabula Sandstone in the Focus Area varies from 6.2 m to 25.8 m with an average thickness of 15.9 m.

5.1.3.5. The A Seam (KEAS) (2.1 (ii), (v), (vi))

The A Seam represents the primary target for opencast mining in the Masama Project area and consists of a robust coal seam at the base of a thicker coal and carbonaceous mudstone sequence. The A Seam is very consistent in its development in the project area consisting of interbedded bright and dull coal often with large (centimetre scale) pyrite nodules present.

In the Focus Area the thickness of the A seam ranges from 4.2 m to 6.2 m with an average thickness of 5.0 m. The A Seam is generally of good quality, however, where it is intensely weathered in the immediate environs of the "topographic high" it is of poor quality as observed on the geophysical logs for boreholes S298, S315, S332 and S334; and for this reason no A Seam Coal Resources were estimated in these areas.

The A Seam present in the Central Block is of lower quality than in the West Block (where the Focus Area is located). No coal Resources for the A Seam in the Central Block are estimated in this report, but have historically been estimated by Coffey Mining (2013)[5].

5.1.3.6. Middle Mmamabula Coaly Mudstone (KEMMCM Unit - A to AU Seam Interval) (2.1(ii), (v), (vi))

This unit also termed the "A Sequence" represents the Middle Mmamabula Coaly Mudstone, and consists of alternating layers of coal and carbonaceous mudstone.

The thickness within the Focus Area ranges from 9.5 m to 15.2 m with an average thickness of 12.5 m, but may be less where much of the unit has been removed by weathering.

Potentially usable, but lower quality coal is present in this unit, but has not been included in the current coal resource estimate. Down-the-hole geophysical profiles through this unit show very clearly where the better quality coal bands are located and limited sampling of these coal bands has taken place. According to the geophysical profiles the unit are very constant throughout the Focus Area and correlations between boreholes are possible.

In the recent (2016) shallow A Seam drilling conducted it was found that in some cases the top of this unit is truncated and the top of the sequence (including the A Upper Seam) is not always present.

5.1.3.7. The A Upper Seam (AU Seam – KEAUS unit) (2.1 (ii), (v), (vi))

The A Upper Seam represents the thin layers of a bright/dull coal at the top of the Middle Mmamabula coaly mudstone unit. The A Upper Seam is often intensely weathered and visually of poor quality, e.g. borehole S298, which is for this reason excluded from the data used to create the geological model.

Where the A Upper Seam is developed within the Focus Area the thickness is very consistent ranging from 1.1 m to 2.2 m with an average thickness of 1.6 m.

Coal Resources for this seam have not been estimated in this report.

5.1.3.8. Upper Mmamabula Sandstone (KEUM Unit - AU to K Seam Interval) (2.1 (ii), (v), (vi))

This unit comprises predominantly feldspathic sandstone and represents the Upper Mmamabula Sandstone. This unit is generally moderately weathered within the Focus Area and although the thickness is extremely variable and ranges from a few meters to over 20.0 m.

5.1.3.9. The K Seam (KEKS) (2.1 (ii), (v), (vi))

The K Seam comprises alternating layers of bright and dull coal with minor carbonaceous mudstone and marks the top of the Mmamabula Formation. As the K Seam occurs higher in the stratigraphy, it is only present in parts of the West Block (within which the Focus Area occurs) and Central Block where the Karoo Supergroup becomes thicker (and other seams become deeper).

This seam occurs in four boreholes in West Block (within which the Focus Area is located) averaging 3.1 m in thickness (Coffey Mining, 2013)[5].

Although this seam is of decent quality no resources were estimated for this seam in this report; coal resources were however previously estimated for this seam in the West and Central Blocks (Coffey Mining, 2013)[5]. Regionally within the West and Central Blocks the seam thickness ranges from 1.4 m to 5.0 m averaging 3.7 m (Coffey Mining, 2013)[5].

5.1.3.10. Dibete Siltstone (KEDS - K to G Seam Interval) (2.1 (ii), (v), (vi))

This unit is represented by Dibete siltstones and mudstones as well as subordinate sandstone ranging in thickness from 10.0 m to 25.0 m. Within the Focus Area this unit is generally moderately to highly weathered.

5.1.3.11. The G Seam (KEDCM) (2.1 (ii), (v), (vi))

The G Seam consists predominately of thin bands of bright, banded coal and carbonaceous mudstone with some areas showing thicker partings of carbonaceous shale.

This seam occurs in two boreholes in West Block (within which the Focus Area is located) averaging 18.1 m in thickness (Coffey Mining, 2013)[5].

In the Central Block the G Seam occurs in five boreholes and thickness ranges from 4.4 m to 16.4 m averaging 11.8 m (Coffey Mining, 2013)[5]**.** The lower thickness of 4.4 m reflects only partial sampling of the G Seam by Shell.

No Coal Resources are estimated for this seam in this report, but were historically estimated by Coffey Mining (2013)[5].

5.1.3.12. Thabala Mudstone (KBTM) (2.1 (ii), (v), (vi))

The Thabala Formation of the Beaufort Group comprises laminated mudstone and siltstone often bioturbated and ferruginous. This unit, were it occurs above the G Seam within the Focus Area, is moderately weathered and according to Coffey Mining (2013)[5] the thickness ranges from a few metres to 20.0 m.

5.1.3.13. KF Overburden Unit (2.1 (ii), (v), (vi))

This unit is represented by a layer of Kalahari Sand ranging from 0.0 m to 20.0 m in thickness (Coffey Mining, 2013)[5]**,** which obscures the bedrock geology. This unit unconformably overlies various Karoo lithologies and tends to thin towards the drainage lines.

5.2 Nature of and controls on coal deposition (2.1 (ii), (v), (vi), (vii); 10.2 (i), (ii))

The Karoo aged coal seams in the Masama Coal Project area and in Botswana in general were deposited in a post-glacial environment under cool to temperate climatic conditions. Coal deposits developed as peat in low lying swamps on the edges of lakes fed by rivers with well-developed alluvial flood plains. Intermittent tectonic activity and resultant movement of faulted blocks during sedimentation resulted in the deepening of individual coal basins while rejuvenation of the hinterland topography produced cyclic sedimentary sequences. The coal deposits formed during periods when low energy conditions prevailed.

Limited regional post Karoo faulting has further exerted controls on the distribution of the coal deposits. Structural interpretations incorporating the work done by Shell (1982)[14] as well as published regional geological maps and aeromagnetic data have been used in this study to identify domains, which were applied to the resource estimation. One such example is the southern limit of the Karoo Supergroup lithologies, which is a faulted contact with Proterozoic Waterberg aged rocks.

Most of Botswana’s coal deposits are typical Gondwana type coal deposits with high inertinite and low vitrinite contents and have also been noted to contain higher moisture contents than typical coal deposits from the Central Basin of South Africa.

The detailed nature and characteristics of each individual coal seam present in the project area have already been discussed under the section “*Stratigraphy and Coal Seams*” above.

5.3 Geological models (2.1 (iii); 3.1 (ii), (iii); 4.1 (i), (ii); 4.2 (iv); 10.2 (ii))

Coal seam intersections and Raw Coal quality data for the E Seam and A Seam were captured in Microsoft Excel® spread sheets, which are presented in Appendix 5 and Appendix 6 respectively. The sources of the information and data used to conduct the Coal Resource estimate described in this report have already been addressed and all the sources of information are listed in the references to this report.

Model Maker® Version 12.02 and Golden Software Surfer® Version 11 software were used for the physical, structural and quality modelling. Fabric8® software was used for all structural analyses. Histograms were created by means of Microsoft Excel®.

Model Maker® Version 12.02 software was used to create an initial base plan indicating the Masama Coal Project Prospecting Licence Area, the Masama Coal Project Focus Area and the borehole positions from available information and data. The initial base plan created in Model Maker® Version 12.02 as well as the applicable physical borehole data captured in Microsoft Excel® were imported into Golden Software Surfer® Version 11. The imported information and data were subsequently used to create grid files by means of the Kriging method for the thickness of all the applicable geological layers. The model only displays the modelling results within the boundaries of the focus area. The grid files are used to create contour layers for all the applicable geological strata. The geological information are interpreted and images of the contour layers are exported to Model Maker® Version 12.02 where interpreted results are added to the initial base plan, all as separate layers, using the computer aided drafting (CAD) function.

The final base plan as discussed above is imported into Golden Software Surfer® Version 11 in order to digitize the different resource classification limits. A dataset is created for the roof and floor of each applicable coal layer to be imported into Golden Software Surfer® Version 11 as well. The imported information and data are subsequently used to create grid files by means of the Kriging method for the roof and floor of all the applicable coal layers. The volume between two grid files, or a grid file and any horizontal plan can then be calculated in Surfer® using the Trapezoidal Rule.

All known features limiting the extent of the coal seams were applied to the model, these included; faults, licence boundaries, “topographic highs”, sub-outcrop limits and weathering. A depth of weathering surface was also applied to limit the resource model. The positions of faults were inferred on the basis of geological and geophysical interpretation, and the examination of seam and formation elevations. The surface topography was supplied by the Client (based on digital elevation data purchased from the Department of Surveys and Mapping in Botswana). This surface was used as a controlling surface for estimating the depth of weathering surface which in turn was used limit the extent of the coal seams.

The Masama Coal Deposit was modelled as a typical tabular and near horizontal, strata bound coal deposit where coal distribution has been controlled by “topographic” or “structural” highs as well as minor faulting and recent weathering. No significantly different interpretations were considered in this report.

5.4 Nature of deposit on the property (2.1 (ii), (iv), (v), (vi), (vii); 3.1 (vii); 4.1 (i), (ii); 10.2 (i), (ii))

The deposit types found within the project area represent strata bound coal seams of various thickness and quality. The original peat accumulations that formed in the Permo-Triassic period underwent compression and lithification to form the sub bituminous coal deposits present today.

The Masama Coal Project coal deposit fundamentally represents a multiple seam deposit type as previously depicted in Figure 14. The A Sequence, between the underlying A Seam and overlying A Upper Seam however comprises carbonaceous mudstone and mudstone with bands of bright and dull coal, which represents an interbedded seam deposit type. Although the E Seam and the A Seam in the West Block are the primary focus of this report, the other seams present and the occurrence of the E Seam and A Seam in the Central Block is also mentioned here for completeness.

In the Masama Coal Project area two “topographic highs”, the Central High and smaller South West High (Shell, 1982)[14] exerted significant local control on the formation of the E Seam and A Seam (Fig. 15). Two cross-sections, one orientated west-east and the other north-south, were drawn. The cross-sections display the relative positions of the various seams, as well as the extent, continuity and the strata thickness through the Focus Area. A vertical exaggeration of twenty times was applied in order to show the small elevation variations of the coal seams. On the eastern side of the west-east section (Fig. 15, Section 1) a pinching out effect occurs towards the Central High structure. The positions section lines are indicated in Figure 15. This influence, although not comprehensively understood, has been taken into account in the geological interpretations and boundaries applied to the coal resource areas (i.e. areas on the “topographic highs” with no coal development, which have been excluded).

The depth of weathering ranges from 15.4 m below surface to 45.0 m below surface, but is generally in the region of 21 m in the potentially opencastable portions of the focus area as observed in the 2016 drilling (MW16r to MW25), but is on average in the region of 27 m in the Focus Area. In areas adjacent to faults the depth of weathering is usually the most extreme.

The strata in the Focus Area of West Block of the Masama Coal Project area are regionally generally flat, dipping gently at ~3° away from the Southwest High. The current exploration focuses in the environs of the Southwest High as described by Shell (1982)[14]. All coal seams pinch out over the “topographic highs” and locally dip directions may vary away from these features. A few regional faults, trending northeast-southwest and northwest-southeast, were identified by Shell (1982)[14] and more recently by GM Geotech. The southern boundary of the coal-bearing Ecca Group with the Waterberg Group is interpreted as a faulted-contact.

Preliminary field structural mapping was conducted by the author in and around an abandoned quarry immediately to the north of Medie. A total of forty structural elements (joints and bedding planes) were measured using a Clar Compass, set for a magnetic declination of -25° as determined with GeoMag® Version 3.0 software on 15 June 2016 (-25.14°). This implies that all azimuth measures noted here are with reference to true north. The orientation of all the planar geological structures was noted as Azimuth of Dip/Dip Angle; that of linear geological structures as Azimuth of Plunge/Plunge Angle; and that of pit faces as Azimuth of Pit Face/Pit Slope Angle.

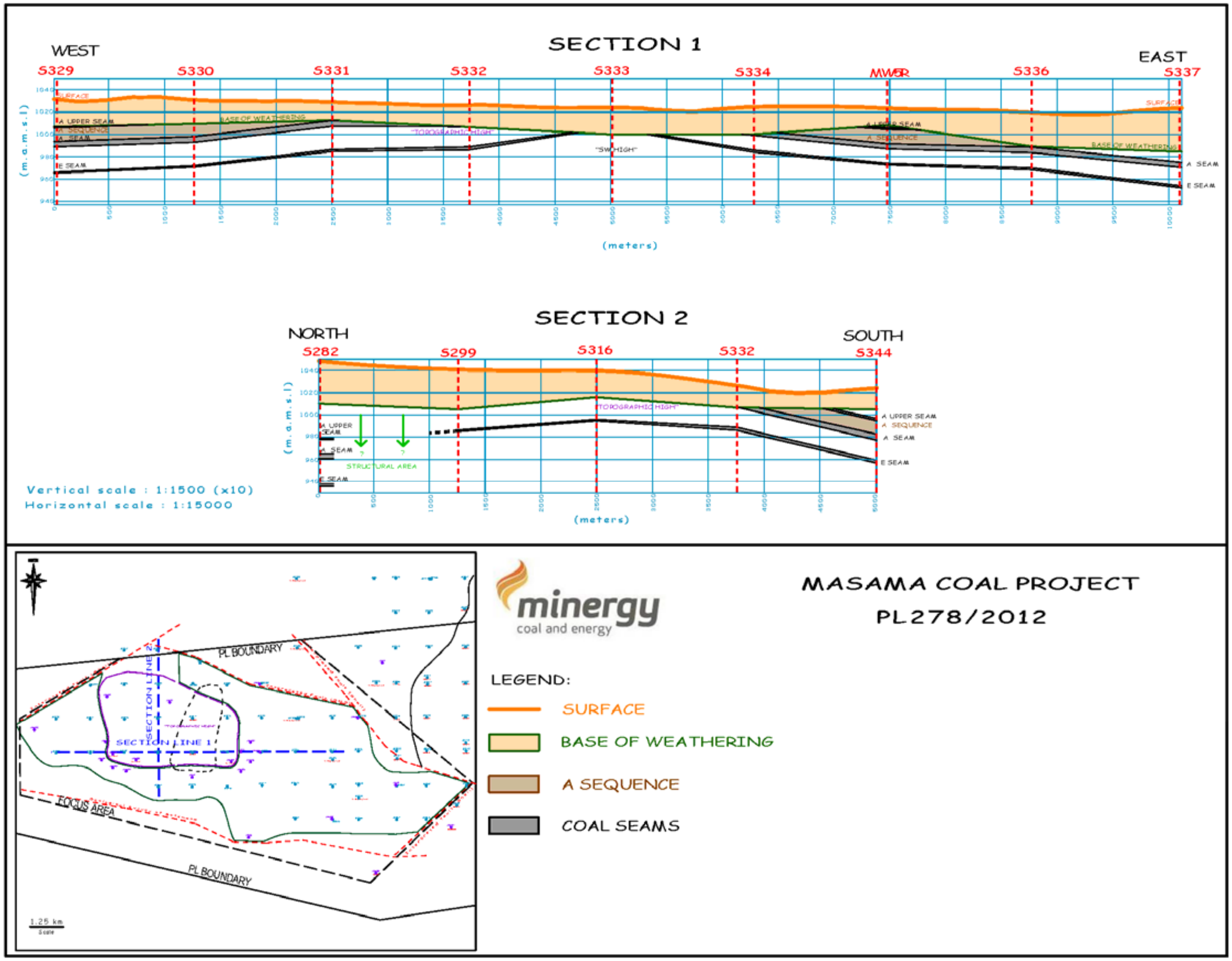

Figure 15: Two cross-sections through Focus Area.

The structural data were modelled using FABRIC8® VERSION 8.0 software.

The maximum orientation of the six sandstone bedding planes measured in and around the abandoned quarry is 171/06 (Fig. 16); the centre of gravity (the orientation of the vector sum of all bedding plane measures) however is at 180/03 and can be considered horizontal for all practical purposes.

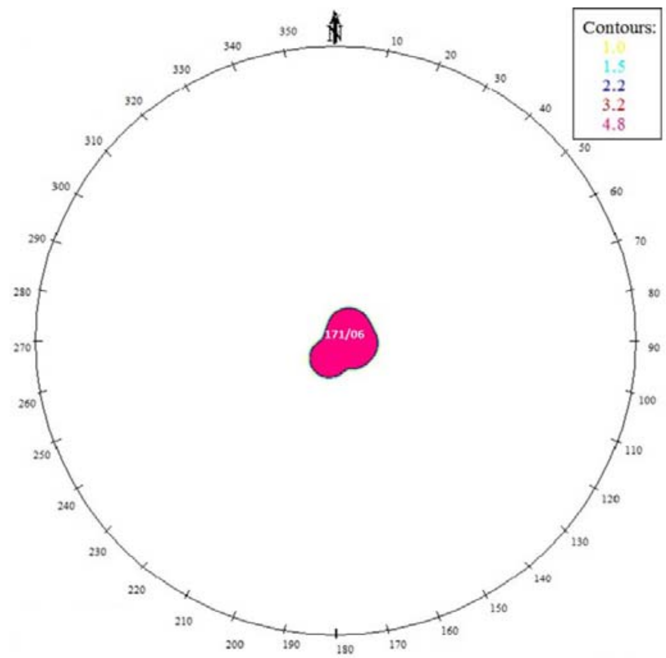

Figure 16: Bedding plane orientation depicted as a maximum by means of a contoured diagram of six measured bedding plane orientations.

Two joint sets, although very ambiguously defined from a total of thirty-four measurements in around the abandoned quarry are distinguished (Fig. 17):

- A near vertical joint set (maximum orientation at 165/87) striking more or less east-northeast west-southwest; and
- A less prominent near vertical joint set (maximum orientation at 252/85) striking more or less south-southeast north-northwest;

The joint sets have a strong consistency in strike and dip, however trends within do occur.

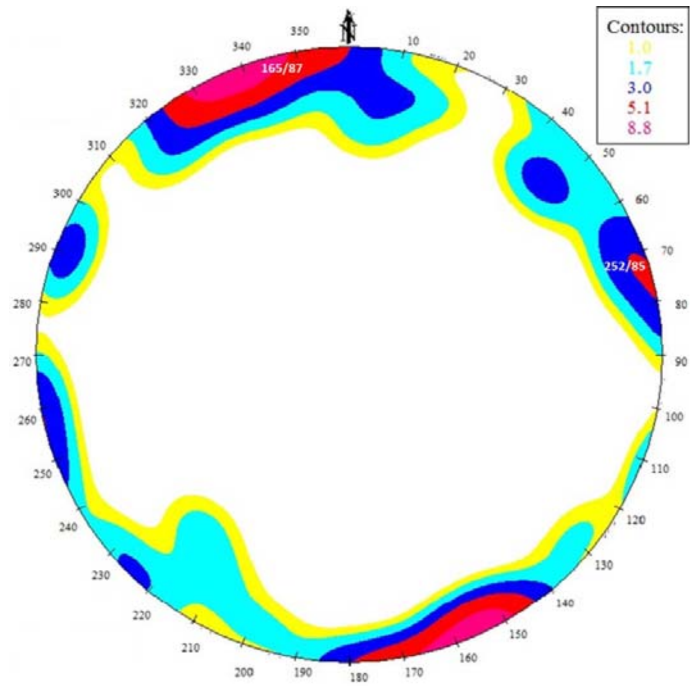

Figure 17: Joint sets orientations depicted as maxima by means of a contoured diagram of thirty-four measured joint plane orientations.

5.5 Coal seam thicknesses, distribution and qualities (2.1 (ii), (iv), (v), (vi); 3.1 (vi), (vii); 4.1 (i); 4.2 (iii); 4.5 (ii); 10.2 (i), (ii))

The coal seam thicknesses and thickness ranges of all the coal seams intersected in boreholes drilled in the Focus Area and which are used in this resource estimation are summarized in Table 7.

The current exploration focuses only on the A Seam (opencast) and the E Seam (underground), for which resource calculations are conducted.

Table 7: Average coal seam depth and thicknesses in the Masama West Block (Focus Area).

COAL SEAM	AVERAGE DEPTH BELOW SURFACE (m)	AVERAGE THICKNESS (m)	MINIMUM THICKNESS (m)	MAXIMUM THICKNESS (m)
G Seam	35.2	18.1	17.2	19.0
K Seam	46.7	3.1	1.4	3.9
A Upper Seam	49.0	1.6	1.1	2.2
A Sequence	50.7	12.5	9.5	15.2
A Seam	50.2	5.0	4.2	6.2
E Seam	72.7	1.7	0.4	2.8

Seam thickness contour plans for the E Seam and the A Seam were produced using Golden Software Surfer's® Version 11 superior gridding method. The seam thickness contour plans are shown in Figure 18 and Figure 19.

The variation in the seam thicknesses of the E Seam and the A Seam as represented in the seam thickness contour plans in Figure 18 and Figure 19 are diagrammatically depicted in Figure 20 and Figure 21. Figure 20 shows that the 71% of E Seam intersections in the Focus Area exceeds a thickness of 1.5 m. The A Seam thickness as depicted in Figure 21 implies that 75% of all A Seam intersection in the Focus Area exceed a thickness of 4.6 m.

The E Seam thickness is relatively constant throughout the Focus Area. Minor deviations in thickness occur in the environs of the "Southwest High" (Fig. 18), as well as along the southern E Seam resource limit to the extreme east and the west (where thinning of the seam is interpreted). Yet another deviation in E Seam thickness is observed to the northeast of the "Southwest High" can probably be ascribed to contradictory data.

The A Seam thickness is very constant throughout the Focus Area, but is anticipated to thin in the immediate vicinity of the "Topographic High" (Fig. 19) where it appears to pinch out along this structural phenomenon. Slightly thinner A Seam is observed in the northeast and along parts of the south-eastern boundary of the focus area. Small areas of slightly thicker A Seam are observed immediately south and west of the "Topographic High".

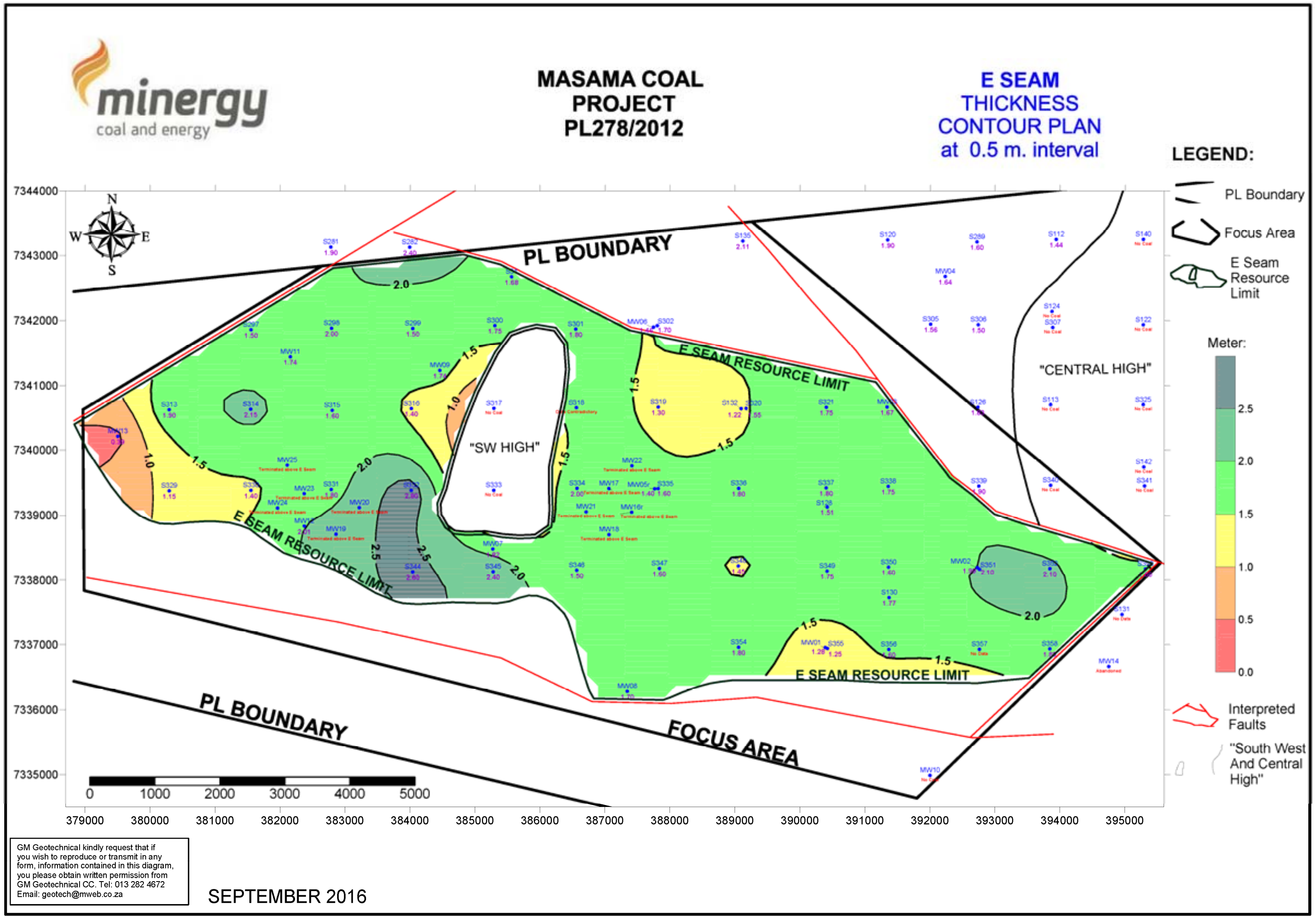

Figure 18: E Seam thickness contour plan.

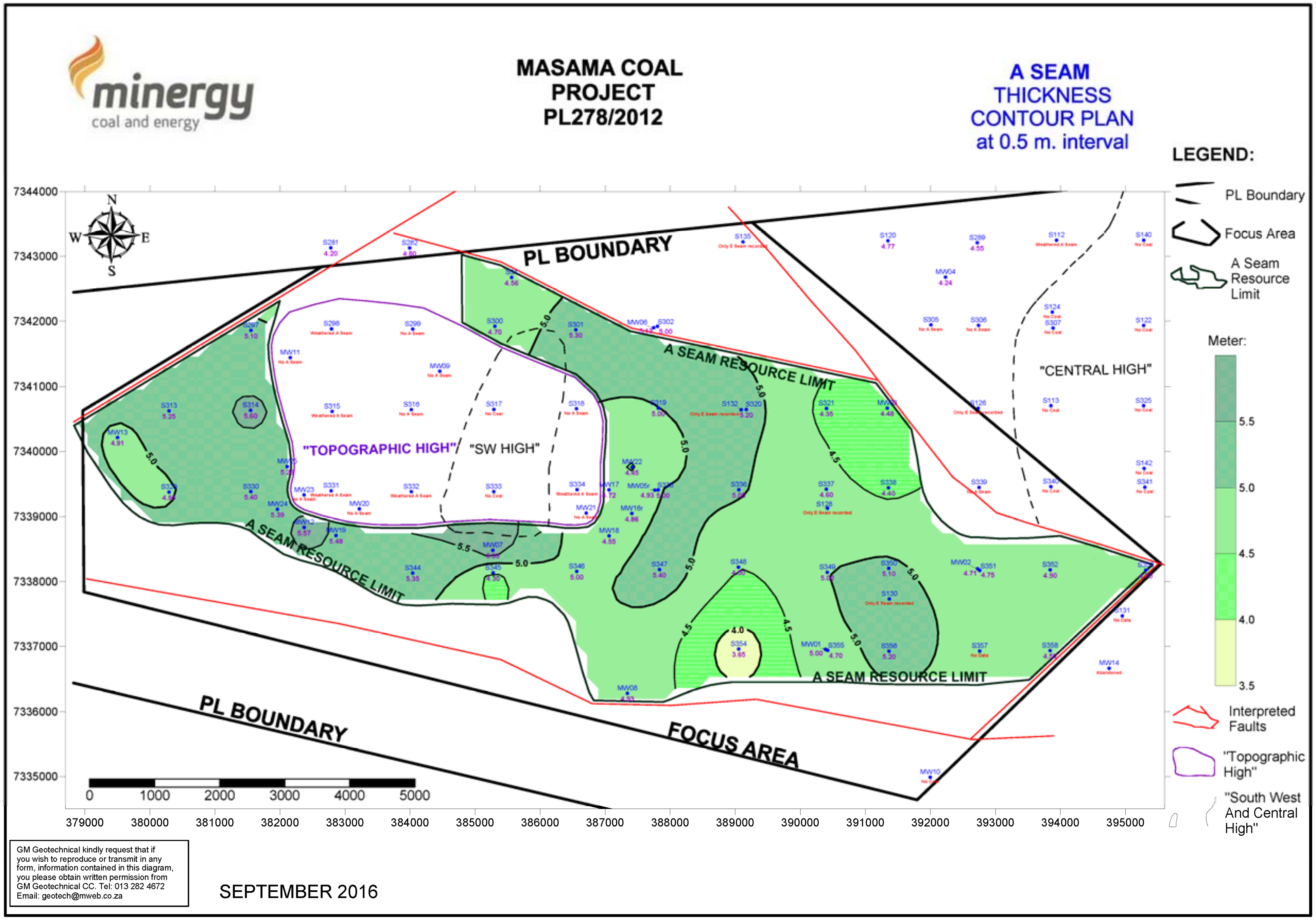

Figure 19: A Seam thickness contour plan.

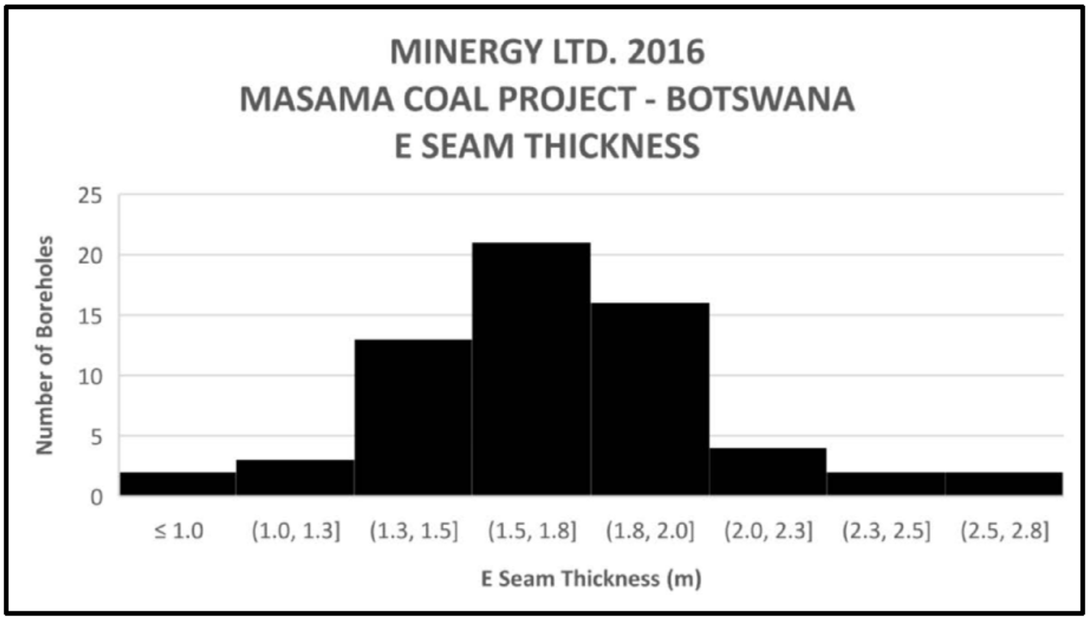

Figure 20: E Seam - diagrammatical variation in thickness

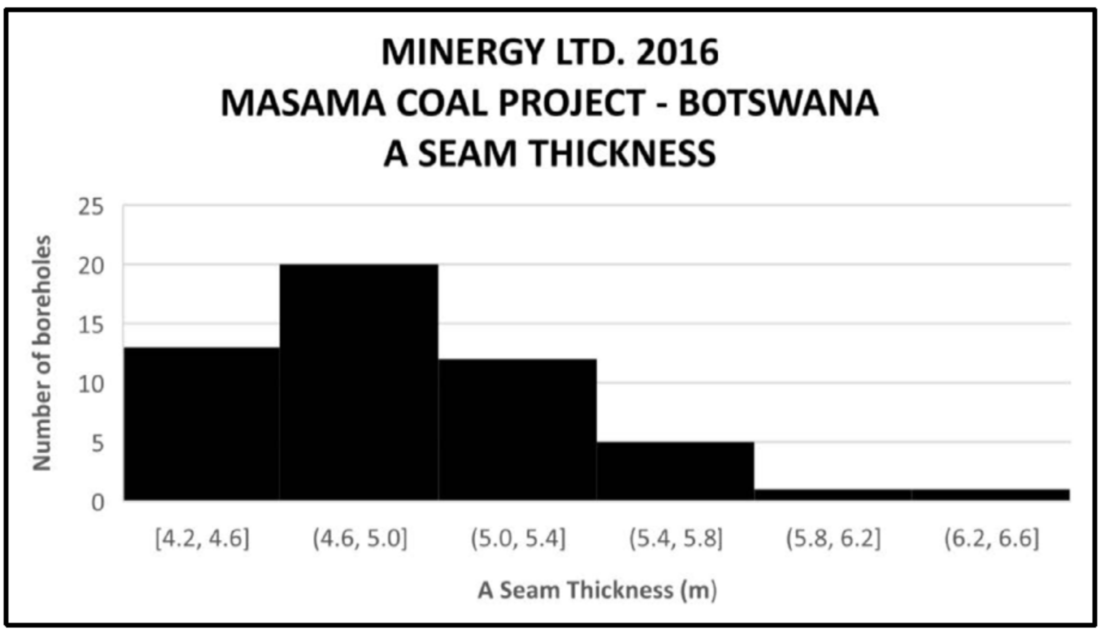

Figure 21: A Seam – diagrammatical variation in thickness

The following raw coal quality contour plans on an air dried basis for the E Seam and the A Seam were produced using Golden Software Surfer's® Version 11 superior gridding method:

- Calorific Value (MJ/kg)
- Ash (%)
- Moisture (%)
- Volatile Matter (%)

A summary of the raw coal qualities and seam thicknesses for the E Seam, A Seam, A Upper Seam, K Seam and G Seam were presented by Coffey (2013)[5] (Appendix B: Summary of Coal Seam Intersections). The raw coal quality contour plans are shown in Figure 22 to Figure 29.

Histograms showing the variation in the Calorific Values (MJ/kg) of the E Seam and the A Seam as represented in the Calorific Value contour plans (Fig. 22 and Fig. 26) are presented in Figure 30 and Figure 31.

The E Seam raw coal is clearly of a better quality than that of the A Seam raw coal. 76% of all the raw coal intersections analysed within the Focus Area have Calorific Values well above 20.0 MJ/kg (Fig. 22). The lower raw CV values for the E Seam often indicate the presence of sandstone or mudstone partings within the seam. The raw coal Calorific Value results for the A Seam within the Focus Area implies that 84% of the coal is well above 20.0 MJ/kg (Fig. 26).

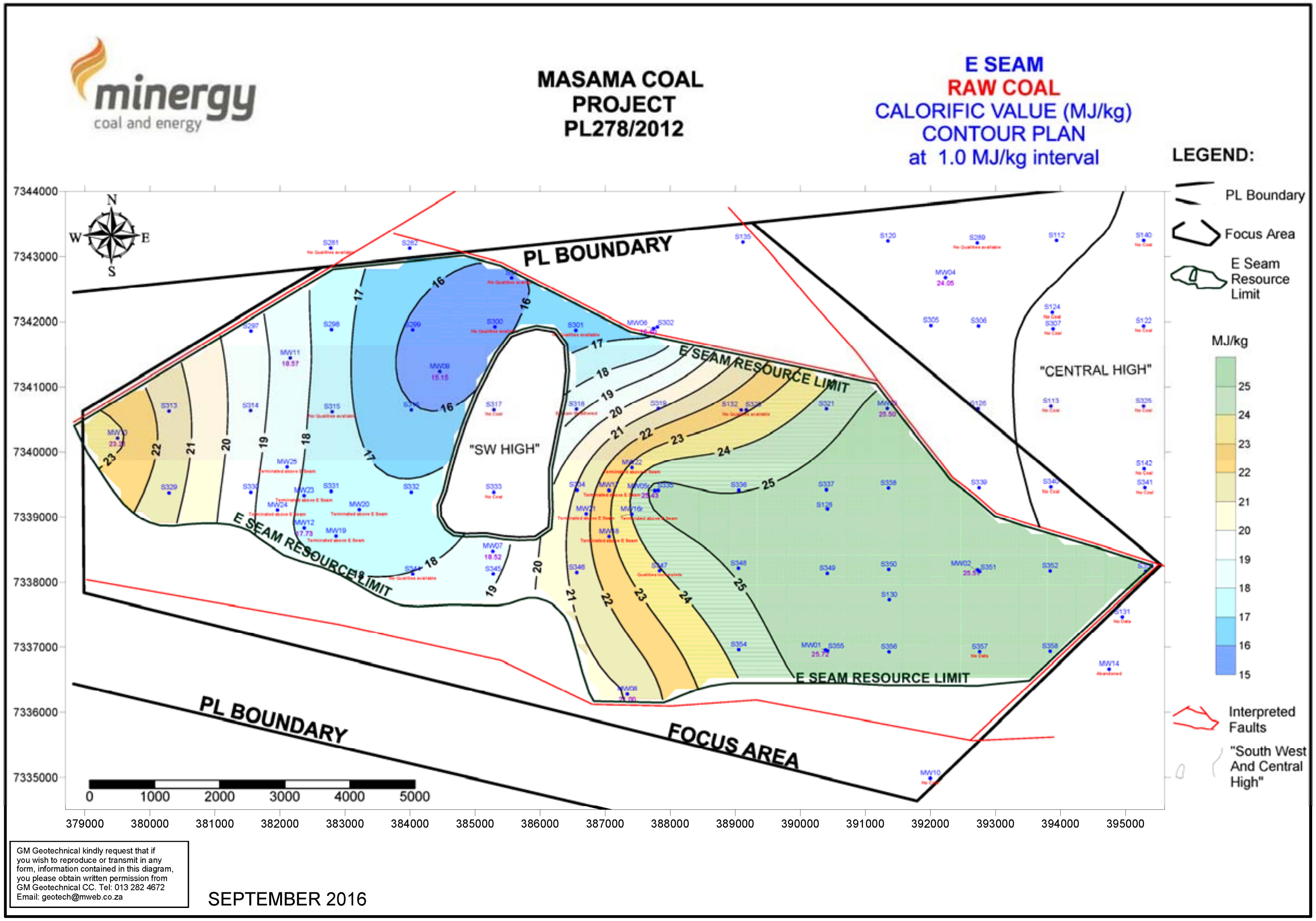

Figure 22: E Seam Raw Coal Calorific Value (MJ/kg) contour plan.

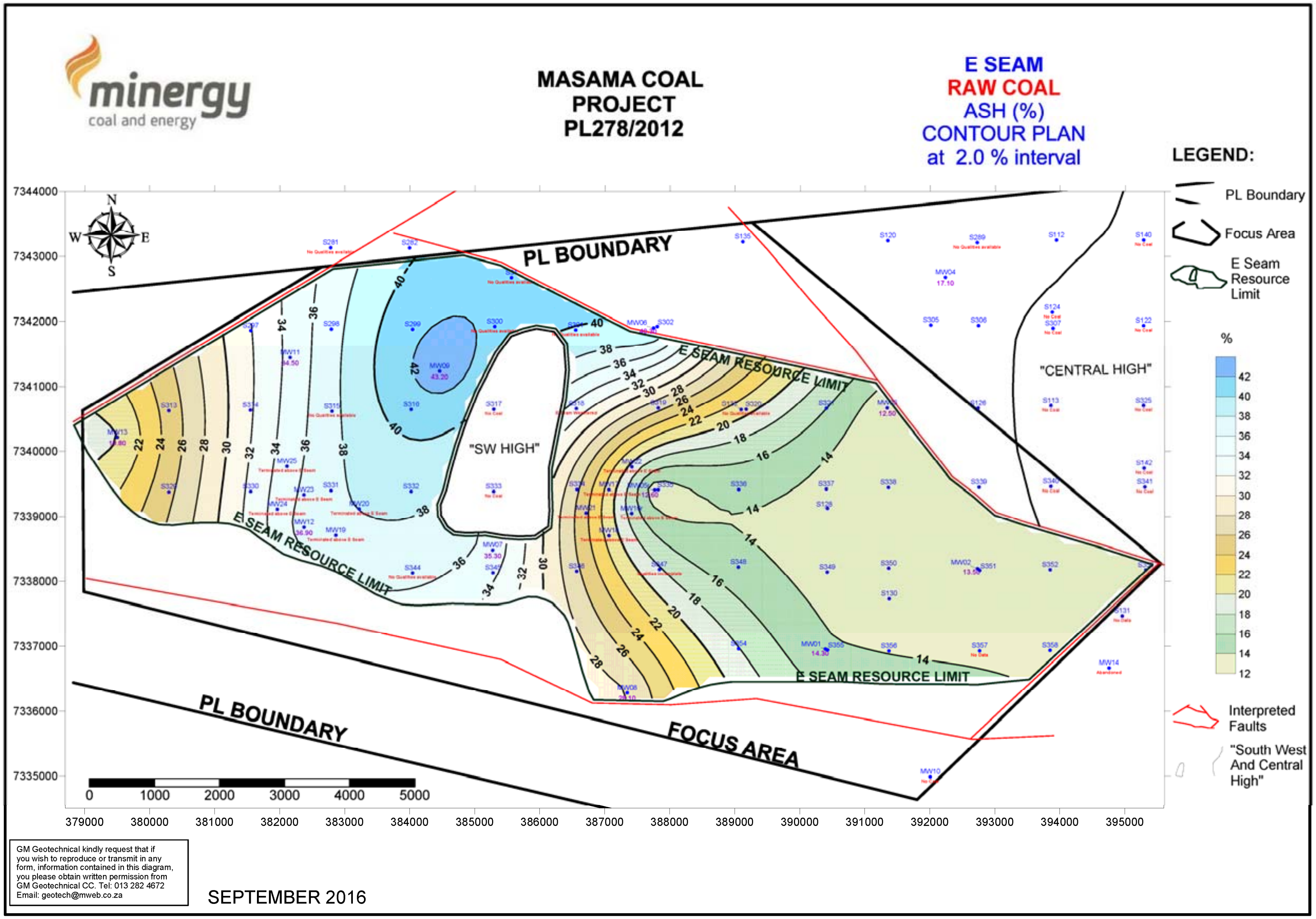

Figure 23: E Seam Raw Coal Ash (%) contour plan.

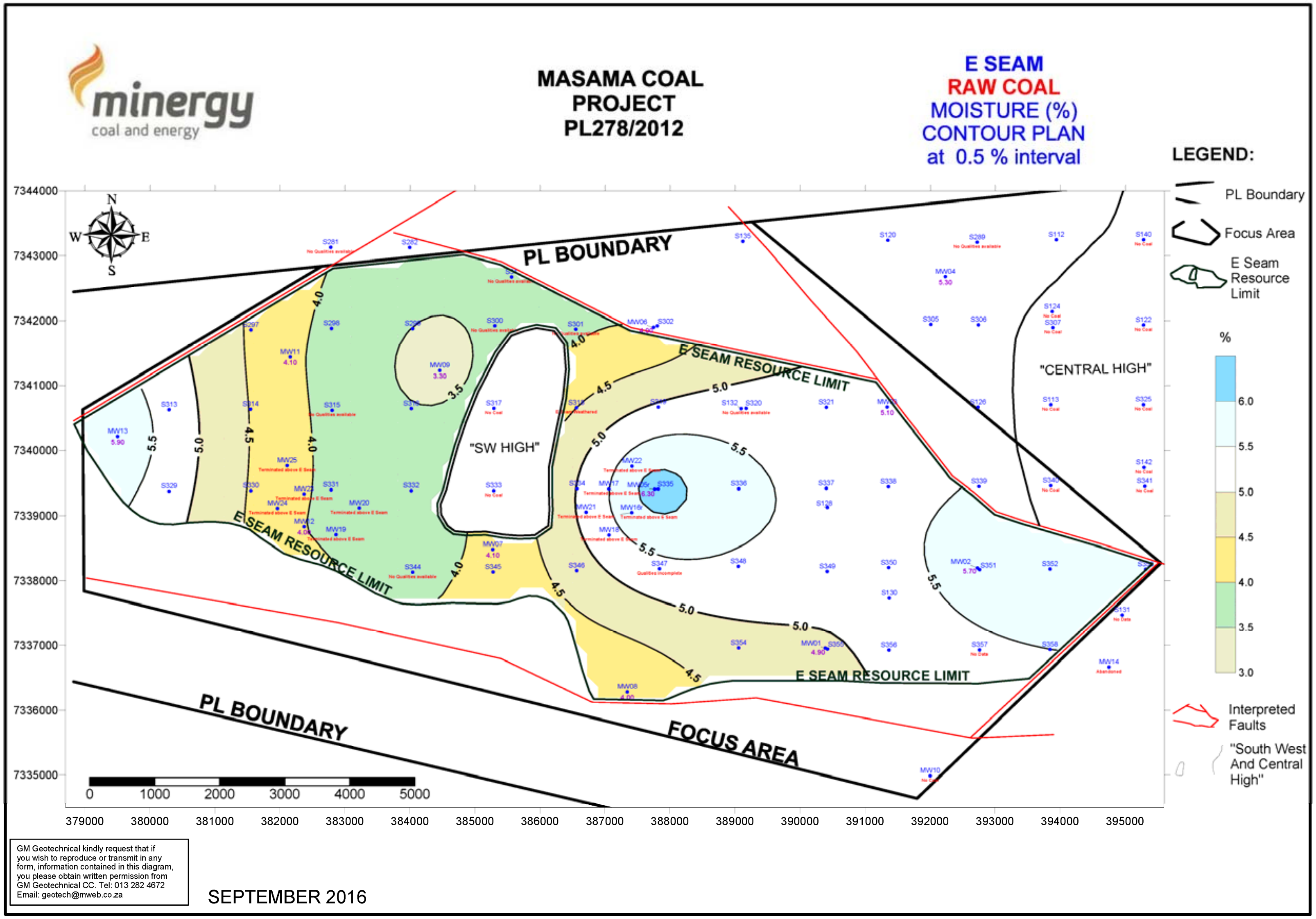

Figure 24: E Seam Raw Coal Moisture (%) contour plan.

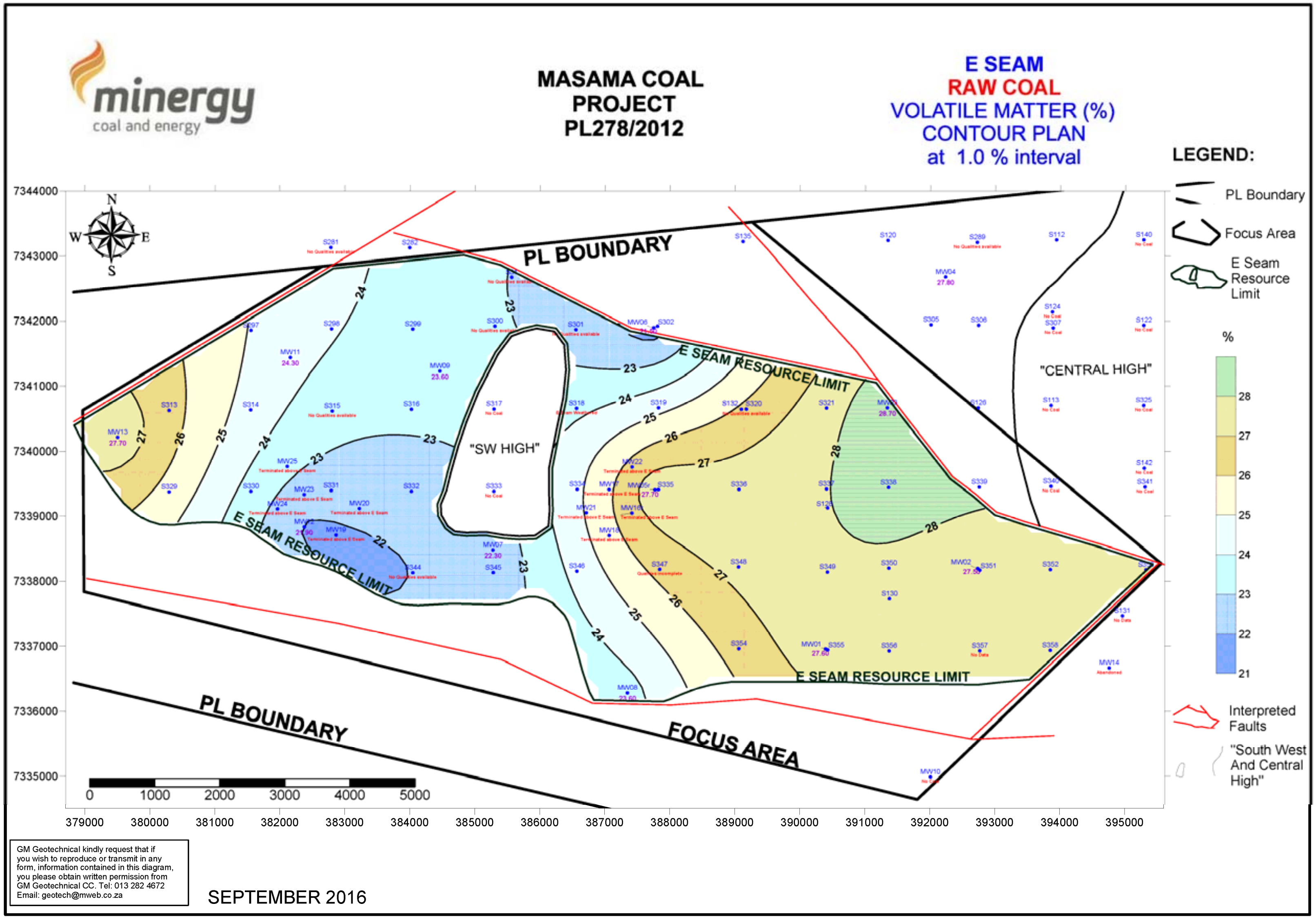

Figure 25: E Seam Raw Coal Volatile Matter (%) contour plan.

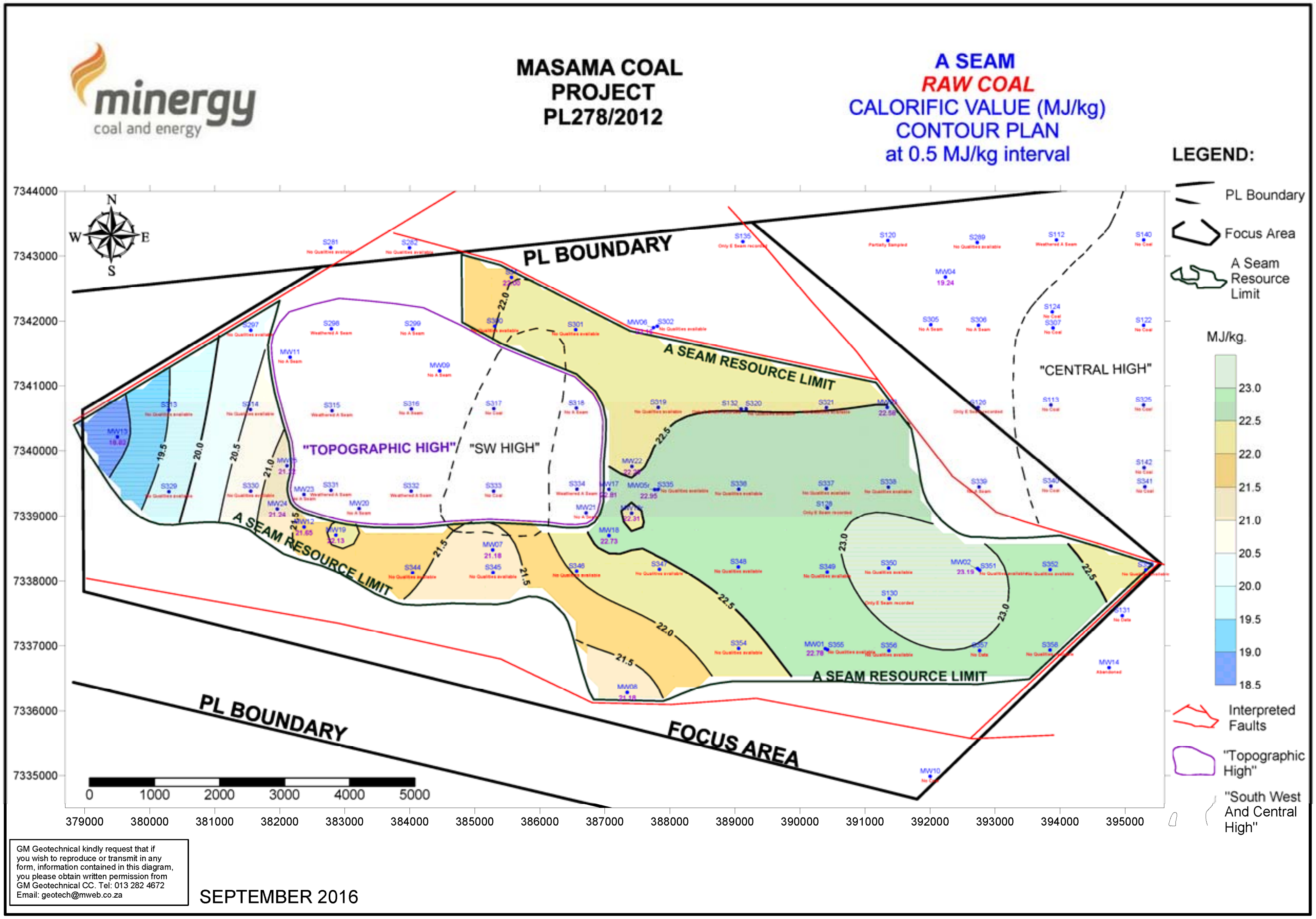

Figure 26: A Seam Raw Coal Calorific Value (MJ/kg) contour plan.

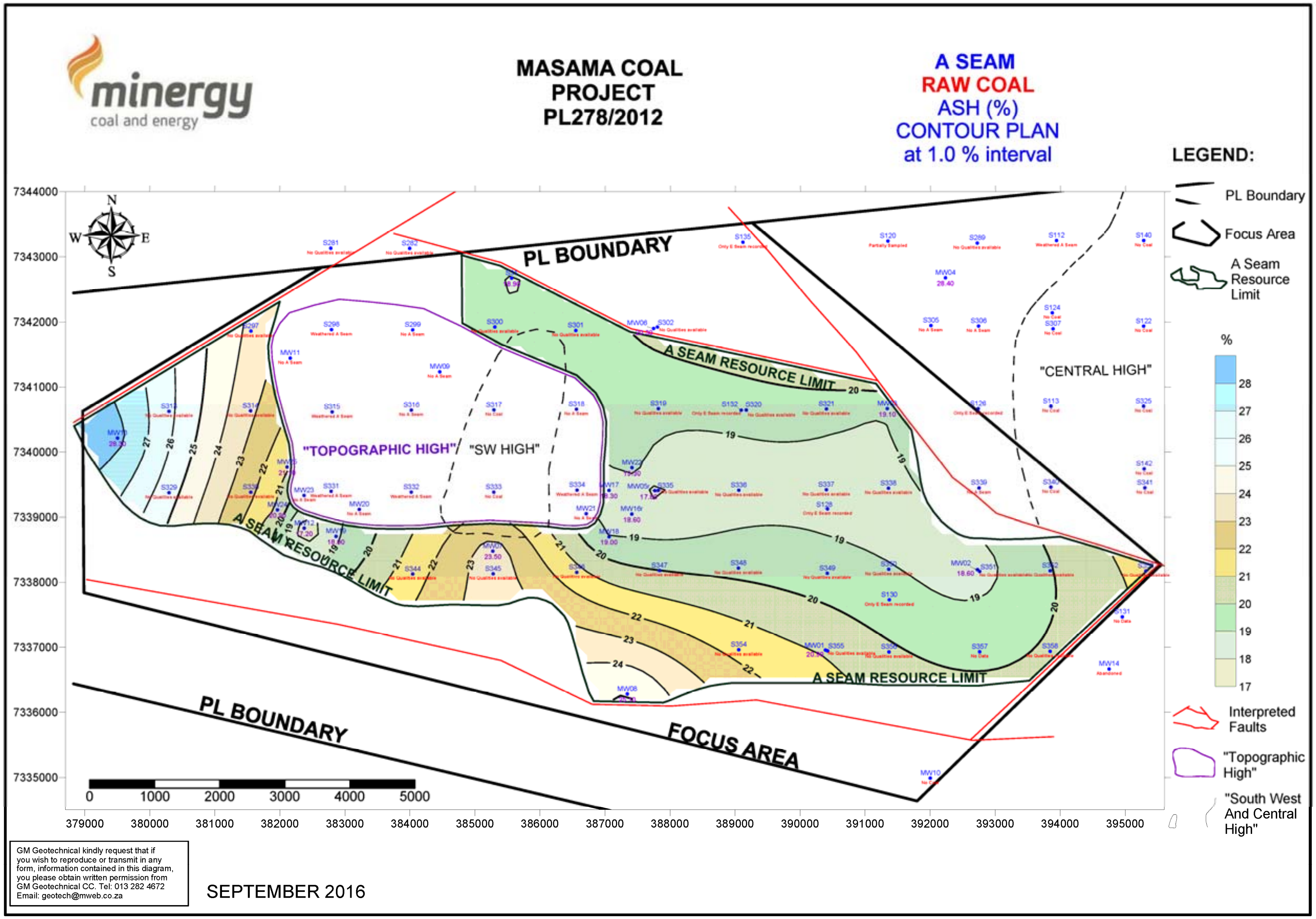

Figure 27: A Seam Raw Coal Ash (%) contour plan.

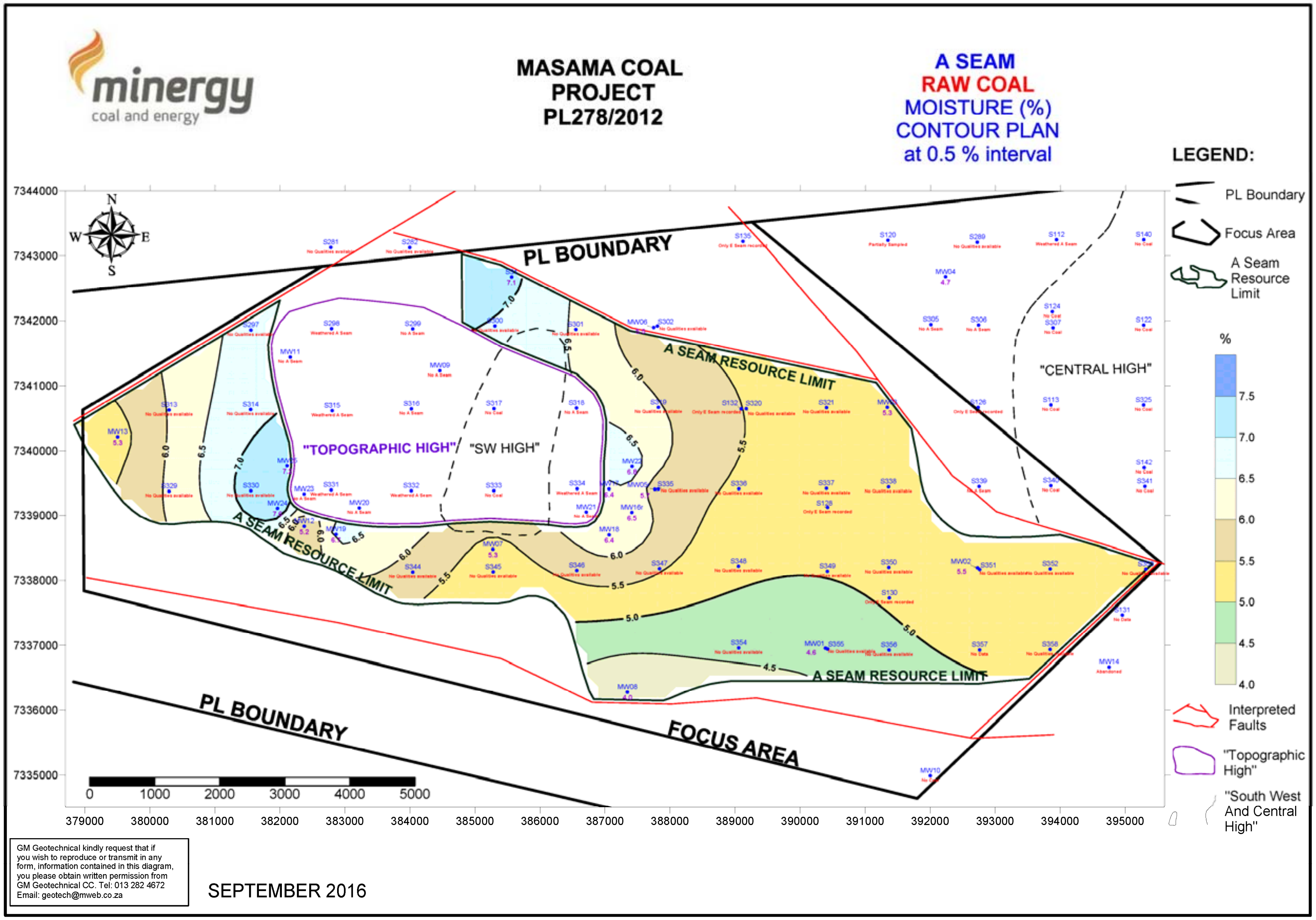

Figure 28: A Seam Raw Coal Moisture (%) contour plan.

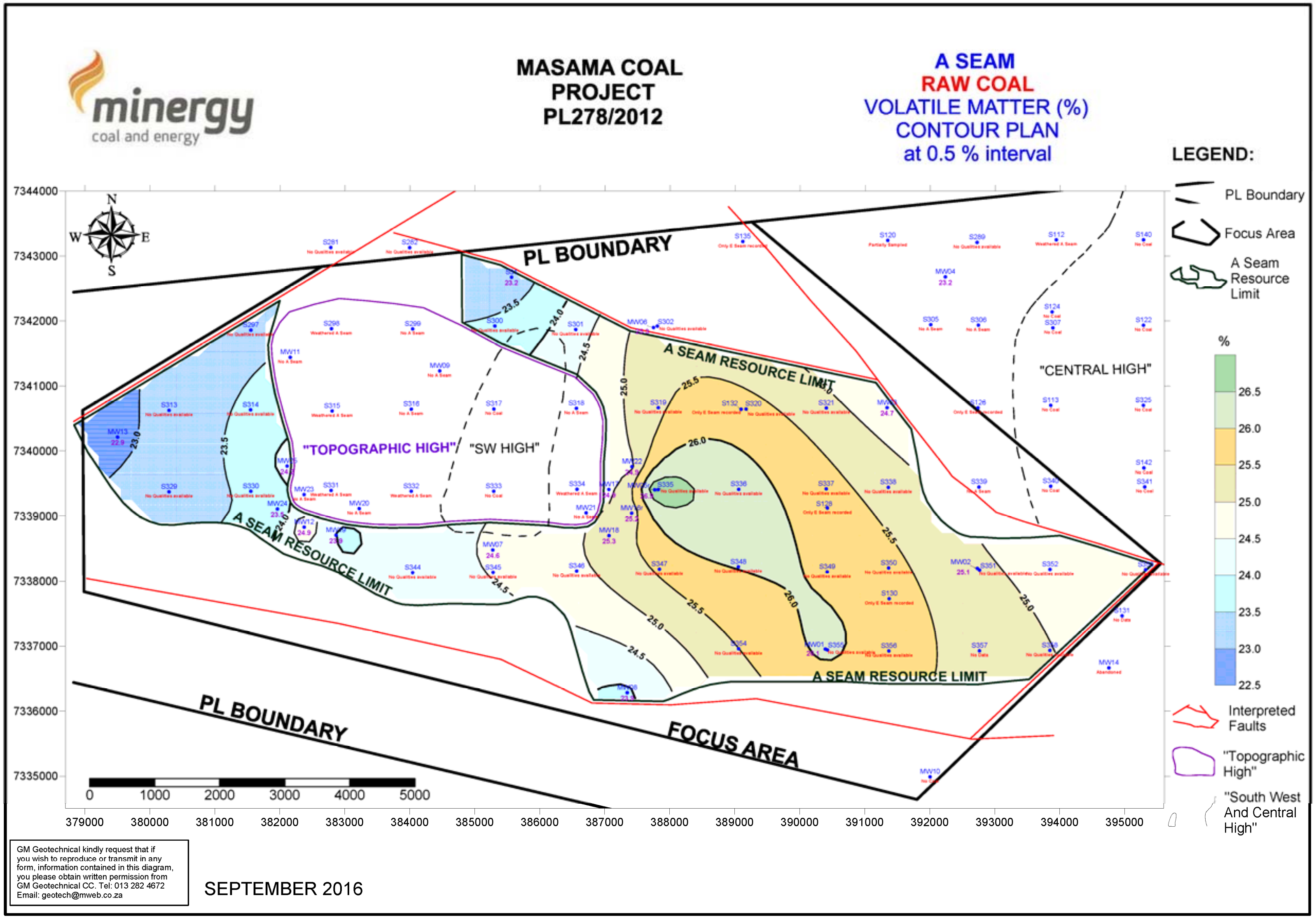

Figure 29: A Seam Raw Coal Volatile Matter (%) contour plan.

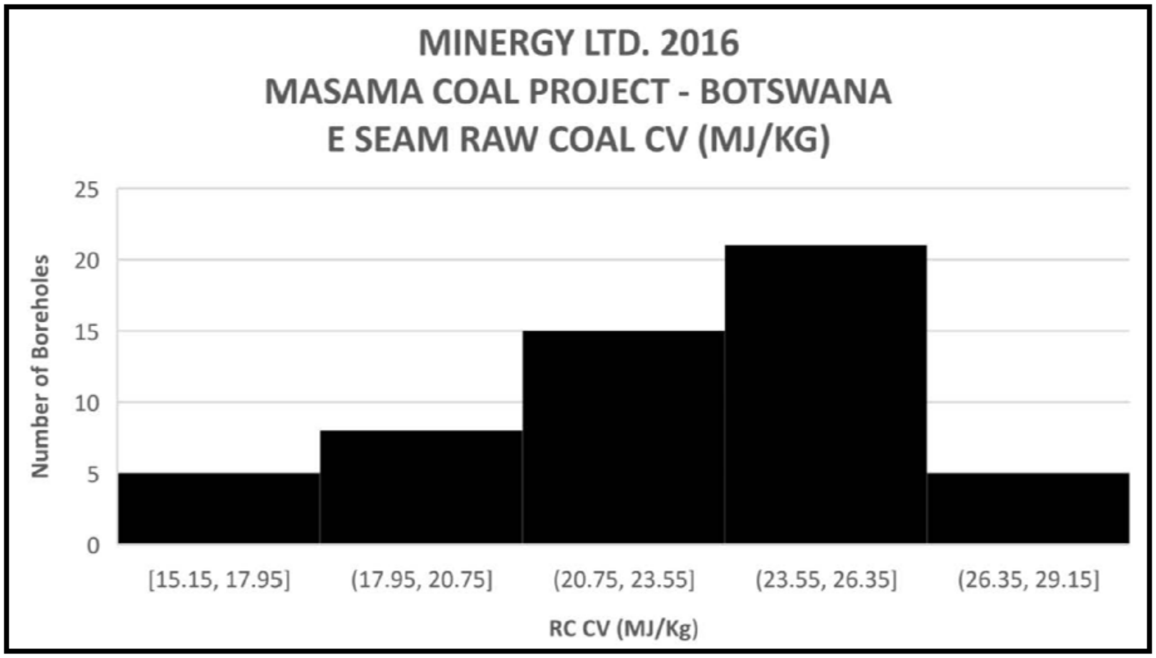

Figure 30: E Seam - Histogram showing distribution of Raw Coal Calorific Value (MJ/kg) (Focus Area of Masama West Block).

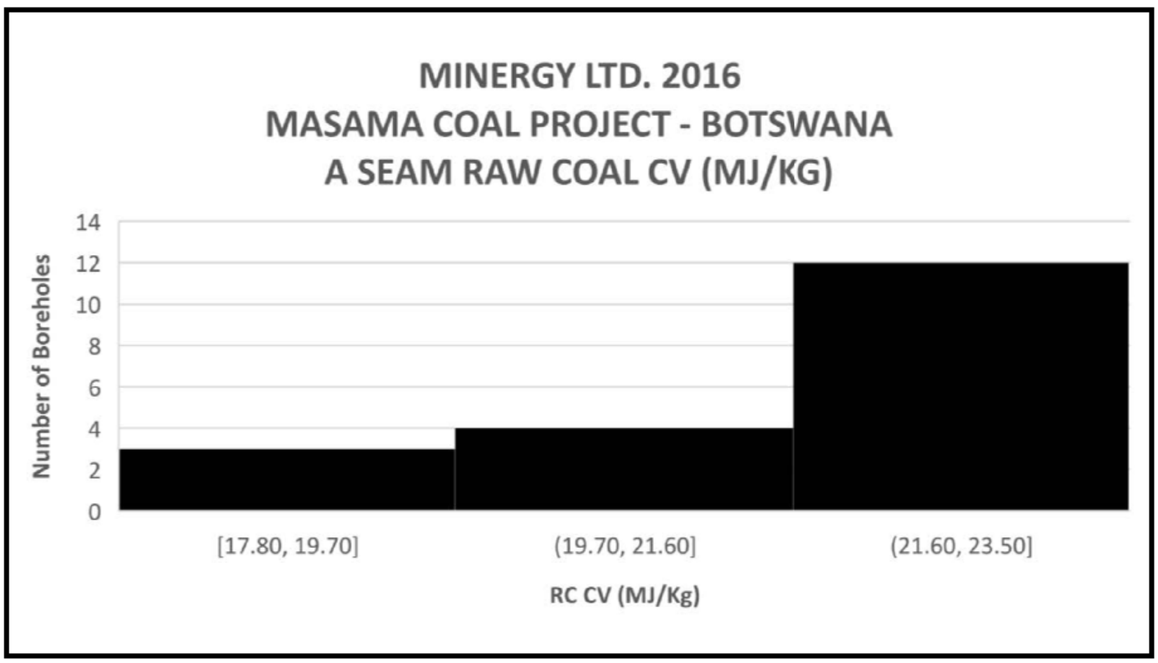

Figure 31: A Seam - Histogram showing distribution of Raw Coal Calorific Value (MJ/kg) (Focus Area of Masama West Block).

6. EXPLORATION DATA AND INFORMATION

6.1 Remote sensing data and interpretations (3.1 (i))

High resolution satellite images have been compiled from data available on Google Earth Pro® (2012 and 2016). No other satellite imagery has been collected by Minergy for the Masama Coal Project and no interpretations have been done.

6.2 Geophysics (3.1 (i), (iii))

Shell reported that they conducted ground magnetic and gravity surveys but this data or their interpretations could not be sourced.

Aeromagnetic surveys were flown by the Fugro Airborne Surveys for the Department of Geological Survey (DGS) in 1986. This data set is of excellent quality and was flown with a 200 m line spacing, 80 m mean ground clearance and then gridded to a 50 m mesh. Minergy purchased grids of the Total Magnetic Intensity and First Vertical Derivative from the DGS (Fig. 32 and Fig. 33).

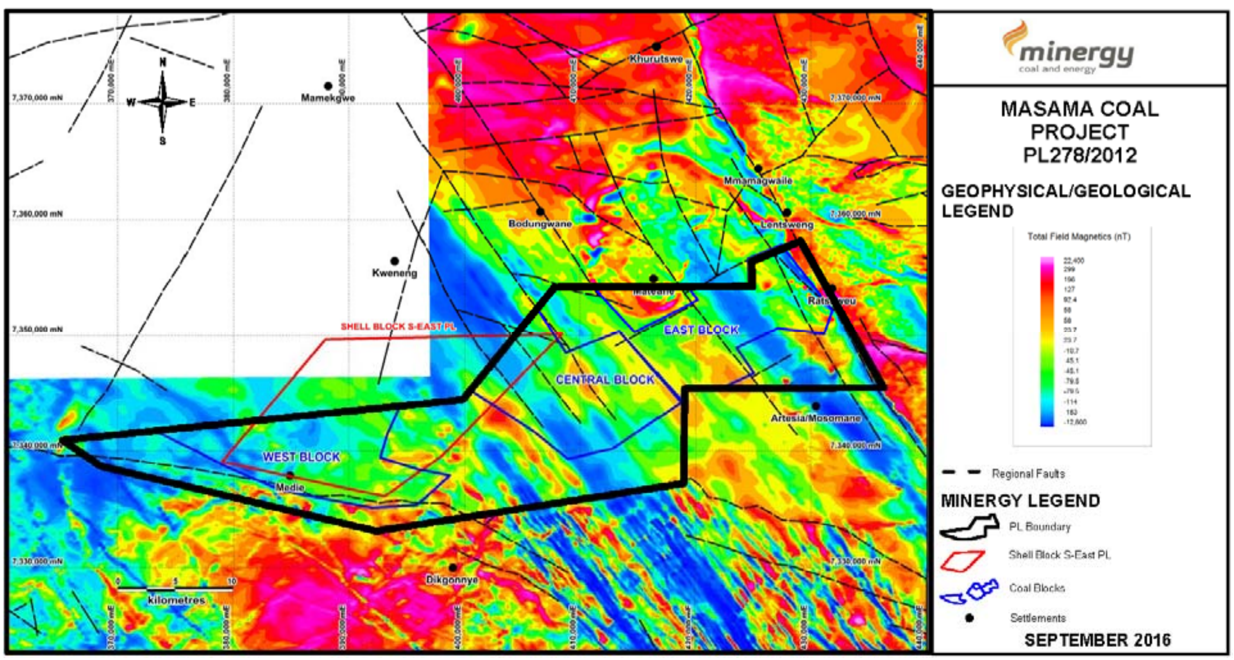

Figure 32: Masama Coal Project: Aeromagnetic Survey Data – Total Field

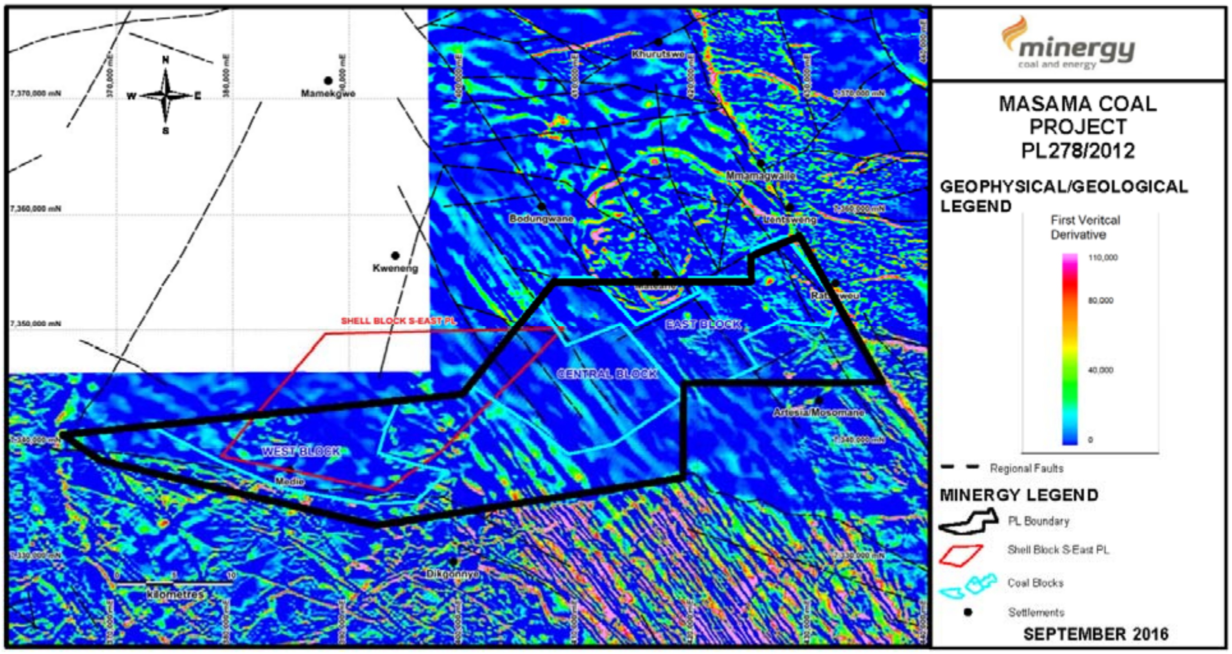

Figure 33: Masama Coal Project: Aeromagnetic Survey Data – First Vertical Derivative.

The aeromagnetic data are particularly helpful in identifying major geological boundaries, structures and the presence of late Karoo aged intrusive rocks affecting the Masama Coal deposit. Boundaries determined from the aeromagnetic data were used to constrain the resource model. The aeromagnetic survey also indicates that very few dykes or sills affect the Masama Coal deposit, but that in the case of the Central Block there are numerous northwest trending structures and dykes in the pre-Karoo basement. Some of these structures have possibly been reactivated in post-Karoo times.

Down-the-hole geophysical logging was conducted on most boreholes drilled by Shell (1982)[14] and on all boreholes drilled by Minergy. The typical suite of data collected was, long spaced density, short spaced density, gamma and calliper.

6.3 Mapping (3.1 (i))

No systematic surface mapping other than the structural mapping conducted by the author in and around an abandoned quarry immediately to the east of Medie is known to have taken place in the Masama Coal Project area. The lack of field mapping is most probably due to the very limited outcrop of bedrock geology beneath the Kalahari Sand. Shell (1982)[14] did however produce maps indicating the estimated thickness of Kalahari Sand present and also a sub-outcrop geological interpretation on the basis of their drilling results.

6.4 Structural studies (3.1 (i))

A structural interpretation was conducted by Shell (1982)[14] and was incorporated into the analysis done in this report. In addition, the aeromagnetic data was examined and the presence of potential structures interpreted by the author, these were also applied in the determination of boundaries to the Coal Resource estimate.

A preliminary field joint study was recently conducted by the author; the results of which have already been discussed in this report.

6.5 Drilling (3.1 (v), (vi), (vii); 3.2 (i), (v); 7.1 (i))

Between 1974 and 1979, Shell conducted wide spaced (regional) drilling on Block S and defined several “reserves” that met their specifications. In excess of one hundred mostly fully cored boreholes were drilled in this phase (Shell 1979[12] and 1981[13]). A small number of these “regional” exploration boreholes fall within the Masama Coal Project area and Minergy has managed to source geological logs, down-the-hole geophysics and limited analytical data for these boreholes.

In Shell’s S-East Block a focused exploration programme took place from 1980 to 1982. During this phase Shell drilled a further one hundred and one boreholes, of these forty-five were fully cored and fifty-six were percussion boreholes. All of the boreholes were geophysically logged, but only the fully cored boreholes were sampled, targeting the E Seam and the A Seam (with an emphasis on the E Seam). Minergy has sourced summary data for this drilling programme as well as the geophysical logs.

Twenty fully cored boreholes totalling 1 792.0 m were drilled by Minergy during the period October to December 2012 in the Masama Coal Project area. All the Minergy boreholes were drilled by Diabor Botswana (Pty) Ltd. using either LY33 or XY44 drill rigs. Boreholes were all completed as either HQ or TNW diameter core. In some cases tri-cone was used through the soft unconsolidated overburden and then PQ or HQ down to solid rock, Boreholes were then cased to below the depth of weathering and then completed with HQ or TNW diameter core. Some boreholes were drilled with an HQ triple tube core barrel. All boreholes were drilled vertically and down-the-hole orientation surveys were run on the first two, which confirmed very little deviation from the vertical starting position.

During the drilling programme a collar table was maintained, recording the site where each borehole was drilled, hand held GPS co-ordinates, date started and ended, final borehole depth (EOH), depth of weathering, core sizes, casing inserted, geologist who logged and sampled the core, geophysical and orientation surveys and collar surveys as well as any other relevant information. Differential GPS (DGPS) collar surveys were conducted once drilling was complete.

Minergy field operations were directed by Mr. John Astrup (Minergy) who is the Exploration Manager and a geologist with twenty-one years of experience including five years spent on coal exploration in Botswana. The coal logging was conducted by Mr. John Astrup and two independent geologists: Mr. Vivian Stuart-Williams (BSc, MSc Sedimentology) and Mr. Kelebogile Modise (BSc Geology). The field geotechnical logging was conducted by Mr. Blessing Chivasa (National Diploma in Geology).

The Minergy 2012 exploration programme had two main objectives:

- The first objective was to twin selected Shell boreholes to compare their seam depth, thickness and coal qualities in order to obtain the required level of confidence in the historic data. Their collars were located within 50 m of the Shell borehole collars. This objective was achieved as indicated in Table 8.
- The second objective was to infill the Shell boreholes, which were either situated within the Masama Coal Project area or were within a two kilometre radius of the project area, in order to satisfy the JORC Code (2012)[16] criteria for classification of an inferred coal resource. The borehole spacing of the historic and Minergy boreholes varies from 1.5 km to 3.5 km.

Table 8: Comparison of the Minergy and Shell twin boreholes.

Minergy BHID	A Seam Depth	A Seam Thickness	E Seam Depth	E Seam Thickness		Shell BHID	A Seam Depth	A Seam Thickness	E Seam Depth	E Seam Thickness
MW01	39.12	5.00	56.24	1.28		SE355	39.10	4.70	56.00	1.25
MW02	103.98	4.71	125.65	1.99		SE351	103.45	4.75	124.80	2.10
MW03	58.70	4.48	80.36	1.67		S110	59.04	4.32	80.92	1.58
MW05	36.29	4.93	54.13	1.40		SE335	37.00	5.00	54.80	1.60
MW06	93.32	5.13	112.12	1.46		SE302	92.20	5.00	110.50	1.70

During April and May 2016 Minergy drilled a further eleven fully cored boreholes totalling 374 m at the Masama Coal Project. The drilling specifically targeted shallow A Seam resources with seven of the eleven boreholes intersecting thick, high quality A Seam at depths of between 21.7 m and 26.7 m (top of seam), Seam thicknesses were between 4.5 m and 5.5 m, while boreholes that did not intersect the A Seam were towards the "topographic high". Drilling took place in two areas, which have been termed Section A and Section B. Boreholes were stopped approximately 5.0 m below the A Seam and were not drilled down to the E Seam. All the boreholes were drilled by Diabor Botswana (Pty) Ltd. as HQ3 diameter core. All the boreholes were drilled vertically. The borehole locations (historical and Minergy boreholes 2012 and 2016) are shown in Figure 34 and Table 9.

Drilling was supervised by Mr. John Astrup (Minergy). All holes were geophysical logged by Poseidon Geophysics who also conducted DGPS surveys of borehole collars. Borehole logging and sampling was conducted by Mr. Gerhard Mulder (Geologist) and Mrs. Pauline Venter (Technical Assistant) both of whom have extensive coal experience.

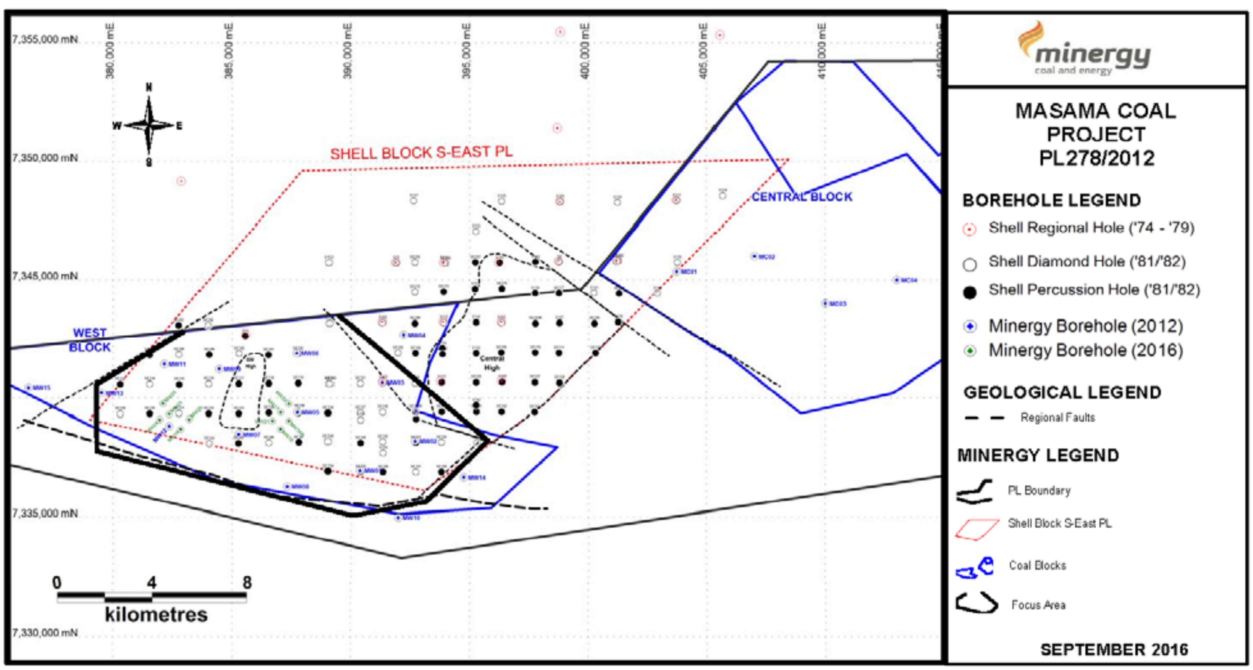

Figure 34: Masama Coal Project: Borehole location map (Shell and Minergy)

Table 9: Summary of borehole co-ordinates and elevations

BH ID	UTM 35S WGS84		
	EASTING	NORTHING	ELEVATION m.a.m.s.l.
SHELL BOREHOLES			
S2	398820.6	7355432.8	1096.5
S3	405519.4	7355304.0	1045.9
S4	398792.4	7345816.6	1028.0
S5	398703.1	7351378.1	1040.5
S9	407948.6	7361539.9	1061.7
S15	391927.8	7345761.3	1052.9
S23	382868.0	7349149.0	1074.9
S27	374969.0	7345664.0	1070.6
S31	385561.7	7342674.3	1038.2
S103	396355.5	7343235.4	1030.0
S105	401197.6	7345823.1	1023.0
S106	396273.8	7345770.0	1039.5
S107	398810.8	7343232.5	1024.7
S108	398835.3	7348327.5	1037.6
S109	396382.6	7340721.0	1018.7
S110	391367.5	7340696.2	1028.9
S111	403734.0	7348386.9	1024.9
S112	393939.4	7343248.5	1037.4
S113	393854.2	7340702.5	1023.7
S114	393956.4	7345755.9	1047.3
S120	391347.8	7343239.4	1039.2
S121	395239.4	7344643.7	1038.0
S122	395279.9	7341934.4	1030.4
S123	395273.2	7347086.7	1046.3
S124	393874.8	7342139.6	1033.4
S125	396362.4	7348335.5	1047.7
S126	392735.1	7340665.5	1027.6
S127	392772.2	7339165.1	1020.7
S128	390419.1	7339126.7	1021.7
S129	401230.9	7348292.9	1025.0
S130	391369.4	7337729.5	1014.9
S131	394951.5	7337468.9	1009.5
S132	389092.4	7340642.8	1026.8
S133	389094.0	7345765.3	1052.3
S134	405658.3	7348579.3	1020.0
S135	389118.9	7343222.3	1036.1
S136	403773.5	7345779.0	1014.0
S137	392665.8	7348359.7	1064.9
S138	401267.3	7343259.9	1009.0
S139	397780.0	7344467.1	1026.4
S140	395280.6	7343248.1	1032.7
S141	400241.7	7344476.9	1017.1
S142	395286.7	7339738.0	1018.0
S143	397791.1	7345801.4	1030.7
S144	402925.5	7344469.6	1013.0
S255	392727.8	7345772.0	1051.6
S256	394013.3	7345743.0	1046.8
S257	395241.5	7345773.0	1040.4
S262	401280.0	7345846.0	1023.3
S272	392726.9	7344514.9	1045.3
S273	393939.7	7344521.0	1043.0
S293	397789.1	7343205.0	1029.5
S295	400256.1	7343202.0	1013.9
S297	381554.0	7341858.0	1041.4
S298	382792.0	7341881.0	1041.1
S299	384041.0	7341878.0	1041.1
S300	385305.0	7341922.0	1037.8
S301	386549.0	7341868.0	1036.2
S302	387803.0	7341921.0	1035.4
S305	392008.2	7341943.0	1031.2
S306	392741.1	7341936.0	1032.1
S307	393886.9	7341893.0	1032.2
S309	396342.8	7341952.0	1028.4
S310	397787.6	7341953.0	1028.6
S311	398788.7	7341949.0	1025.6
S312	400306.1	7341950.0	1014.0
S313	380295.0	7340626.0	1037.7
S314	381549.0	7340634.0	1036.3
S315	382803.0	7340616.0	1038.1
S316	384020.0	7340644.0	1039.2
S317	385290.0	7340647.0	1038.2
S318	386559.0	7340657.0	1030.0
S319	387818.0	7340667.0	1029.4
S320	389170.0	7340646.0	1026.5
S321	390403.0	7340663.0	1027.7
S325	395278.4	7340703.0	1024.3
S327	397765.6	7340710.0	1022.3
S328	398808.1	7340687.0	1019.1
S329	380295.0	7339376.0	1034.4
S330	381552.0	7339384.0	1033.1
S331	382787.0	7339397.0	1026.5
S332	384019.0	7339384.0	1024.4
S333	385288.0	7339384.0	1022.6
S334	386568.0	7339415.0	1023.1
S335	387817.0	7339411.0	1023.0
S336	389055.0	7339414.0	1019.5
S337	390402.0	7339421.0	1023.4
S338	391356.0	7339444.0	1022.0
S339	392749.0	7339449.0	1022.4
S340	393853.4	7339461.0	1020.3
S341	395298.1	7339451.0	1016.3
S342	396360.9	7339458.0	1011.7
S343	397764.3	7339448.0	1008.8
S344	384041.0	7338129.0	1025.0
S345	385278.0	7338132.0	1021.3
S346	386563.0	7338154.0	1011.6
S347	387836.0	7338183.0	1011.3
S348	389049.0	7338220.0	1008.2
S349	390416.0	7338141.0	1016.5
S350	391361.0	7338202.0	1015.0
S351	392759.0	7338169.0	1015.8
S352	393842.0	7338179.0	1012.0

S275	396364.5	7344652.0	1031.9
S277	398791.6	7344464.0	1024.2
S279	401299.9	7344461.0	1015.8
S281	382782.1	7343131.0	1048.0
S282	383994.9	7343128.0	1047.3
S289	392721.2	7343209.0	1039.8

S353	395313.0	7338175.0	1009.2
S354	389053.0	7336961.0	997.6
S355	390421.0	7336942.0	1002.1
S356	391365.0	7336927.0	1010.8
S357	392758.0	7336929.0	1011.2
S358	393841.0	7336936.0	1010.0

BH ID	UTM 35S WGS84		
	EASTING	NORTHING	ELEVATION m.a.m.s.l.
MINERGY 2012			
MC01	403737.0	7345351.0	1013.0
MC02	407001.8	7346006.5	1004.9
MC03	410000.4	7344003.1	991.7
MC04	413000.0	7345000.0	983.0
MW01	390386.5	7336956.4	1002.6
MW02	392726.1	7338195.3	1015.9
MW03	391336.9	7340666.6	1028.7
MW04	392233.0	7342679.6	1036.8
MW05	387765.0	7339407.3	1023.3
MW05r	387762.9	7339406.9	1023.3
MW06	387745.3	7341898.5	1035.3
MW07	385273.2	7338480.1	1020.3
MW08	387341.5	7336282.5	1017.4
MW09	384457.3	7341231.5	1040.0
MW10	391999.0	7334988.4	1002.8
MW11	382158.5	7341439.9	1039.5
MW12	382372.9	7338832.2	1021.3
MW13	379503.5	7340213.6	1035.0
MW14	394747.9	7336666.3	1008.0
MW15	376444.1	7340452.5	1040.0

BH ID	UTM 35S WGS84		
	EASTING	NORTHING	ELEVATION m.a.m.s.l.
MINERGY 2016			
MW16	387408.5	7339045.4	1021.9
MW16r	387409.7	7339047.0	1021.9
MW17	387058.8	7339412.0	1023.9
MW18	387060.1	7338701.8	1015.8
MW19	382861.7	7338707.4	1020.9
MW20	383219.5	7339118.2	1020.4
MW21	386709.0	7339053.3	1020.9
MW22	387412.6	7339757.0	1026.2
MW23	382370.9	7339332.8	1028.0
MW24	381961.5	7339112.4	1029.3
MW25	382110.3	7339765.8	1030.9

Note to table: Boreholes shaded yellow (within and in the immediate vicinity of the Focus Area) were used to determine the SAMREC classification of the resource and for modelling the resource.

The past (1974 – 1982) and present (2012 and 2016) exploration drilling programmes conducted by Shell Coal Botswana (Pty) Ltd. and Minergy Coal (Pty) Ltd. respectively up to date are summarized in Table 10.

Table 10: Summary of exploration programmes (historical reports and information provided by the Client).

COMPANY	DATE	No. OF BH	CORED	OPEN-HOLED	WIRELINE LOGGING	BH SPACING
Shell Coal Botswana (Pty) Ltd	1974-1975	4	3	1*	BPB	-
	1976	11	6	5	BPB	-
	1980	25	14	11	Mini-Logger	±2 – 2.5 km
	1981-1982	76	31	45	BPB	±1.2 – 2 km
Minergy Coal (Pty) Ltd.	2012	20*	20	0	Poseidon Geophysics	2.5 -3km

	2016	11	11	0	Poseidon Geophysics	±500 m.

* **West Block and Central Block boreholes**

6.6 Down-the-hole geophysical logging (3.2 (ii), (v))

All Minergy boreholes were geophysically logged by Poseidon Geophysics. Natural gamma, long spaced and short spaced density and calliper were measured in each borehole. The down-the-hole geophysical data were used to assist with depth correlation and adjustments where necessary and were also extensively used to ensure consistency in sample selection. Detailed logistics reports covering the down-the-hole geophysical logging (2013 and 2016) including equipment specifics and calibration are presented in Appendix 7.

6.7 Borehole logging (3.2 (ii), (iii), (iv), (v); 3.3 (vi); 3.6 (i); 10.3 (i))

For the Minergy 2012 drilling the protocol below was followed:

Core was examined at the rig and a first pass orientation and marking of core was completed. Coal intersections were examined in detail noting zones of bright and dull coal as well as carbonaceous mudstone on the core with a china marker.

Borehole core was then transported to the central core shed in Medie, foam or rubber mats were placed between core boxes to ensure minimum movement of the core, and this was carried out especially carefully for boxes with coal seam intersections. Transportation of the core by vehicle and handling was carried out very carefully, disturbing the core as little as possible.

Once in the core shed the borehole core was laid out for logging. The core was meter marked with depths using reliable drilling breaks and correcting the depths through core runs with over or under recovery of core. The core was joined together wherever possible and from one row of core to the next within the core box. All zones of core loss were identified and noted on the core or on the core box. Where it was exceptionally difficult to accurately meter mark the core, the geophysical logs were used to assist by marking the depths of major lithological changes clearly visible on the geophysical log.

Core recovery was recorded for each sample. However, this was an overall recovery estimate rather than a linear core recovery. Generally, the overall core recovery was >90% but in most cases >95%. There were however a few of samples which had <90% overall recovery. Samples where overall core recovery estimates were <95% were re-examined (on core photo's) and a linear recovery was estimated. When this was done only six samples had linear core recovery <95% and only two of these were <90%. Where recovery over several samples was low in a particular borehole, these boreholes were re-drilled, as was the case with MW05.

The core was then logged as per Minergy's logging template, noting major lithologies, and providing descriptions of it and also logging zones of "core loss" as intervals where these occur. Regarding the lithology, the following features were noted:

- Colour;
- Grain size;
- Presence of easily visible grains such as "feldspathic" or "biotite" grains within sandstone units;
- Sedimentary features such as bedding, cross bedding, laminations, bioturbation etc.;
- Nature of contacts;
- Dips of contacts, or bedding where clearly visible and consistent;
- Fracturing and weathering.

For the coal zones, the core was closely examined noting zones of various coal lithotypes e.g. bright coal, dull coal, carbonaceous mudstone and grey mudstone. The geophysical logs were used to distinguish between dull coal, coaly mudstone and carbonaceous mudstone. Where bright and dull coal occurs as thin alternating bands, these bands were logged as mixed coal. Core boxes were taken into the sunlight to assist with distinguishing bright and dull coal. All units greater than 10 cm were logged as separate lithotypes. Within the coal zones the following were noted:

- Presence of pyrite nodules, frequency and size;
- Presence and nature of calcite veining;
- Presences and nature of siderite nodules/grains;
- Weathering and fracturing;
- Degradation of the coal;
- Lithological coding was carried out as per the list of "Lith" Codes for the Masama Coal Project;

- Stratigraphic coding is carried out as per the list of "Strat" Codes for the Masama Coal Project;
- The depth of weathering (DOW) was recorded in the log and in the header of the logging template and later in the summary collar table;
- The logging geologist, date logged and changes in core size were also recorded in the header of the logging template;
- Basic validation of the logging was done during data capture and any errors were corrected prior to sampling of the core.

In addition to the geological logging, geotechnical logging was also conducted on all the Minergy boreholes by a suitably experienced geologist.

For the Minergy 2016 drilling programme the borehole core was carefully transported to the Minergy core shed in Medie and were stored there undercover and in cool conditions until they were logged and sampled by Mr. Gerhard Mulder.

Once in the core shed the borehole core was laid out for logging. The core was meter marked with depths using reliable drilling breaks and correcting the depths through core runs with over or under recovery of core. The core was joined together wherever possible and from one row of core to the next within the core box. All zones of core loss were identified and noted on the core using a paint marker. Where it was exceptionally difficult to accurately meter mark the core, the geophysical logs were used to assist by marking the depths of major lithological changes clearly visible on the geophysical log. The different lithological types were identified and correlated to the down-the-hole geophysical logs. The detailed sections of the logs were used to distinguish between coal and mudstone as well as contact types. The core was logged using the GBIS Core Description Manual as basis covering the following features:

- The lithological descriptions of the core were based on the general characteristics of hand held specimens.

- The primary properties of the sedimentary rocks of the Mmamabula Formation are all of similar origin and were described in terms of the following properties:
  - Lithology;
  - Colour;
  - Grain size;

- Sedimentary structure;
- Secondary minerals;
- Nature of contacts.

➢ Secondary properties, which are not related to a specific lithological unit, which were recorded independently of the lithological units, are:

- Weathering (types and base);
- Core losses;
- Indurations;
- Tectonic structures.

➢ Interbedded lithologies were described separately mostly as mixed lithologies.

For the coal zones, the core was closely examined noting zones of various coal lithotypes e.g. bright coal, dull coal, carbonaceous mudstone and grey mudstone. The geophysical logs were used to distinguish between dull coal, coaly mudstone and carbonaceous mudstone. Where bright and dull coal occurs as thin alternating bands, these bands were logged as mixed coal. Core boxes were taken into the sunlight to assist with distinguishing bright and dull coal. All units greater than 10 cm were logged as separate lithotypes. Within the coal zones the following were noted:

➢ Lithological coding was carried out as per the list of “Lith” Codes for the Masama Coal Project;

➢ Stratigraphic coding is carried out as per the list of “Strat” Codes for the Masama Coal Project;

➢ Weathering and fracturing;

➢ The depth of weathering (DOW) was recorded in the log and in the header of the logging template and later in the summary collar table;

➢ Degradation of the coal;

➢ Presence of secondary minerals for example pyrite and calcite;

➢ Secondary minerals are described in terms of frequency of occurrence and size;

➢ The date logged was recorded in the header/footer of the logging template;

➢ Basic validation of the logging was done during the sampling process and any errors were corrected prior to sampling of the core.

The geological setting and characteristics of coal horizons were continuously compared from one borehole to the other.

At the Masama Coal Project it has been possible to identify a consistent sequence of samples, using a combination of the geophysical and geological logs and hence (to the extent possible) the same numbered sample should be taken in the same place in each borehole. This greatly facilitates later correlation, compositing and modelling of the coal seams.

In addition to the geological logging and coal zone inspection, the total core recovery (TCR) and the rock-quality designation (RQD) were recorded on the borehole logs.

The total core recovery (TCR) is the borehole core recovery percentage, which is defined as the quotient:

TCR = $\left(\frac{l_{sum\ of\ pieces}}{l_{tot\ core\ run}}\right) \times 100\%$

$l_{sum\ of\ pieces}$ = Sum of length of core pieces

$l_{tot\ core\ run}$ = Total length of core run

The available records do not identify any instances of significant core loss indicating that the core recovery, particularly over the coal intersections, are satisfactory at >95%.

Rock-quality designation (RQD) is a rough measure of the degree of jointing or fractures in a rock mass, measured as a percentage of the drill core in lengths of 10 cm or more. RQD has several definitions. The most widely used definition, originally introduced for use with NX-size core, is: the borehole core recovery percentage incorporating only pieces of solid core that are longer than 100 mm in length measured along the centreline of the core. RQD is defined as the quotient:

RQD = $\left(\frac{l_{sum\ of\ 100mm}}{l_{tot\ core\ run}}\right) \times 100\%$

$l_{sum\ of\ 100mm}$ = Sum of length of core sticks longer than 100 mm measured along the centre line of the core

$l_{tpt\ core\ run}$ = Total length of core run

High-quality rock has an RQD of more than 75%, whereas low-quality rock has an RQD of less than 50%.

Where recovery over several samples was low in a particular borehole, these boreholes were re-drilled, as was the case with MW16.

The nature and detail of the geological and geotechnical borehole logging undertaken on the Minergy Coal Project is sufficient to support the classification of Resources described in this report.

6.8 Sampling (3.2 (iii), (v); 3.3 (i), (ii), (iii), (iv), (v), (vi), (vii); 3.6 (i); 10.3 (ii))

Coal samples were obtained from boreholes, which were drilled during the Minergy 2012 exploration programme (Mr. John Astrup) and 2016 exploration programme (Mr. Gerhard Mulder). In order to provide sufficient sample mass for the required proximate analysis, total sulphur, phosphorous content and swelling index, a minimum sample weight of ~2 kg sample was targeted.

The entire borehole was then photographed. After photographing the core, samples were taken and bagged, and at this point core can be split with a chisel and the proportions of bright and dull coal could be more accurately estimated if necessary.

Prior to sampling the core was stored in the Medie core shed (out of the sun and in a “cool” (temperature) and dry environment). Sampling was carried out within two weeks of drilling, as the core does deteriorate if left for a long period. All sample intervals were determined from geophysical and/or core observations and were clearly marked onto the core with a paint marker.

At the Masama Coal Project it has been possible to identify a consistent sequence of samples, using a combination of the geophysical and geological logs and hence (to the extent possible) the same numbered sample should be taken in the same place in each borehole. This greatly facilitates later correlation, compositing and modelling of the coal seams. Details of the geological and geophysical characteristics utilised in the A Seam selection as used by Mr. Gerhard Mulder and Mr. John Astrup are presented as Figure 35 and Figure 36. The geological setting and characteristics of coal horizons were continuously compared from one borehole to the other. During the Minergy 2012 drilling programme the E Seam was sampled as a single sample.

All sample numbers, sampling intervals (from and to depths) as well as thicknesses were then recorded on sample tags. The sample tags were prepared in duplicate; one was put inside the bag together with the sample and the other one was stapled to the sample bag. A complete sample list was subsequently completed in duplicate; one to accompany the samples to the laboratory and the other one filed for future reference. Samples were placed in heavy duty PVC sample bags and clearly marked with the sample numbers as described below. To ensure maximum representivity, whole core was sampled in all boreholes.

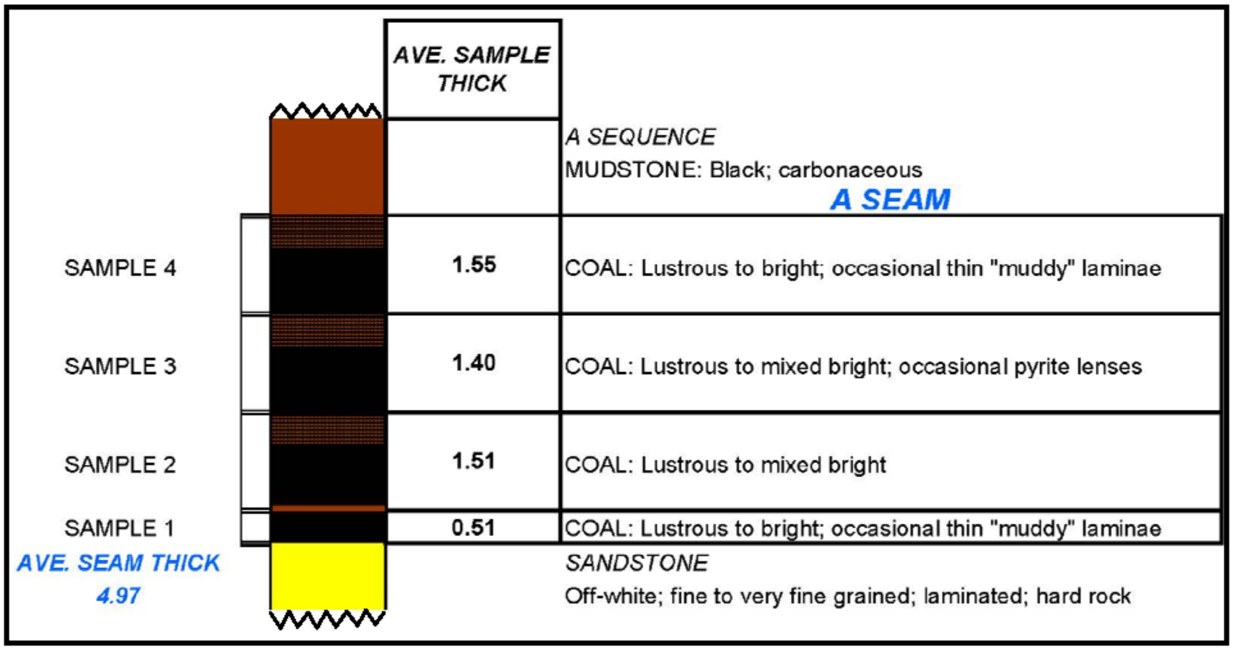

Figure 35: Sample numbering procedures used by Mr. Gerhard Mulder.

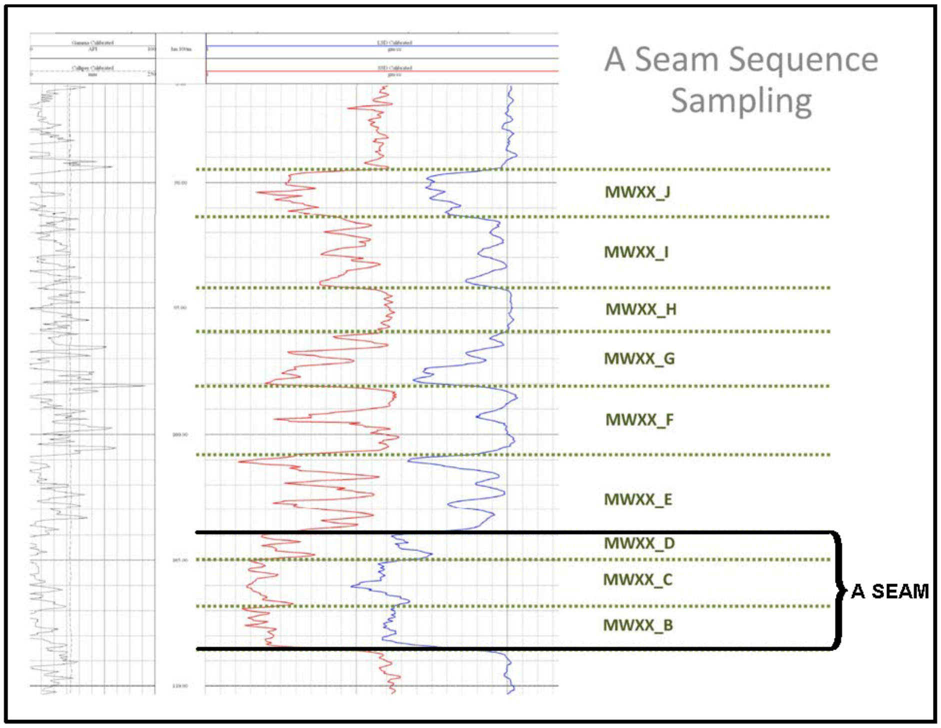

Figure 36: Sample numbering procedures used by Mr. John Astrup.

Export permits were obtained before taking the samples out of Botswana.

Samples were carefully transported to South Africa and submitted to the SANAS accredited, SABS Secunda Laboratory (T0230), Noko Analytical Services (T0512) and Bureau Veritas Inspectorate (T0313) for coal quality analyses; and Letaba Civil Engineering Materials Laboratory (Pty) Ltd. (T0549) for foundation indictor analyses. Samples were prepared and analysed using SABS, ASTM and ISO standard methods.

6.9 Sample preparation and analysis (3.3 (v); 3.4 (i), (ii), (iii); 3.5 (ii); 3.7 (i), (ii), (iii), (iv); 10.3 (ii))

Approximately one hundred and fifty eight samples (numbers as provided by the Client) from the Minergy 2012 exploration programme were submitted to SABS Secunda Laboratory (SANAS: T0230).

The initial eighteen 2016 coal samples were transported to Middelburg by Mr Gerhard Mulder and personally delivered to Noko Analytical Services, a SANAS accredited testing laboratory (T0512) within twenty-four hours of arrival. The residues of the eighteen samples (pulverized fraction -212 micron) were collected from Noko Analytical Services and submitted to Bureau

Veritas Inspectorate Laboratories (Pty) Ltd., a SANAS accredited testing laboratory (T0313) to verify the Moisture Content as reported by Noko Analytical Services.

The second batch of fifteen 2016 coal samples were also submitted to Bureau Veritas Inspectorate Laboratories (Pty) Ltd., a SANAS accredited testing laboratory (T0313). These samples were once again transported from the project to the laboratory by Mr Gerhard Mulder.

Three soil samples were submitted Letaba Civil Engineering Materials Laboratory (Pty) Ltd., a SANAS accredited laboratory (T0549) for foundation indicator tests.

The ISO and South African National Standard (SANS) have a standard set of tests and methods that are used for coal analysis by South African laboratories. The standard method of coal sample preparation was followed for all samples and is summarised as follows:

- Receipt of the sample into the laboratory's electronic information management and sample tracking system;
- Drying of sample. All drying oven temperatures do not exceed 40° C;
- Measuring mass of sample;
- Determining the relative density of the sample;
- Crushing the sample to -25 mm;
- Screening out of the -0.5 mm fraction for proximate, calorific value (CV) and total sulphur analysis;
- Pulverising the -0.5 mm sample;
- Pulverised material split using a rotary splitter;
- Washing the -25 mm +0.5 mm fraction at client specified relative densities;
- Drying and weighing each fraction;
- Crushing and pulverising each fraction;
- Conditioning each sample for one hour;
- Carrying out the proximate, CV and total sulphur analysis for each fraction and raw coal;
- Automatically generating an electronic laboratory report which is emailed to the client; and
- An officially signed laboratory certificate reporting on the fractional and cumulative results is delivered to the client.
- The determination of Crucible Swelling Index, if required was conducted on instruction of the client.

- Retain all sample residues until further notice.

Both Noko Analytical Services and Bureau Veritas Inspectorate Laboratories use standard methods for the analysis of coal samples as presented in Table 11.

Table 11: Standard tests for coal samples.

PARAMETER	STANDARDS / TEST METHOD
Sample Preparation	ISO 13909-4 / ISO 18283
Calorific Value (Sulphur Corrected)	ISO 1928
Total Sulphur	ASTM D4239
Apparent Relative Density	Water Displacement / ISO 1014 / AS 1038.26 - 2005
Float and Sink (Washability)	ISO 7936
Proximate Analysis	ISO 17246:2010

Proximate, CV and total sulphur analysis were determined for each fraction and raw coal. Relative density was determined on each coal sample using the Archimedes principle.

For the Minergy 2012 exploration programme densimetric (float and sink) analyses were conducted on -25 mm to +0.5 mm fraction at the following densities: F1.40, F1.50, F1.60, F1.70, F1.80, and S1.80, or as instructed and air dried. On the lightest fraction of each sample (generally F1.40) determination of Crucible Swelling Number (ISO 501) and Phosphorus in Coal (BS1016 part 14) was conducted.

For the Minergy 2016 exploration programme densimetric (float and sink) analyses for the first eighteen samples were conducted on -25 mm to +0.5 mm fraction at the following densities: F1.45, F1.50, F1.55, F1.60, F1.65, F1.70, F1.75, F1.80, and S1.80, or as instructed and air dried. Phosphorus analysis was conducted at float density 1.65 for these eighteen samples.

For the second batch of fifteen samples densimetric (float and sink) analyses were conducted on -25 mm to +0.5 mm fraction at the following densities: F1.35, F1.40, F1.45, F1.50, F1.55, F1.60, F1.65, F1.70, F1.75, F1.80, and S1.80, or as instructed and air dried.

Phosphorus in Coal was determined on selected samples.

6.10 Database management (3.1 (viii); 3.3 (iv); 3.5 (i), (iii); 7.1 (i), (ii))

Borehole data and information from the 2012 Minergy exploration programme as well as historic exploration were provided to GM Geotech by the Client.

The 2012 and historic borehole data and information was received in Microsoft Excel® format from Minergy and were entered into a combined Microsoft Excel® database, which also includes the 2016 borehole data. GM Geotech reviewed and validated the historic Shell data and also the drilling and analytical data collected by Minergy in 2012, this included cross checking geological logs and analytical results against down-the-hole geophysical logs. Where discrepancies were identified these were queried and resolved with the Client, the historic data was found to be reliable and was incorporated into the current database.

The following general activities were undertaken during database validation:

- Ensure compatibility of total borehole depth data in each of the collar, assay and geology database files.
- Check for missing and overlapping intervals in geology and overlapping intervals in all files.
- Checking of database coding.
- Comparison of the elevations of surveyed borehole collars and topography.
- Correspondence of sampled intervals and seam 'from-to' depths.
- Identification of un-sampled intervals within seams.
- Checks on seam correlation.
- Detection of quality data with anomalous or zero values.
- Checks that the sum of moisture, ash, volatile matter and fixed carbon contents equates to 100%.

Queries were reported to the client for correction and the database was then updated.

The seam compositing over the selected horizon was conducted in an early stage of the Masama Coal Project in order to get the practical mining horizons which would have economic potential.

All boreholes were drilled vertically and since the sedimentological units are sub-horizontal, the intersections reported are very close to true thicknesses.

The summary of physical data is presented in Appendix 5.

The sample thickness was used as a weighting for calculation of the cumulative quality results as presented in Appendix 6.

As far as the CP has been able to ascertain, the information provided by the Client was complete and not incorrect, misleading or irrelevant in any material aspect. The CP has no reason to believe that any material facts have been withheld.

6.11 Quality control (3.4 (i), (iv); 3.5 (i), (iv); 3.6 (i); 7.1 (i))

All the SANAS accredited laboratories control of proximate values, calorific value and total sulphur content is maintained by a system of routine analysis of standard samples, during which a control sample is included after every ten analyses. In addition, the laboratories participate in Proficiency Testing Schemes, which provide an external control on the accuracy of the laboratory's results. All laboratories also participate in an inter-laboratory “round robin” system for sample preparation and total moisture determination.

6.12 Survey data verification, audits and reviews (3.1 (v); 3.4 (iv); 3.5 (i); 7.1 (i))

Several of the collars for boreholes drilled by Shell are still visible in the field, in addition the many of the north-south and east-west bulldozed drilling access roads put in by shell are still present and still in use as access tracks. Even where the Shell bulldozed lines are no longer in use – the position of the line is still visible in the field and also on aerial images. The positions of several of the Shell boreholes were confirmed by comparison of the field observed hand held GPS and or DGPS position with that reported by Shell.

Differential GPS (DGSP) surveys were conducted by Poseidon Geophysics on all boreholes drilled by Minergy. On completion of the drilling programme or after a sufficient number of boreholes had been drilled, a differential GPS (DGPS) survey was conducted. This gave very accurate collar positions (Easting, Northing and Elevation) and allowed for collars to be plotted accurately on the DTM (Digital Terrain Model) for coal deposit modelling. The co-ordinate system used for collar surveys is the UTM35S projection, which makes use of the WGS84 ellipsoid and WGS84 datum. A full borehole collar table with DGPS locations is included as Table 9 (Section 6.5).

6.13 Coal quality test work (4.1 (ii); 10.4 (i))

Float sink wash tests were conducted on coal seams intersected in all of the boreholes drilled by Minergy during 2012. In 2014 this data was used by DRA to generate wash curves for each seam in the Scoping Study conducted by Coffey Mining in 2014 (Coffey, 2014)[6].

Further composite wash-ability curves were compiled by GM Geotech in 2016 for the E Seam and the A Seam based on Minergy borehole information falling within the Focus Area. The wash-ability data and wash-ability curves are presented for the E Seam in Section A and Section B as well as for the A Seam in Section A and Section B and are presented in Figure 37 to Figure 40. The wash yield is theoretical. Theoretical yields are based on laboratory analysis only and need to be adjusted by the relevant coal processing discount factor to ascertain what the expected practical product yield would be.

No other test work has been conducted by Minergy.

WASHABILITY SAMPLE : SECTION A - E SEAM

R.D.	YIELD(%)	CV (MJ/KG)	ASH (%)	VM(%)	IM (%)
1.40	56.7	27.75	7.5	31.2	5.6
1.50	76.3	27.20	9.0	29.6	5.5
1.60	86.3	26.66	10.4	28.5	5.5
1.70	89.9	26.37	11.2	28.0	5.5
1.80	91.1	26.23	11.6	27.9	5.5
R.C.	100.0	24.57	16.4	27.0	5.2

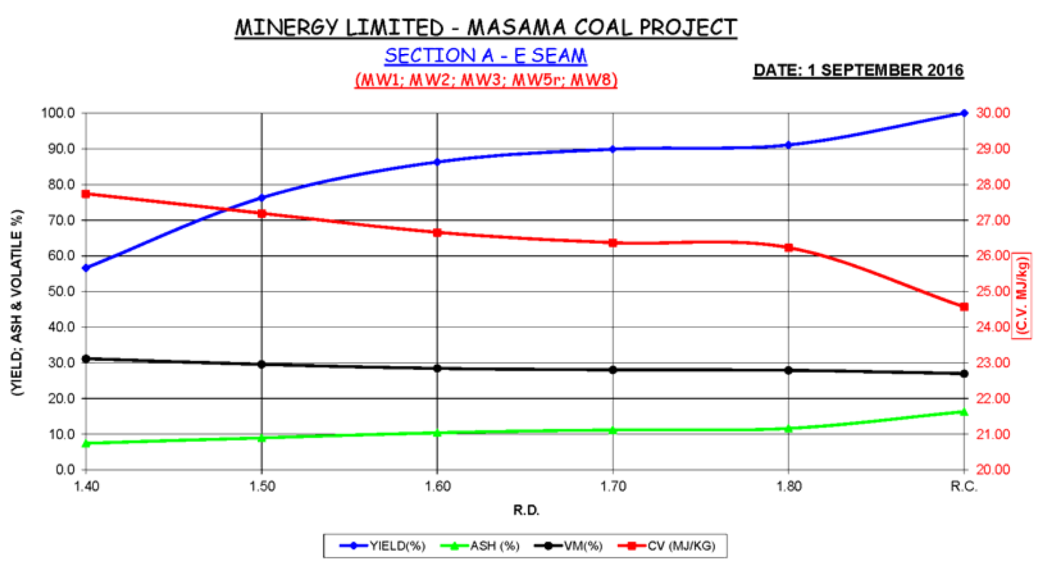

Figure 37: E Seam wash data and wash-ability curve for Section A (air dried basis).

WASHABILITY SAMPLE : SECTION B - E SEAM					
R.D.	YIELD(%)	CV (MJ/KG)	ASH (%)	VM(%)	IM (%)
1.40	32.1	27.41	7.4	33.7	5.7
1.50	47.9	26.68	9.8	31.9	5.4
1.60	53.3	26.26	11.0	31.3	5.4
1.70	57.5	25.72	12.6	30.5	5.3
1.80	62.5	24.95	14.7	29.6	5.2
R.C.	100.0	17.80	36.5	23.2	4.0

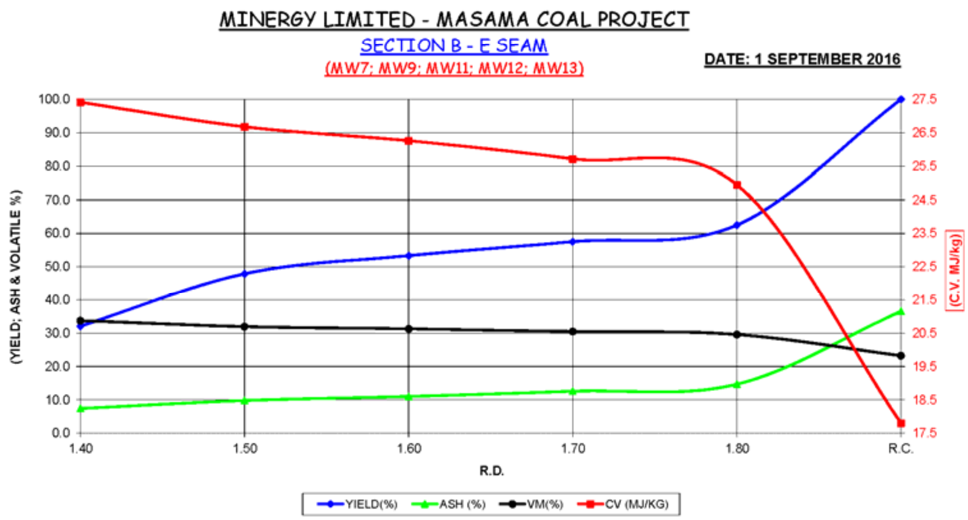

Figure 38: E Seam wash data and wash-ability curve for Section B (air dried basis).

WASHABILITY SAMPLE : SECTION A - A SEAM					
R.D.	YIELD(%)	CV (MJ/KG)	ASH (%)	VM(%)	IM (%)
1.40	29.9	27.75	6.4	29.6	6.0
1.45	44.4	26.95	7.8	28.1	6.6
1.50	56.1	26.48	9.0	27.1	6.5
1.55	63.5	26.06	10.1	26.7	6.4
1.60	69.9	25.66	11.1	26.3	6.3
1.65	75.4	25.20	12.3	26.1	6.3
1.70	80.1	24.79	13.3	25.9	6.2
1.75	83.1	24.50	14.1	25.9	6.1
1.80	85.9	24.22	14.8	25.8	6.1
R.C.	100.0	22.37	20.1	25.2	5.6

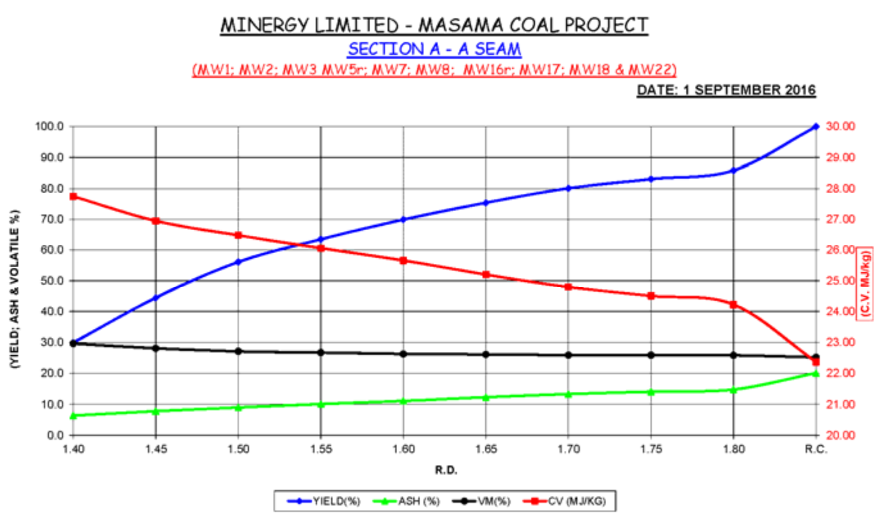

Figure 39: A Seam wash data and wash-ability curve for Section A (air dried basis).

WASHABILITY SAMPLE : SECTION B - A SEAM					
R.D.	YIELD(%)	CV (MJ/KG)	ASH (%)	VM(%)	IM (%)
1.40	20.8	26.92	6.8	28.7	7.5
1.45	36.2	26.32	8.0	27.3	7.6
1.50	46.5	25.80	9.2	26.4	7.4
1.55	55.3	25.28	10.6	25.9	7.4
1.60	62.7	24.79	11.9	25.6	7.3
1.65	69.6	24.35	13.1	25.3	7.2
1.70	75.6	23.92	14.2	25.1	7.1
1.75	79.4	23.56	15.2	25.0	7.0
1.80	83.4	23.17	16.2	24.8	6.9
R.C.	100.0	21.06	21.1	23.9	6.4

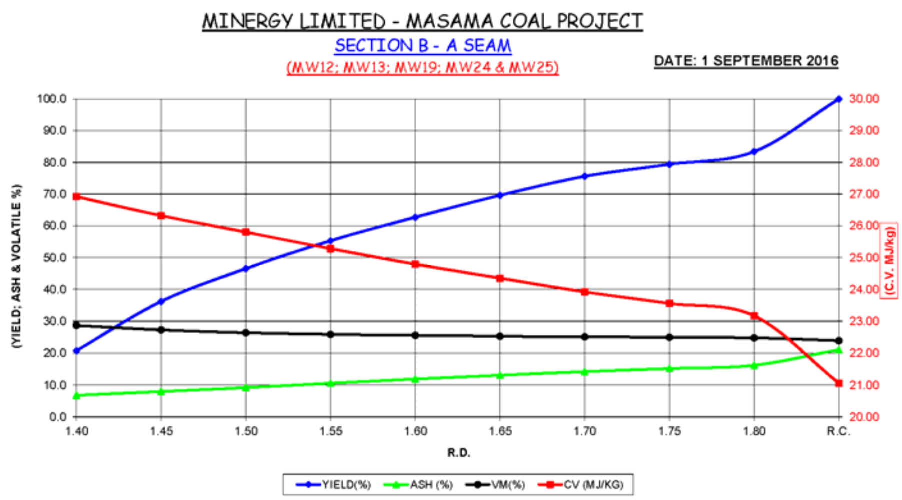

Figure 40: A Seam wash data and wash-ability curve for Section B (air dried basis).

7. COAL RESOURCE ESTIMATES

7.1 Estimation and modelling techniques (3.1 (vi); 3.7 (ii), (iii), (iv); 4.1 (i), (ii), (iv), (v); 4.2 (ii), (iv); 4.3 (i); (5.2 (i); 10.1 (i), (ii); 10.3 (ii); 10.5 (i), (ii))

The Coal Resource estimates were conducted in accordance with the South African Code for Reporting of Mineral Resources and Mineral Reserves (SAMREC) Code (2016)[1], as well as considering the South African guide to the systematic evaluation of coal resources and coal reserves (SANS10320:2004)[2]. As part of the resource estimation process all available geological and geophysical data were reviewed in detail and during classification of the resource consideration was given to the consistency of the coal seam thicknesses and coal quality over the West Block as well as the larger Masama Coal Project Prospecting License area.

Golden Software Surfer® Version 11 and Model Maker® Version 12.02 were used for the structural, physical and quality modelling of the coal resource as well as for the mine design. Golden Software Surfer® Version 11 software was used to calculate seam volumes between the modelled upper and lower seam surfaces. Volumes for each seam in each of the model areas were multiplied by the relative densities determined to calculate coal tonnages. Kriging was used to interpolate coal qualities and physical parameters.

The raw coal relative densities used to calculate the Resource tonnages is not an in situ bed moisture density, but rather an air dried (laboratory determined) density. The effect of bed moisture on the density and hence the tonnage estimates is not considered to be significant.

The seam thickness constraint applied for opencast operations of the A Seam was a minimum thickness of 0.5 m. The A Seam is foreseen to be mined by opencast methods only in those areas where the in situ strip ratio is less than 5:1. The remaining resource will be mined by underground methods.

The seam thickness constraint applied for underground operations of the E Seam and A Seam was a minimum thickness of 1.5 m.

The impacts of sedimentological and depositional variations; as well as the effect of the structural features have been examined during this study to determine its possible influence on the distribution of the E Seam and the A Seam.

The Masama Coal Deposit was modelled as a typical tabular and near horizontal, strata bound coal deposit where coal distribution has been controlled by “topographic” or “structural” highs as well as minor faulting and recent weathering. No significantly different interpretations were considered in this report.

The values of the critical coal quality parameters, namely calorific value, ash content, inherent moisture content and volatile matter content as reflected in the resource summary table implies that all the raw coal meets, or can be blended or beneficiated to meet the quality criteria of the specific markets at acceptable yields, therefore no raw quality cut-offs are applied.

The model data were compared to the drill data by running the statistics on the model and by checking the model data interactively at the borehole positions.

All these above-mentioned examinations and the spacing of points of observation provide a sufficient level of confidence in the Masama Coal Project source data and the geological model to support the Coal Resource classification.

7.2 Coal Resource classification criteria (4.1 (iv); 4.4 (i); 4.5 (v))

According to the South African Code for Reporting of Mineral Resources and Mineral Reserves (SAMREC) Code (2016)[1], coal resources may be subdivided in order of increasing geological confidence, into Inferred, Indicated and Measured categories.

Further guidance on the classification of Coal Resources is provided by the South African guide to the systematic evaluation of coal resources and coal reserves (SANS10320:2004)[2].

The Masama Coal Resources were partly classified as Indicated Resources and partly as Inferred Resources as shown in Figure 41 and Figure 42. The key factors considered for classification was borehole density in combination with the consistency of data within and beyond the resource boundaries of the "Focus Area". A discount of thirty percent was applied to the entire resource to account for unforeseen geological losses. This is despite areas of known non-development of coal seams having already been specifically excluded from the resource areas. This classification and the discount applied was done considering the confidence levels of drilling techniques, logging, drill sample recovery, sub-sampling techniques and sample preparation, quality of assay data, verification of sampling and assaying, location of sampling points, data density and distribution, database integrity, geological interpretation, seam deposit type, estimation and modelling techniques and consistency of physical coal parameters and coal quality.

The proposed resource areas for the A Seam and the E Seam as defined in accordance with the current information are shown in Figure 41 and Figure 42 respectively.

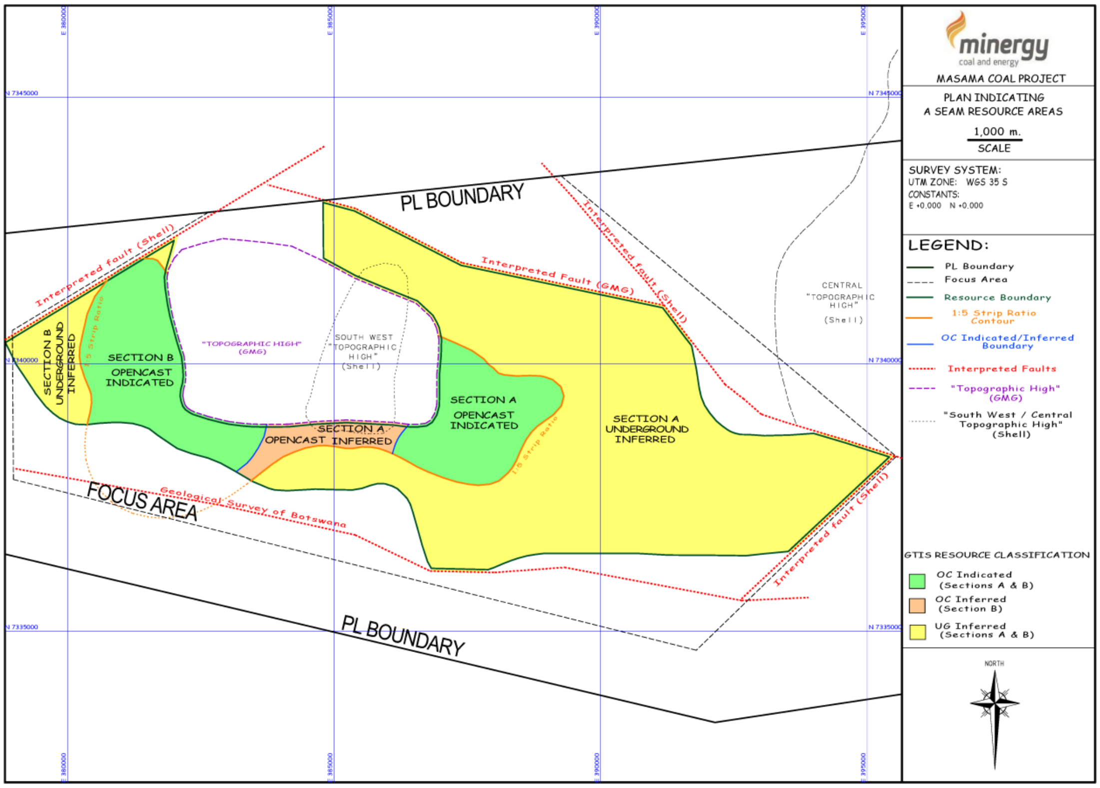

Figure 41: A Seam resource plan.

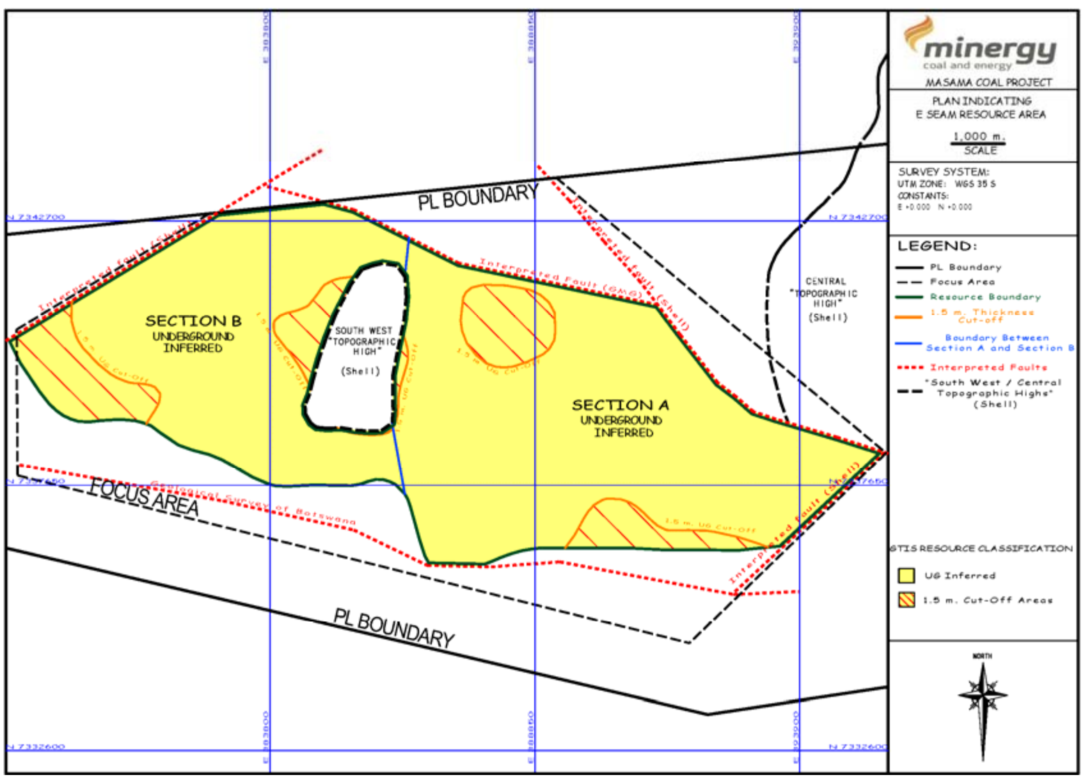

Figure 42: E Seam resource plan.

7.3 Reasonable prospects for eventual economic extraction (1.4 (ii); 4.3 (i), (ii), (iii), (iv), (v), (vi), (vii), (viii), (ix); 4.5 (iii); 5.2 (i); 5.3 (iii); 5.5 (iii); 10.4 (i))

The Coal Resources defined in this report for the Masama Coal Project are considered to have reasonable and realistic prospects for eventual economic extraction on the following basis:

- Geological parameters – as described in Sections 5, 6, and 7 of this report. The coal present in the E Seam and A Seam of the Masama Coal Project is of suitable quantity, quality, continuity, seam thickness and depth to be mined using mining methods currently in use in the Witbank Coalfield of South Africa.

- Mining methods anticipated include opencast mining using the "roll over method" and shallow underground board and pillar mining using continuous miners. For opencast mining a seam thickness cut-off of 0.5 m and a strip ratio cut-off of 5:1 were applied. For underground mining a seam thickness cut-off of 1.5 m was applied although several mines are known to mine successfully and lower stope widths. With a thickness of approximately 5 m the A Seam is considered well suited to exploitation through opencast mining methods. Where the E Seam it suitably thick and the inter-burden between the E Seam and the A Seam not too thick, the possibility of deepening the opencast mine and extracting of the E Seam after mining the A Seam should be considered. Both seams are considered of suitable thickness and continuity for exploitation by underground mining methods.

- Due to the similarity of the coal seams at Masama to those currently being economically exploited in the Witbank Coalfield, engineering, mining and processing parameters are anticipated to be similar those experienced in the operating mines.

- Coal from the Masama Coal Deposit would need to be processed in order to produce saleable products and this would be conducted using standard coal industry processing or washing techniques. This would most likely involve a single stage wash plant using dense medium cyclones and spirals for separation of saleable coal and discards.

- At present there is one operating coal mine in Botswana, the Morupule Coal Mine, which is described in Section 9.1 of this report. This mine has been operating successfully as an underground coal mine since the 1970's and more recently also as an opencast mine.

- A medium sized coal mine at Masama producing in the region of 3 to 5 Mt per annum ROM coal would have a life of mine in the region of fifty years. This would require that a Mining Licence be granted for twenty-five years and then renewed for a further twenty five years.

- Infrastructure aspects relating to the reasonable prospects of economic extraction for the Masama Coal Project are as follows:

  - Power – initial mining to be done using generator power, project is ~20 km from the nearest grid connection and a power supply from Botswana Power Corporation is also considered realistic.

  - Water – extensive groundwater resources are present in the area and existing boreholes with sufficient sustainable yields for mining and processing operations have been identified.

  - Access – good roads are available to the project area – however these may require some upgrading to support mining operations. The Masama Coal Project is located close to the A1 highway, which provides road access to potential markets in the region. A railway line is present approximately 40 km east of the project area and provides rail access to certain potential markets.

- There are no legal, governmental, permitting or statutory aspects that are considered impediments to the prospects for economic extraction. Legislation relevant to the project has been covered in Section 2.4 of this report. Mining Licences in Botswana are granted for an initial period of up to twenty-five years and can be renewed an unlimited number of times for further periods of up to twenty five years each.

- For the bulk of the resource area there are no environmental or social aspects that are considered impediments to the mining operations. There is a village present in the resource area and here consideration will need to be given as to what mining methods would be best in areas proximate to the village. One small drainage line is present and here environmental studies will need to be done to determine if this stream can be diverted. As part of the Mining Licence application process a full Environmental and Social Impact Assessment (ESIA) and Environmental Management Plan (EMP) needs to be compiled and approved.

- Coal products similar to those currently being sold in the regional market and export market can be produced by washing raw coal from the E Seam and the A Seam at Masama. The yields of potential products are sufficiently high that it would be considered economic.

- The location of the Masama Coal Project means that it has a distance advantage to certain of the coal markets in the region. These markets could be accessed by means of road and rail transport.

- Economic assumptions and parameters considered in assessing reasonable prospects for eventual economic extraction are as follows:

  - Coal products similar to those that could be produced from Masama are currently fetching prices in the region of between R400/t Free-on-Truck (FOT) and R700 / t FOT. Export coal prices from Richards Bay are currently in the region of $66 / t (FOB) (http://www.barchart.com/commodityfutures/ICE_Richard_Bay_Coal_Futures/LV)[20]

  - Capex for starting medium sized mine at Masama is anticipated to be similar to what it would be in the Witbank Coalfield of South Africa and thus in the region of R200 million to R400 million.

  - Operating costs for a small to medium sized mine at Masama are also anticipated to be similar to those elsewhere in the region and thus in the vicinity of R300 to R400 / sales tonne.

- Material risks are covered under Section 9.2.

- For the Masama Coal Project the Resources declared are seen in the context of “eventual exploitation” in the near to medium term. It is anticipated that it would take less than three years to complete remaining exploration and also establish a mining operation at Masama. The Indicated Resources declared are anticipated to be mined in an opencast operation with a transition to underground mining later in the life of mine. At a reasonable rate of production most of the Resources identified in this report could be exploited within approximately fifty years.

7.4 Coal Resource statement (4.3 (i), (ii); 4.5 (i), (vii); 10.3 (ii); 10.4 (i); 10.5 (ii); 10.4 (i); 10.5 (i), (ii))

The Minable Tonnes In Situ (MTIS) Resource Estimation for the Masama Coal Project Focus Area on an air-dried basis and discounted for potential geological losses as well as strip ratio cut-off (for opencast areas) and minimum mining height cut-off (for underground areas) are presented in Table 12. Raw coal qualities and relative density (RD) on an air dried basis and at the moisture content indicated are also presented in Table 12.

The reference point for the Coal Resources presented in Table 12 would be a processing plant in close proximity (<10 km) to the mining areas.

Table 12: Masama Coal Project Focus Area Coal Resource Estimate as at 01 November 2016.

FOCUS AREA - MASAMA COAL PROJECT: BOTSWANA										
COAL RESOURCES					Raw Coal Qualities (Air Dried)					
SEAM	AREA	CLASSIFF ICATION	Average Seam T (m)	MTIS Resource (Mt)	RD	C.V. (MJ/kg)	ASH (%)	IM (%)	V.M. (%)	TS (%)
A Seam	Opencast (Section A)	Indicated	4.88	25.15	1.49	22.62	18.6	6.3	25.5	1.65
A Seam	Opencast (Section B)	Indicated	5.40	36.54	1.53	21.57	19.5	6.7	24.1	1.63
TOTAL A SEAM	**Opencast (Sections A & B)**	**Indicated**	**5.19**	**61.69**	**1.51**	**22.00**	**19.1**	**6.5**	**24.7**	**1.64**
A Seam	Opencast (Section A)	Inferred	5.93	9.52	1.54	21.18	23.5	5.3	24.6	2.74
TOTAL A SEAM	**Opencast (Section A)**	**Inferred**	**5.93**	**9.52**	**1.54**	**21.18**	**23.5**	**5.3**	**24.6**	**2.74**
A Seam	Underground (Section A)	Inferred	4.68	166.62	1.51	22.34	20.6	5.3	24.6	2.11
A Seam	Underground (Section B)	Inferred	5.04	15.56	1.60	18.82	28.3	5.3	22.9	0.84
TOTAL A SEAM	**Underground (Sections A & B)**	**Inferred**	**4.71**	**182.18**	**1.52**	**22.04**	**21.3**	**5.3**	**24.5**	**2.00**
E Seam	Underground (Section A)	Inferred	1.68	52.41	1.44	24.57	16.4	5.2	27.0	1.28
E Seam	Underground (Section B)	Inferred	1.84	41.30	1.59	17.80	36.5	4.0	23.2	1.64
TOTAL E SEAM	**Underground (Sections A & B)**	**Inferred**	**1.75**	**93.71**	**1.51**	**21.59**	**25.3**	**4.7**	**25.3**	**1.44**
TOTAL A & E SEAMS	**Underground (Sections A & B)**	**Inferred**		**275.89**	**1.51**	**21.89**	**22.62**	**5.09**	**24.75**	**1.81**
TOTAL RESOURCE				**347.10**	**1.51**	**21.89**	**22.02**	**5.35**	**24.73**	**1.81**

7.5 Coal Resource reconciliation (4.2 (v); 4.5 (vi))

A detailed coal resource reconciliation is not possible because historic resource estimates have covered different areas and/or coal seams, the following comments can however be made:

- The Resource tonnage of E Seam Resources in the current estimate is less than those estimated by Shell for the same seam (94 Mt vs 326 Mt). However Shell's estimate covered a larger area.
- The Resource tonnage estimated by Coffey Mining (2013)[5] in 2013 for the E Seam and A Seam in the West Block of the project area is also larger than those in the current estimate as shown in Table 13 below. It should however be noted that the area covered by the Coffey Resource estimate is considerably larger than the area covered in the current Resource estimate. Raw coal qualities for the seams are similar in both estimates.

Table 13: Comparison between Resource tonnages estimated by Coffey Mining (2013)[5] and current Resource estimate

Seam	Coffey Mining (2013)[5]	Current Estimate
E Seam	199 Mt (Inferred)	94 Mt (Inferred)
A Seam	563 Mt (Inferred)	71 Mt (Indicated) and 182 Mt (Inferred)

8. TECHNICAL STUDIES

Technical studies are in the process of being conducted on the undated Coal Resources reported in this report. In 2014 Minergy completed a Scoping Study on a large (7.8 Mt per annum ROM) export focussed opencast coal mine (Coffey, 2014)[6], which covered an area that completely overlaps with Section A of the Focus Area in this report. Many of the technical studies done in the Scoping Study are relevant to a small to medium size coal mine as envisaged for the Masama Coal Project.

The Scoping Study referred to above was based on preliminary technical and economic assessments. It is preliminary in nature, and included Inferred Mineral Resources which are insufficient to provide certainty that the conclusions of the Scoping Study will be realised.

8.1 Geotechnical (4.1 (ii), 5.1 (i))

The host rocks for the coal seams are Karoo Supergroup sandstones and shales with estimated uniaxial compressive strengths (UCS) of between 25 MPa and 120 MPa. The coal seams have estimated strengths around 20 MPa. (Coffey, 2014)[6]

The rocks are not highly jointed except for the horizontal bedding partings. The RQDs are generally over 80% in the unweathered material.

The sand and calcrete (soft overburden) are not consolidated and should be treated as soils (Coffey, 2014)[6].

The Coffey (2014)[6] Scoping Study concluded that the Masama coal deposit could be mined in a stable fashion using terrace mining with vertical benches up to 25 m high, but these will generally be 10 m to 15 m vertical high-walls stripping the waste rock above each target coal seam. The unconsolidated sand and calcrete (soft overburden) should be removed from the tops of benches and should not have slopes greater than 40°.

8.2 Geohydrology (5.1 (i); 8.1 (i))

The Coffey (2014)[6] Scoping Study determined that sufficient ground water exists in the vicinity of the Masama Coal Project Area for a large coal mine with an estimated water requirement of 200 L/tonne, equating to approximately 1 560 ML per annum (about 178 m^3/hr).

Numerous potential sources of groundwater were identified near the planned mining area. Most of the potential sources could individually provide the required 1 560 ML per annum. Further groundwater investigations and groundwater exploration drilling were recommended.

Eight sources of sustainable groundwater supply were identified and recommended for further evaluation:

- Use existing boreholes in close proximity to Section A - Masama Coal Project.
- Tap into the artesian wellfield 40 km northeast of Section A - Masama Coal Project.
- Develop a wellfield in the Ecca Group rocks 20 km northeast of Section A - Masama Coal Project.
- Develop a wellfield along the structural contact south of Section A - Masama Coal Project.
- Develop a wellfield in the Lebung Formation inlier.
- Develop a wellfield in the Ntane aquifer north of the Zoetfontein Fault ~45 km north of Section A - Masama Coal Project.
- Develop a wellfield in the “Structural High” west of Section A - Masama Coal Project Area, where sandstone lithologies dominate in the Ecca Group.
- Develop a wellfield in the Proterozoic Waterberg Group metasediments approximately 30 km south of Masama and in the vicinity of the village of Lentsweletau.

8.3 Environmental Studies (5.1 (i); 5.5 (i), (ii), (iii), (iv), (v); 5.7 (i))

A desktop environmental screening assessment was undertaken by Coffey Mining as part of the Scoping Study (Coffey 2014)[6]. The focus area of this report is substantially the same vicinity as the areas considered in the Scoping Study and hence the outcomes of the environmental study is applicable to a small to medium size coal mine as envisaged for the project.

The content below is a summery from Coffey (2014)[6]:

Botswana Legal Requirements

In Botswana, environmental study is guided by the Environmental Assessment Act No. 10 (2011)[21]. The Act requires that Environmental Impact Assessments (EIA) should be undertaken for all the projects that may have negative impacts on the environment.

EIA Procedural Framework in Botswana

Screening:

In Botswana, the term 'screening' means an initial stage in the EIA process where the Minister determines whether an activity should be subject to an EIA or not. Under the Act, Category A projects require a full EIA, Category B projects require a partial EIA, and projects in Category C do not require an EIA. The Environmental Assessment Act does not specify what activities fall into which category, leaving this to be clarified in the Regulations.

Project Brief:

Under the Act, every application for an Environmental Authorisation for a project must be accompanied by a Project Brief in the form set out in the regulations (currently in draft), and the formulation of policies and programmes must be accompanied by a strategic environmental assessment.

The Project Brief or strategic environmental assessment must include the views and opinions of interested and affected parties. To this end, the Act requires the applicant to do the following:

- Publicise the proposed activity, its effects and benefits in the mass media for a period of at least twenty-one days.
- Hold meetings with affected people or communities.

Under Section 6(5) of the Act, the Department of Environmental Affairs (DEA) may authorise the implementation of the activity if it is satisfied that there are no probable adverse impacts. It may at its discretion, under Subsection 6, request the developer to submit an environmental management plan. However, the DEA may request the applicant to submit more information to allow it to make an informed decision.

If the proposed project is likely to have adverse impacts on the environment, the DEA can reject an application or decide that an EIA is required. It will then direct the applicant to prepare Terms of Reference for the EIA in the prescribed form set out in the regulations.

If the DEA considers the Terms of Reference to be adequate to guide the Environmental Impact Assessment, he may then approve them. Alternatively, the DEA may request more detail from the applicant for the Terms of Reference before approval is granted.

EIA and EIS:

Section 9 of the Act states that the 'EIA shall identify and evaluate the environmental impact of an activity with particular reference to the:

- Health, safety or quality of life of people;
- Archaeological, aesthetic, cultural or sanitary conditions of the environment; and
- Configuration, quality and diversity of natural resources.

Section 10 of the Act requires the DEA to place a notification in the Government Gazette and specified newspapers at least once a week for a period of four weeks, inviting comments and objections from the interested and affected parties. In its decision-making process, the DEA must consider comments or objections raised by the public during this period. In certain circumstances outlined in Section 11 of the Act the DEA may hold a public hearing. The procedure for holding a public hearing is prescribed in the Regulations under the Act. An important component of the Act is that any Terms of Reference, statement, report, decision or any other document produced under the Act shall be accessible to the public.

Review of the EIS:
Section 10 of the Act gives the DEA sixty days in which to review the EIS. After its review, the DEA may invite public comment. Once it is satisfied that the report is adequate and that the proposed mitigation measures will be 'effective and sufficient', it may do one of the following:

- Grant an Environmental Authorisation with conditions; or
- Reject the EIS in writing, giving reasons for the decision.

Botswana has not developed guidelines for a formal review process, but Section 17 requires the competent authority (the DEA) to consider the following:

- The contents of the Terms of Reference;
- The EIS;
- The recommendations of other government departments and local authorities;
- The comments and objections made by the interested and affected parties.

A person aggrieved by the decision may appeal to the High Court within thirty days of receiving the decision.

Environmental monitoring and audits:
Section 18 of the Environmental Assessment Act requires the authorities to monitor compliance with the agreed mitigation measures, while Section 19 makes provision for environmental audits. After carrying out an environmental audit the DEA may require a developer to take specific mitigation measures to ensure compliance with predictions made in the statement or, require mitigation measures to address environmental impacts not anticipated at the time of the

authorisation. Failure to comply with the provisions of the DEA could result in revocation or modification of an authorization.

Landholding and Land Use

Numerous cattle posts are located in the proposed mining area (Section A). These posts are allocated by the Land Board on a grant basis and in this category no permanent structures are supposed to be built. The land in Section A of the Masama Coal Project falls into the category of Communal (or Tribal) Land, portions of which may be allocated, free of charge to citizens, for residential, grazing, arable and commercial/industrial purposes by the Land Board on customary law grant or common law grant (Botswana National Atlas, 2001)[10].

Conclusions

The Coffey (2014)[6] Scoping Study concluded the following; the project area is typically rural and is used for agricultural activities such as subsistence maize and sorghum growing and traditional cattle farming. One local community village known as Medie is in close proximity to the proposed mining area and infrastructure site. The land in the Masama “Section A” area falls into the category of Communal (or Tribal) Land, with portions of which may be allocated free of charge to citizens for residential, grazing, arable and commercial/industrial purposes. There are numerous cattle posts in the mine lease area that have been allocated by the Land Board on a grant basis.

Based on the study, the main area of concern are the possible impacts related to the community of Medie. The direct impacts would be related to noise, dust and the social impacts in terms of in-migration of non-locals seeking employment and the establishment of a mining village disrupting the current social fabric. At present it is not planned to relocate the Medie village.

At this stage of the project development it does not appear that any environmental or social fatal flaws are present.

9. OTHER RELEVANT DATA AND INFORMATION

9.1 Adjacent properties (1.3 (i); 3.1 (iv); 8.1 (i))

The more advanced and relevant adjacent properties to the Masama Coal Project are as follows:

- Mmamabula East Project – Jindal Steel and Power;
- Mmamabula South and Central Projects – Anglo Coal Botswana;
- Morupule Coal Mine – Debswana;
- Waterberg Coalfield – including Grootegeluk Coal Mine (Exxaro) and other advanced projects.

Figure 43 depicts the location of the Masama Coal Project in relation to the other coal projects, as mentioned above.

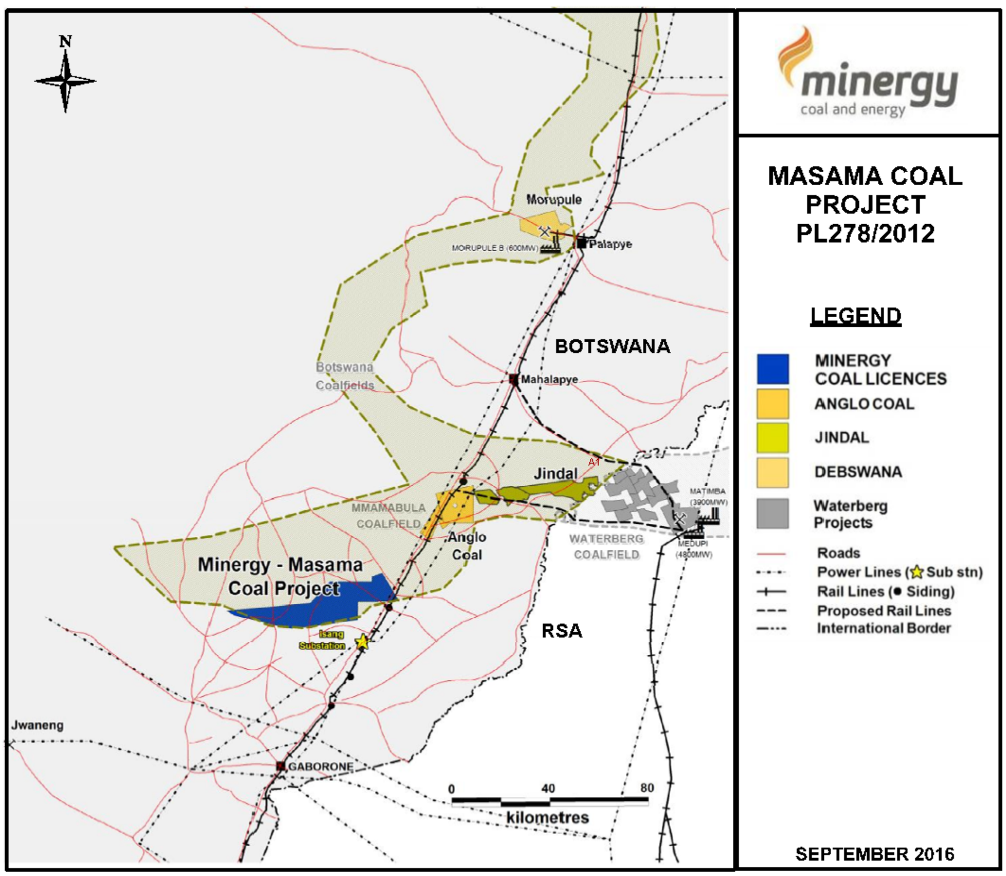

Figure 43: The location of the Masama Coal Project in relation to the other nearby coal projects.

Mmamabula East Project (http://www.jindalafrica.com/botswana/Mmamabula-Coalfield)[22]

Located some 100 km east of the Masama Central Block, the Mmamabula Project as seen extensive prospecting for coal since coal was discovered there in the 1960's. Between 2005 and 2012 CIC Energy Corp of Canada conducted extensive drilling and related work on the Mmamabula Project.

CIC defined a total Coal Resource of approximately 2.4 BT on what they referred to as the Mmamabula East Project as indicated in Table 14 below.

Table 14: Mmamabula In Situ Mineral Resource Estimate (D1 + M2 + D2 Upper Seams: Western, Central and Eastern Blocks) (effective date: 31 March 2011)

Category	**Tonnage (Mt)**
Measured	2,389.81
Indicated	7.52
Measured + Indicated (total)	**2,397.33**
Inferred	3.08

The resources were predominantly in two seams, termed the M2 Seam and D1 Seam, which have average thicknesses of ~3 m and ~ 6 m (CIC Technical Reports[23] and CIC Presentations[24]). There is a down faulted graben block between the Mmamabula East area and the Masama Coal Project, and different seam terminology was used during historical exploration in the two areas, tentatively the M2 Seam is correlated with the Masama E Seam and the D1 Seam with the Masama A Seam.

CIC evaluated the Mmamabula Project for several development options including power generation, export coal and also coal to liquids (CIC Presentations)[24].

In 2012, Jindal BVI Limited (JBVI), a subsidiary of an Indian multinational steel and power company, Jindal Steel and Power Limited (JSPL) acquired then Canadian listed coal Company CIC Energy Corp. (CIC) for about US $116 million thus gaining ownership of the Mmamabula Project.
(http://www.jindalafrica.com/countries/botswana/jindal-group-acquires-cic-in-botswana)[25].

Jindal have stated their plans for the project as follows; *"Our aim is to operate three surface mines in the rich coalfields of Mmamabula, as well as a power plant. The mine's development will meet the demands of a 600 MW power station and export region coal markets, with the* *potential to employ more than 2 000 people".* (http://www.jindalafrica.com/countries/botswana/botswana-overview)[26].

Mmamabula South and Central Projects

Located just west of the Mmamabula East Project and some 75 km east of Masama Coal Project, the Mmamabula South and Central Projects were put out to tender by the Government of Botswana in 2011 and were awarded to Anglo Coal Botswana in 2013.

Prior to the tender process, the Mmamabula South Block had most recently been explored by CIC Energy Corp who defined Coal Resources of 315 Mt (311 Mt Measured and Indicated and 3.7 Mt Inferred). Seams present are the M2 Seam and D1 Seam (CIC Technical Reports[23] and CIC Presentations[24]).

The Mmamabula Central Block had previously been explored by Shell Coal Botswana in the 1980's who defined total "in-situ raw Reserves" of 487 Mt in three seams they termed the Lower Seam, Middle Seam and Upper Seam. The Lower Seam would correlate to the M2 Seam (Masama E Seam) and the Middle Seam to the D1 Seam (Masama A Seam) (Shell 1982b)[27].

Morupule Coal Mine

Morupule Coal Mine is Botswana's only operating coal mine and is located near the town of Palapye in southeast Botswana some 200 km northeast of the Masama Coal Project.

Morupule Colliery has been operating since 1973 and is 100%-owned by Debswana and operated by the company's coal mining division Morupule Coal Mine.

The coal produced is supplied to Botswana Power Corporation's (BPC) Morupule A thermal power station.

In June 2012, the Morupule Colliery Limited (MCL) 1 expansion project was commissioned. The project was launched in October 2010 at a cost of BWP1.7 billion ($218 million). It was undertaken to supply coal to the new 600 MW Morupule B power station built next to the Morupule A plant.

The mine's capacity has increased from 1 Mt per annum to 3.2 Mt per annum following the expansion (http://www.mining-technology.com/projects/morupule-colliery-expansion-project/)[28].

The Morupule Colliery mines Karoo aged medium to low quality sub-bituminous coal.

Coal is extracted from the 8 m thick Morupule Main Seam and the No. 2 Seam through conventional room and pillar mining methods. These operations are carried out at a depth of 85 m and accessed through a single shaft. Continuous drill and blast methods were originally used until continuous miner operations commenced in 2004.

The number of continuous miners operating at the mine went up from one to four following the expansion. The extracted ore undergoes primary crushing to reduce its size to 300 mm and a secondary crushing, which further reduces the size to less than 32 mm.

The mine is equipped with a 1 Mt per annum capacity coal washing plant, which has been operational since January 2008. The plant removes coal particles that are less than 15 mm. It uses a Dense Media Separation (DMS) process to separate high calorific value coal from low calorific value coal.

The coal is fed to the plant, which includes a slow rotating drum. High calorific value coal floats on the top and low calorific value coal settles at the bottom. Coal from secondary crushing and the washing plant is blended and fed into the conveyor system to feed the power station (http://www.mining-technology.com/projects/morupule-colliery-expansion-project/)[28].

Although the Morupule Colliery is located well north of the Masama Coal Project and in a different Coalfield (the Morupule Coalfield) and predominantly supplies coal to mine mouth power stations, it demonstrates a successful and long life coal mining operation within Botswana.

Waterberg Coalfield

The Waterberg Coalfield is located adjacent to the Mmamabula Coalfield and is reported to contain 50% of South Africa's remaining Coal Resources (The South African Coal Roadmap, July 2013)[29]. Currently there is only one operating coal mine in the Waterberg and that is Exxaro's Grootegeluk Mine.

Situated 25 km from Lephalale in South Africa's Limpopo Province, the Grootegeluk open-pit mine employs two thousand people and produces 18.8 Mt per annum final coal products, using a conventional truck and shovel operation. This mine has an estimated Minable Coal Reserve of

3 261 Mt and a total Measured Coal Resource of 4 719 Mt, from which semi-soft coking coal, thermal coal and metallurgical coal can be produced.

Grootegeluk has the world's largest beneficiation complex where 8 000 tonnes per hour of run-of-mine coal is upgraded in six different plants.

Some 14.8 Mt of annual production is power station coal, transported directly to Eskom's Matimba power station on a 7 km conveyor belt in terms of the existing supply contract. An additional 1.5 Mt per annum of metallurgical coal is sold domestically to the metals and other industries on short-term contracts. Grootegeluk produces 2.5 Mt per annum of semi-soft coking coal, the bulk of which is railed directly to Mittal SA under a long-term supply agreement. Approximately 1 Mt per annum of semi-soft coking coal and thermal coal is exported through Richards Bay Coal Terminal or sold domestically (http://www.exxaro.com/index.php/where-we-operate/coal/grootegeluk/)[30].

Grootegeluk Mine was expanded between 2009 and 2016 to supply an additional 14.6 Mt per annum of thermal coal to Medupi Power Station.

The Waterberg Coalfield also hosts Eskom's 3 690 MW Matimba Power Station and 4 800 MW Medupi Power Station (under construction). There are also advanced projects by Sasol, Anglo Coal, Resource Generation and Waterberg Coal Company among others in the Waterberg Coalfield.

9.2 Risks (4.1 (iii); 5.5 (iii); 5.7 (i))

Possible material and legal/environmental risk factors are:

- The local influence of large- and small-scale geological structures on the coal deposit.
- Drainage lines and roads passing through the potential mining area; as well as the village of Medie that falls near opencast mining areas and on top of a potential underground mining area.
- The possible influence of mining operations on groundwater occurrences.
- Acid Mine Drainage from coal discards or from carbonaceous material that is backfilled into the pit voids. The potential of this material to produce acid mine drainage needs to be investigated further during the EIA studies.

- The depth of weathering and its impact on the exact position that opencast mining can commence. Should the depth of weathering be found to be deeper than anticipated in places this will impact on the coal resources potentially available for mining.
- Variation in E Seam thickness – should the thickness of the E Seam show a high degree variability this could have a material impact of how this seam could be mined in underground mining operations.
- Upgrading of resources to higher levels of confidence, there is a risk that not all currently identified Inferred Resources will be upgraded to Indicated Resources with further exploration.
- Insufficient power supply.
- Distance to some potential markets.

10. INTERPRETATION AND CONCLUSIONS (4.2 (VI); 4.5 (VIII); 10.5 (I))

The Masama Coal Project represents a large coal deposit, which has been historically explored by Shell and also more recently by Minergy (between 2012 and 2016). Exploration data generated by Minergy to date combined with information of the historic Shell exploration, has made it possible to define an Indicated opencast Coal Resource for the A Seam and a larger Inferred underground Coal Resource for the E Seam and the A Seam in the Focus Area of the West Block of the Masama Coal Project area. The Coal Resource has been estimated within the guidelines of the SAMREC Code (2016)[1], while further guidance on the classification of Coal Resources is provided by the South African guide to the systematic evaluation of coal resources and coal reserves (SANS10320:2004)[2].

A total Coal Resource of 347 Mt has been estimated for the E Seam and A Seam within the Focus Area of the West Block of the Masama Coal Project. This Resource can be further broken down as follows:

- 61.7 Mt Indicated Coal Resource in the A Seam within Opencast Section A and Section B;
- 9.5 Mt Inferred Coal Resource in the A Seam within Opencast Section A;
- 275.9 Mt Inferred Coal Resource in the E Seam and the A Seam within Underground parts of Section A and Section B.

A discount factor of 30% was applied to all resource categories to account for unforeseen geological losses.

Raw coal qualities for the resource estimates are reported on an air dried basis and accordingly include natural moisture contained within the coal. All of the Coal Resources defined to date lie between depths of ~20 m and ~70 m and the deposit represents a series of discrete sub-horizontal (~3° dip) coal seams separated by sandstone, siltstone or mudstone.

Raw coal quality ranges for the E Seam and A Seam are as follows:

- E Seam Section A (U/G): CV 21.0 MJ/kg to 25.7 MJ/Kg, Ash 28.1% to 12.5%, Total Sulphur 1.2% to 2.8%
- E Seam Section B (U/G): CV 15.2 MJ/kg to 23.2 MJ/Kg, Ash 43.2% to 19.8%, Total Sulphur 0.5% to 2.7%

- A Seam Section A (O/C and U/G): CV 21.2 MJ/kg to 23.2 MJ/Kg, Ash 25.1% to 17.8%, Total Sulphur 0.8% to 2.8%
- A Seam Section B (O/C and U/G): CV 18.8 MJ/kg to 22.1 MJ/Kg, Ash 28.3% to 17.2%, Total Sulphur 0.6% to 2.6%

Wash results for the Masama Coal Project indicate that different potential products could be produced for the E Seam and the A Seam at acceptable yields.

Wash results from borehole core for the Masama Coal Project indicate that different potential products could be produced for the E Seam and the A Seam at acceptable theoretical product yields as indicated below:

- For the E Seam (Section A, Underground), a product with an average CV of 26.8 MJ/kg (6,401 kcal/kg), with 10.4% ash and 0.52% TS could be produced at an average theoretical product yield of ~86%;
- For the E Seam (Section B, Underground), a product with an average CV of 25 MJ/kg (5,971 kcal/kg), with 14.5% ash and 0.47% TS could be produced at an average theoretical product yield of ~62%.
- For the A Seam (Section A, Opencast and Underground), a product with an average CV of 26.0 MJ/kg (6,210 kcal/kg), with 10.1% ash and 0.47% TS could be produced at an average theoretical product yield of ~63%.
- For the A Seam (Section B, Opencast and Underground), a product with an average CV of 25.0 MJ/kg (5,971 kcal/kg), with 11.5% ash and 0.26% TS could be produced at an average theoretical product yield of ~60%.

The total sulphur (TS) content of all potential products is considered low and well within product specifications. The limited phosphorous data available indicate this should also be within acceptable limits and may be particularly low for the E Seam products.

Yields for E Seam are lower in Section B due to the presence of partings within the seam. Yields and coal quality for A Seam in Section B are slightly lower than Section A due to the presence of more carbonaceous mudstone within the coal seam.

11. RECOMMENDATIONS

Only a small segment of the Masama Prospecting Licence area has been explored to date and there is potential to increase the Resource with further drilling. Infill drilling is also recommended to upgrade the selected Indicated Resources to Measured Resources and the Inferred Resources to Indicated Resources and eventually Measured Resources.

It is highly recommended that a laser derived ground digital terrain model must be developed for the Masama Coal Project Focus Area prior to finalizing the mine planning.

The potential coal products that could be produced and their potential markets should be examined in more detail.

Low quality coal is present above the A Seam and would be extracted during opencast mining – potential uses for this coal should be investigated.

The Masama Coal Project represents an exciting opportunity for the development of a small to medium scale coal mine in Botswana and it is recommended that the project be advanced to a feasibility stage. In order to prepare the project for a Mining Licence application a comprehensive Environmental and Social Impact Study needs to be completed as prescribed under Botswana legislation. This will include consultation with affected parties and the development of an Environmental Management Plan.

Minergy has met its expenditure commitments and plans further exploration and related work for the Masama Coal Project as shown in Table 15 below.

Table 15: Masama Coal Project proposed work programme and budget.

Work Item	Cost ZAR	Comments
Fully core (Diamond) Drilling 1000 m	4 500 000	Includes drilling, field costs, assays, DH geophysics, interpretation and updated resource estimates
Percussion Drilling 600 m	750 000	Includes drilling, field support, DH geophysics, and interpretation
EIA and water studies	3 415 000	Includes all aspects of the EIA studies as well as water studies
Feasibility Study	3 380 000	Includes all aspects of a Feasibility Study, Lidar Survey and geotechnical studies
Total	**12 045 000**	

12. REFERENCE LIST

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13. DATE AND SIGNATURE (9.1 (I), (II), (III))

CERTIFICATE OF COMPETENT PERSON

This Certificate of Competent Person is given only as a guide to the CP. It is designed to incorporate all of the requirements of the Code.

Certificate of Competent Person

As the author of the report entitled MASAMA COAL PROJECT BOTSWANA: WEST BLOCK COAL RESOURCE, INDEPENDENT COMPETENT PERSONS REPORT, I hereby state:-

1. My name is D.S. Coetzee an associate geologist at GM Geotechnical Consultants cc., No. 5 Laver Street Middelburg.
2. Earth Scientist; South African Council Scientific Professions (SACNASP) Reg. No. 400136/00 and a member of the Geological Society of South Africa (MGSSA) (963564)
3. PhD Geology
4. The Minergy lead competent person is appointed by the Minergy management team. D.S. Coetzee started his professional career in 1979 as a geologist with the Geological Survey of South Africa and later as a mining and exploration geologist with Union Corporation working in the field of platinum from the Rustenburg offices. In 1981 he accepted a position as geology lecturer at Technikon Pretoria (now Tshwane University of Technology) where he proceeded through the ranks of Senior Lecturer and Principal Lecturer. In 1997 the title of Full Professor was conferred on him. Since his appointment in 1981 until he retired in 2008 he lectured mainly in the field of applied geology (mining and exploration, structural geology and many other sub-disciplines), participated in research, conducted private consultation and also fulfilled the position of Head of Department (Department of Physical Science; Department of Materials Technology and Department of Environmental, Water and Earth Sciences). He served as acting Dean in the Faculty of Natural Sciences during 1996. Between 2009 and 2011 he served as Contract Professor mainly in the field of Bushveld Geology - Institute for Bushveld Geology; and Mining and Exploration – MSc course (an honorary position) in the Department of Geology, University of Pretoria. D.S. Coetzee has conducted geological and geotechnical consultation for Thabazimbi Iron Ore Mine; A & B Global Mining; Delton Mining; Aquila Steel in Thabazimbi

and is working as an associate geologist with GM Geotechnical Consultants cc since 2004 (12 years), mainly in the field of coal geology.

5. I am a 'Competent Person' as defined in the SAMREC Code.
6. D.S Coetzee has conducted geological work and compiled various competent persons and other geological and technical reports for amongst others Wescoal Mining (Pty) Ltd., Nkomati Anthracite Mining (Pty) Ltd., Sentula Mining Ltd., Bisichi Mining (PLC) (Blackwattle Colliery), South 32, Fifth Season (Pty) Ltd., Timpisi Coal (Pty) Ltd., Lafarge Industries (Pty) Ltd., Aquila Steel (Pty) Ltd., Kumba Iron Ore Mine, Thabazimbi, etc. A full list of reports is available on request.
7. A site visit was conducted on 15 July 2016, to investigate borehole core and conduct structural field mapping.
8. D.S Coetzee is responsible for the technical aspects, geological aspects and the classification and estimation of the operation's mineral resources.
9. I am not aware of any material fact or material change with respect to the subject matter of the Report that is not reflected in the Report, the omission of which would make the Report misleading.
10. I declare that this Report appropriately reflects the Competent Person's/author's view.
11. I am independent of Minergy Coal (Pty) Ltd.
12. I have read the SAMREC Code (2016) and the Report has been prepared in accordance with the guidelines of the SAMREC Code.
13. I do not have, nor do I expect to receive, a direct or indirect interest in the Masama Coal Project or Minergy Coal (Pty) Ltd.
14. At the effective date of the Report (01 November 2016), to the best of my knowledge, information and belief, the Report contains all scientific and technical information that is required to be disclosed to make the Report not misleading.

Dated at Middelburg: 01 November 2016

D.S. Coetzee

14. APPENDICIES

APPENDIX 1 - GLOSSARY, ABBREVIATIONS AND UNITS

APPENDIX 2 – SAMREC CODE (2016) TABLE 1 CHECKLIST

APPENDIX 3 – BSE SECTION 12 COMPLIANCE CHECKLIST

APPENDIX 4 – COMPLIANCE STATEMENT

APPENDIX 5 – Physical Database – Summary of coal intersections for E and A Seam

APPENDIX 6 – Coal Qualities – Summary of Raw Coal Qualities for E and A Seam intersections

APPENDIX 7 – Logistics Reports for Geophysical Logging

APPENDIX 1 - GLOSSARY, ABBREVIATIONS AND UNITS

Word/Abbreviation/Unit	Definition
Air-dry / Air dried	In equilibrium with a standard environment or with the normal surroundings. Includes inherent (equilibrium) moisture content for coal
Analysis	Process of determining chemical properties of a sample
Ash	A measure of the non-combustible material in coal, expressed as a percentage. Determined by proximate analysis tests
Basement	In coal exploration/mining, refers to the rocks underlying the coal-bearing sediments
Bituminous coal	A medium quality coal mostly used in raising steam for the generation of electricity
Borehole	Exploratory drill hole (Core or chips extracted from a cylindrical hole during drilling)
Borehole log	A graphical representation of the information revealed by vertical diamond drilling
BSE	The Botswana Stock Exchange
BWP	Botswana Pula
Cadastral	Relating to property boundaries.
cm	Centimetre
Coal	Carbonaceous sedimentary rock with an ash content of less than 50%
Coal Zone	An interval of strata containing coal seams or “ply’s”. Commonly a close association of mudstone and coal.
Coking	With reference to coal – coal which has suitable properties for use in coke manufacture or other metallurgical processes.
CP	Competent Person
CPR	Competent Person’s Report
Cross-section	A diagram or drawing that shows features transected by a vertical plane, drawn normally at right angles to longer axis of geologic features.
CV	Calorific Value. A measure of the heat content of a sample. Normally measured in MJ/kg
Density	Measure of the relative "heaviness" of objects in terms of constant volume. Density =-mass/volume
Deposit	Mineral or other Earth material that has accumulated through the action of wind,

	water, ice or other natural agents
DGS	Department of Geological Survey, a government department in Botswana
Dip	The angle that a structural surface, i.e. a bedding or fault plane, makes with the horizontal plane. Measured preferably perpendicular to the strike of the structure (=true dip). Apparent dip is that observed without reference to 'strike'
Dolerite	A medium-grained basic igneous rock which is emplaced within the earth's crust in the form of dykes and sills. Dolerite emplacement can result in burnt/devolatilized coal where intrusions intersect coal horizons
DOW	Depth of Weathering
Dyke	Discordant intrusive igneous rock normally emplaced vertically, sub-vertically or at a steeply inclined angle
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
Equilibrium Moisture	See "Inherent Moisture"
ESIA	Environmental and Social Impact Assessment
Estimation	The quantitative judgement of a variable, for example, a resource quantity
Exploration	Prospecting, sampling, mapping, drilling and other tools used in the search for mineralization.
Fault	A fracture in rock material, along which the opposite sides have been displaced parallel to the plane of movement
FOB	Free on Board
FOT	Free on Truck
Graben	A fault structure in which an area between 2 fault planes is displaced downwards
GTIS	Gross Tonnes In Situ with no modifying factors
Ha or Hectare	A measurement of area 100 m by 100 m. 100 Ha = 1 km^2.
Horst	A fault structure in which an area between 2 fault planes is displaced upwards
HQ	Diamond drill core size 63.5mm in diameter
IM	Inherent Moisture see below.
In situ	In its original place. Most often used to refer to the location of mineral

	resources.
In situ tonnage	Measure of mass of coal or other mineral in the ground
Indicated Coal Resource	An 'Indicated Coal Resource' is that part of a Coal Resource for which quantity, grade or quality, densities, shape and physical characteristics are estimated with sufficient confidence to allow the application of Modifying Factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit. Geological evidence is derived from adequately detailed and reliable exploration, sampling and testing and is sufficient to assume geological and grade or quality continuity between points of observation. An Indicated Coal Resource has a lower level of confidence than that applying to a Measured Coal Resource and may only be converted to a Probable Coal Reserve
Inferred Coal Resource	An 'Inferred Coal Resource' is that part of a Coal Resource for which quantity and coal quality are estimated on the basis of limited geological evidence and sampling. Geological evidence is sufficient to imply but not verify geological and grade or quality continuity. An Inferred Coal Resource has a lower level of confidence than that applying to an Indicated Coal Resource and must not be converted to a Coal Reserve. It is reasonably expected that the majority of Inferred Coal Resources could be upgraded to Indicated Coal Resources with continued exploration.
Inherent Moisture	More correctly termed 'equilibrium' moisture. Moisture content bound up in a coal sample which remains after that sample has been air-dried.
ISO	International Standards Organization
JORC	The Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves
JSE	Johannesburg Stock Exchange
kcal/kg	Kilocalorie / Kilogram
m	Metre
MAMSL	Metres above mean sea level
Metallurgical coal	Coal which is suited to coke manufacture or use as a reductant in metallurgical processes
MJ/kg	Mega-Joule per kilogram (unit of energy)
Mt	Million Tonnes

MTIS	Mineable Tonnes In Situ (Resource)
Mudstone	Fine-grained argillaceous rock type consisting mainly of clay minerals. Commonly associated with coal within "Coal Zone"
Opencast, Open Pit	Surface mining in which a commodity is extracted from a pit. The geometry of the pit may vary in terms of the characteristics of the deposit. Mining method normally restricted to shallow occurrences
Overburden	The alluvium or soils and rock that must be removed in order to expose a deposit.
Palaeo topography	Refers to the distribution of an ancient land surface in term of elevation. In coal exploration the pre-Karoo basement surface is commonly used as a reference surface
Palaeo- / Topographic- "High"	An area or zone of increased elevation of an ancient land surface
RD	Relative Density
ROM	Run of Mine. A measure of mined coal.
RQD	Rock Quality Designation
RSA	Republic of South Africa
SAMREC Code	South African Code for the Reporting of Exploration Results, Mineral Resources and Mineral Reserves, 2016 Edition
Sandstone	A fine- to very coarse- grained arenaceous sedimentary rock consisting of silicate group minerals
SANAS	South African National Accreditation System: The only national body responsible for carrying out accreditations in respect of conformity assessment, as mandated through the Accreditation for Conformity Assessment, Calibration and Good Laboratory Practice Act (Act 19 of 2006).
SANS	South African National Standard
Sedimentary rocks	Rocks formed by the deposition of fragmental, detrital or chemical material that originates from weathering of older rocks and which is transported from a source to a site of deposition.
Sill	A body of intrusive igneous rock concordantly intruded into a stratigraphic sequence (usually horizontally or near-horizontally, but not necessarily so) and of similar origin to dykes rocks.
Steam coal	Coal, normally bituminous in nature, used to raise steam for power generation or other industrial applications

Strata	Rock sequences
Stratigraphic sequence or column	The geological sequence found at a particular locality in terms of rock types. Normally portrayed as a column with the older rocks at the base and youngest at the top
Stratigraphic, Stratigraphy	A term describing the sequence in time of bedded rocks which can be correlated between different localities
Strike	Describes the orientation (direction) of a geological surface such as a rock unit, dyke or fault plane in terms of its intersection with the horizontal plane
Stripping Ratio or SR	The amount of overburden that must be removed to gain access to a unit amount of coal, expressed as cubic metres of overburden to ROM tonnes of coal. A stripping ratio commonly is used to express the maximum volume or weight of overburden that can be profitably removed to obtain a unit amount of coal.
TCR	Total Core Recovery
Thermal coal	See STEAM COAL
Tonnage	Quantities where the tonne is an appropriate unit of measure. Typically used to measure or estimate quantities of in situ material or quantities of material mined, transported, processed or sold.
TTIS	Total Tonnes In Situ
Volatiles/Volatile Matter	A measure of the volatile component of coal as determined under fixed conditions in a laboratory as part of proximate analysis
VOLS	A measure of the volatile component of coal as determined under fixed conditions in a laboratory as part of proximate analysis
Washability analysis	As applied to coal, refers to a series of tests designed to provide an indication of the amenability of a sample to beneficiation to provide various products with generally enhanced qualities
Yield	A measure of the relative proportion of material which can be obtained by processing thereof. In coal exploration borehole yield is determined on samples by washability tests. Figures need to be discounted to obtain practical plant yields.
ZAR	South African Rand

APPENDIX 2 – SAMREC CODE (2016) TABLE 1 CHECKLIST (10.1 (i))

			MASAMA COAL PROJECT SECTION OF THIS REPORT			SAMREC GUIDANCE		
			Exploration Results	Mineral Resources	Mineral Reserves	Exploration Results	Mineral Resources	Mineral Reserves
Section 1: Project Outline								
1.1	Property Description	(i)	1.1, 2.1	1.1, 2.1		Brief description of the scope of project (i.e. whether in preliminary sampling, advanced exploration, scoping, pre-feasibility, or feasibility phase, Life of Mine plan for an ongoing mining operation or closure).		
		(ii)	3.1, 3.2, 3.3, 3.4, 3.5	3.1, 3.2, 3.3, 3.4, 3.5		Describe (noting any conditions that may affect possible prospecting/mining activities) topography, elevation, drainage, fauna and flora and vegetation, the means and ease of access to the property, the proximity of the property to a population centre, and the nature of transport, the climate, known associated climatic risks and the length of the operating season and to the extent relevant to the mineral project, the sufficiency of surface rights for mining operations including the availability and sources of power, water , mining personnel, potential tailings storage areas, potential waste disposal areas, heap leach pad areas, and potential processing plant sites.		
		(iii)	1.4	1.4		Specify the details of the personal inspection on the property by each CP or, if applicable, the reason why a personal inspection has not been completed.		
1.2	Location	(i)	1.3, 2.1, 2.2, 3.1, 3.4	1.3, 2.1, 2.2, 3.1, 3.4		Description of location and map (country, province, and closest town/city, coordinate systems and ranges, etc.).		
		(ii)	2.3, 2.4, 2.5	2.3, 2.4, 2.5		Country Profile: describe information pertaining to the project host country that is pertinent to the project, including relevant applicable legislation, environmental and social context etc. Assess, at a high level, relevant technical, environmental, social, economic, political and other key risks.		
		(iii)	3.2	3.2, 3.3		Provide a general topocadastral map	Provide a topocadastral map in sufficient detail to support the assessment of eventual economics. State the known associated climatic risks	Provide a detailed topocadastral map. Confirm that applicable aerial surveys have been checked with ground controls and surveys, particularly in areas of rugged terrain, dense vegetation or high altitude.
1.3	Adjacent Properties	(i)	2.2, 9.1	2.2, 9.1		Discuss details of relevant adjacent properties If adjacent or nearby properties have an important bearing on the report, then their location and common mineralized structures should be included on the maps. Reference all information used from other sources.		
1.4	History	(i)	4.1	4.1		State historical background to the project and adjacent areas concerned, including known results of previous exploration and mining activities (type, amount, quantity and development work), previous ownership and changes thereto.		
		(ii)	4.2, 7.3	4.2, 7.3		Present details of previous successes or failures with reasons why the project may now be considered potentially economic.		
		(iii)		4.3, 4.4, 4.5			Discuss known or existing historical Mineral Resource estimates and performance statistics on actual production for past and current operations.	
1.5	Legal Aspects and Permitting					**Confirm the legal tenure to the satisfaction of the Competent Person, including a description of the following:**		
		(i)	2.4	2.4		Discuss the nature of the issuer's rights (e.g. prospecting and/or mining) and the right to use the surface of the properties to which these rights relate. Disclose the date of expiry and other relevant details.		
		(ii)	2.4	2.4		Present the principal terms and conditions of all existing agreements, and details of those still to be obtained, (such as, but not limited to , concessions, partnerships, joint ventures, access rights, leases, historical and cultural sites, wilderness or national park and environmental settings, royalties, consents, permission, permits or authorisations).		
		(iii)	2.4	2.4		Present the security of the tenure held at the time of reporting or that is reasonably expected to be granted in the future along with any known impediments to obtaining the right to operate in the area. State details of applications that have been made.		
		(iv)	2.4	2.4		Provide a statement of any legal proceedings for example; land claims that may have an influence on the rights to prospect or mine for minerals, or an appropriate negative statement.		
		(v)	2.4	2.4		Provide a statement relating to governmental/statutory requirements and permits as may be required , have been applied for, approved or can be reasonably be expected to be obtained.		
1.6	Royalties	(i)	2.5	2.5		Describe the royalties that are payable in respect of each property.		
1.7	Liabilities	(i)	2.5	2.5		Describe any liabilities, including rehabilitation guarantees that are pertinent to the project. Provide a description of the rehabilitation liability, including, but not limited to, legislative requirements, assumptions and limitations.		

			MASAMA COAL PROJECT			SAMREC GUIDANCE		
			Exploration Results	Mineral Resources	Mineral Reserves	**Exploration Results**	**Mineral Resources**	**Mineral Reserves**
Section 2: Geological Setting, Deposit, Mineralisation								
2.1	Geological Setting, Deposit, Mineralisation	(i)	5.1.1	5.1.1		Describe the regional geology.		
		(ii)	5.1.2, 5.1.3,5.2, 5.4, 5.5	5.1.2, 5.1.3, 5.2, 5.4, 5.5		Describe the project geology including deposit type, geological setting and style of mineralisation.		
		(iii)	5.3	5.3		Discuss the geological model or concepts being applied in the investigation and on the basis of which the exploration program is planned . Describe the inferences made from this model.		
		(iv)	5.4, 5.5	5.4, 5.5		Discuss data density, distribution and reliability and whether the quality and quantity of information are sufficient to support statements , made or inferred, concerning the Exploration Target or Mineralisation.		
		(v)	5.1.3, 5.2, 5.4, 5.5	5.1.3, 5.2 5.4, 5.5		Discuss the significant minerals present in the deposit , their frequency, size and other characteristics. Includes minor and gangue minerals where these will have an effect on the processing steps. Indicate the variability of each important mineral within the deposit.		
		(vi)	5.1.3, 5.2, 5.4, 5.5	5.1.3, 5.2 5.4, 5.5		Describe the significant mineralised zones encountered on the property, including a summary of the surrounding rock types, relevant geological controls, and the length, width, depth, and continuity of the mineralisation, together with a description of the type, character, and distribution of the mineralisation		
		(vii)	5.2, 5.4	5.2, 5.4		Confirm that reliable geological models and / or maps and cross sections that support interpretations exist.		

			MASAMA COAL PROJECT			SAMREC GUIDANCE		
			Exploration Results	Mineral Resources	Mineral Reserves	Exploration Results	Mineral Resources	Mineral Reserves
Section 3: Exploration and Drilling, Sampling Techniques and Data								
3.1	Exploration	(i)	6.1, 6.2, 6.4	6.1, 6.2, 6.4		Describe the data acquisition or exploration techniques and the nature, level of detail, and confidence in the geological data used (i.e. geological observations, remote sensing results, stratigraphy, lithology, structure, alteration, mineralisation, hydrology , geophysical, geochemical, petrography, mineralogy, geochronology, bulk density, potential deleterious or contaminating substances, geotechnical and rock characteristics, moisture content , bulk samples etc.). Confirm that data sets include all relevant metadata, such as unique sample number, sample mass, collection date, spatial location etc.		
		(ii)	5.3, 6.10	5.3, 6.10		Identify and comment on the primary data elements (observation and measurements) used for the project and describe the management and verification of these data or the database. This should describe the following relevant processes : acquisition (capture or transfer) , validation, integration, control, storage, retrieval and backup processes. It is assumed that data are stored digitally but hand-printed tables with well organized data and information may also constitute a database.		
		(iii)	1.2, 5.3, 6.2	1.2, 5.3, 6.2		Acknowledge and appraise data from other parties and reference all data and information used from other sources.		
		(iv)	2.2, 4.1, 9.1	2.2, 4.1, 9.1		Clearly distinguish between data / information from the property under discussion and that derived from surrounding properties		
		(v)	6.5, 6.12	6.5, 6.12		Describe the survey methods, techniques and expected accuracies of data . Specify the grid system used.		
		(vi)	5.5, 6.5, 7.1	5.5, 6.5, 7.1		Discuss whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the estimation procedure(s) and classifications applied.		
		(vii)	5.4, 5.5, 6.5	5.4, 5.5, 6.5		Present representative models and / or maps and cross sections or other two or three dimensional illustrations of results, showing location of samples, accurate drill-hole collar positions, down-hole surveys, exploration pits, underground workings, relevant geological data, etc		
		(viii)	6.10	6.10		Report the relationships between mineralisation widths and intercept lengths are particularly important, the geometry of the mineralisation with respect to the drill hole angle. If it is not known and only the down-hole lengths are reported, confirm it with a clear statement to this effect (e.g. 'down-hole length, true width not known').		
3.2	Drilling Techniques	(i)	6.5	6.5		Present the type of drilling undertaken (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Banka , sonic, etc) and details (e.g. core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).		
		(ii)	6.6, 6.7	6.6, 6.7		Describe whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, technical studies, mining studies and metallurgical studies.		
		(iii)	6.7, 6.8	6.7, 6.8		Describe whether logging is qualitative or quantitative in nature; indicate if core photography .(or costean, channel, etc) was undertaken.		
		(iv)	6.7	6.7		Present the total length and percentage of the relevant intersections logged		
		(v)	6.5, 6.6, 6.7	6.5, 6.6, 6.7		Discuss the results of any downhole surveys of the drill-holes.		
3.3	Sample method, collection, capture and storage	(i)	6.8	6.8		Describe the nature and quality of sampling (e.g. cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.		
		(ii)	6.8	6.8		Describe the sampling processes, including sub-sampling stages to maximize representivity of samples. This should include whether sample sizes are appropriate to the grain size of the material being sampled. Indicate whether sample compositing has been applied.		
		(iii)	6.8	6.8		Appropriately describe each data set (e.g. geology, grade, density, quality, diamond breakage, geo-metallurgical characteristics etc .), sample type, sample-size selection and collection methods		
		(iv)	6.8, 6.10	6.8, 6.10		Report the geometry of the mineralisation with respect to the drill-hole angle. State whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type. State if the intersection angle is not known and only the downhole lengths are reported.		
		(v)	6.9	6.9		Describe retention policy and storage of physical samples (e.g. core, sample reject, etc.)		
		(vi)	6.7, 6.8	6.7, 6.8		Describe the method of recording and assessing core and chip sample recoveries and results assessed, measures taken to maximise sample recovery and ensure representative nature of the samples and whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.		
		(vii)	6.8	6.8		If a drill-core sample is taken, state whether it was split or sawn and whether quarter, half or full core was submitted for analysis. If a non- core sample, state whether the sample was riffled, tube sampled, rotary split etc. and whether it was sampled wet or dry.		
3.4	Sample Preparation and Analysis	(i)	6.9	6.9		Identify the laboratory(s) and state the accreditation status and Registration Number of the laboratory or provide a statement that the laboratories are not accredited.		
		(ii)	6.9	6.9		Identify the analytical method. Discuss the nature, quality and appropriateness of the assaying and laboratory processes and procedures used and whether the technique is considered partial or total.		
		(iii)	6.9	6.9		Describe the process and method used for sample preparation, sub-sampling and size reduction , and likelihood of inadequate or non-representative samples (i.e. improper size reduction, contamination, screen sizes, granulometry, mass balance, etc.)		

			MASAMA COAL PROJECT			SAMREC GUIDANCE		
			Exploration Results	Mineral Resources	Mineral Reserves	**Exploration Results**	**Mineral Resources**	**Mineral Reserves**
3.5	Sampling Governance	(i)	6.10, 6.11, 6.12	6.10, 6.11, 6.12		Discuss the governance of the sampling campaign and process, to ensure quality and representivity of samples and data, such as sample recovery, high grading, selective losses or contamination, core/hole diameter, internal and external *QNQC,* and any other factors that may have resulted in or identified sample bias.		
		(ii)	6.9	6.9		Describe the measures taken to ensure sample security and the chain of custody.		
		(iii)	6.10	6.10		Describe the validation procedures used to ensure the integrity of the data, e.g. transcription, input or other errors, between its initial collection and its future use for modelling (e.g. geology, grade, density, etc.)		
		(iv)	6.11	6.11		Describe the audit process and frequency (including dates of these audits) and disclose any material risks identified.		
3.6	Quality Control/Quality Assurance	(i)	6.7, 6.8, 6.11	6.7, 6.8, 6.11		Demonstrate that adequate field sampling process verification techniques (QA/QC) have been applied, e.g. the level of duplicates, blanks , reference material standards, process audits, analysis, etc. If indirect methods of measurement were used (e .g. geophysical methods), these should be described, with attention given to the confidence of interpretation.		
3.7	Bulk Density	(i)	6.9	6.9		Describe the method of bulk density determination with reference to the frequency of measurements , the size, nature and representativeness of the samples .		
		(ii)	6.9, 7.1	6.9, 7.1		If target tonnage ranges are reported state the preliminary estimates or basis of assumptions made for bulk density.		
		(iii)	6.9, 7.1	6.9, 7.1		Discuss the representivity of bulk density samples of the material for which a grade range is reported.		
		(iv)	6.9, 7.1	6.9, 7.1		Discuss the adequacy of the methods of bulk density determination for bulk material with special reference to accounting for void spaces (vugs , porosity etc), moisture and differences between rock and alteration zones within the deposit.		
3.8	Bulk-Sampling and/or trial-mining	(i)	N/A	N/A		Indicate the location of individual samples (including map).		
		(ii)	N/A	N/A		Describe the size of samples, spacing/density of samples recovered and whether sample sizes and distribution are appropriate to the grain size of the material being sampled.		
		(iii)	N/A	N/A		Describe the method of mining and treatment.		
		(iv)	N/A	N/A		Indicate the degree to which the samples are representative of the various types and styles of m ineralisation and the mineral deposit as a whole.		

			MASAMA COAL PROJECT			SAMREC GUIDANCE		
			Exploration Results	Mineral Resources	Mineral Reserves	**Exploration Results**	**Mineral Resources**	**Mineral Reserves**
Section 4: Estimation and Reporting of Exploration Results and Mineral Resources								
4.1	Geological model and interpretation	(i)		5.3, 5.4, 5.5, 7.1		Describe the geological model, construction technique and assumptions that forms the basis for the Exploration Results or Mineral Resource estimate . Discuss the sufficiency of data density to assure continuity of mineralisation and geology and provide an adequate basis for the estimation and classification procedures applied.		
		(ii)		5.3. 5.4, 6.13, 8.1. 7.1		Describe the nature, detail and reliability of geological information with which lithological, structural, mineralogical, alteration or other geological, geotechnical and geo -metallurgical characteristics were recorded.		
		(iii)	9.2			Describe any obvious geological, mining, metallurgical, environmental, social, infrastructural, legal and economic factors that could have a significant effect on the prospects of any possible exploration target or deposit.		
		(iv)		7.2, 7.3, 9.2			Discuss all known geological data that could materially influence the estimated quantity and quality of the Mineral Resource.	
		(v)		5.3, 7.1			Discuss whether consideration was given to alternative interpretations or models and their possible effect (or potential risk) if any, on the Mineral Resource estimate.	
		(vi)		7.2			Discuss geological discounts (e.g. magnitude, per reef, domain, etc.), applied in the model, whether applied to mineralized and / or un-mineralized material (e.g. potholes, faults , dykes, etc).	
4.2	Estimation and modelling techniques	(i)	N/A			Describe in detail the estimation techniques and assumptions used to determine the grade and tonnage ranges.		
		(ii)		7.1			Discuss the nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values (cutting or capping), compositing (including by length and/or density) , domaining , sample spacing, estimation unit size (block size), selective mining units, interpolation parameters and maximum distance of extrapolation from data points.	
		(iii)		5.5			Describe assumptions and justification of correlations made between variables.	
		(iv)		7.1, 5.3			Provide details of any relevant specialized computer program (software) used, with the version number, together with the estimation parameters used.	
		(v)		7.5			State the processes of checking and validation, the comparison of model information to sample data and use of reconciliation data, and whether the Mineral Resource estimate takes account of such information.	
		(vi)		10			Describe the assumptions made regarding the estimation of any co-products, by-products or deleterious elements.	
4.3	Reasonable and realistic prospects for eventual economic extraction	(i)		7.3			Disclose and discuss the geological parameters. These would include (but not be limited to) volume / tonnage, grade and value / quality estimates, cut-off grades , strip ratios, upper- and lower- screen sizes	
		(ii)		7.3			Disclose and discuss the engineering parameters. These would include mining method, dilution, processing, geotechnical, geohydraulic and metallurgical) parameters.	
		(iii)		7.3			Disclose and discuss the infrastructural including , but not limited to, power, water, site- access.	
		(iv)		7.3			Disclose and discuss the legal, governmental, permitting, statutory parameters.	
		(v)		7.3			Disclose and discuss the environmental and social (or community) parameters.	
		(vi)		7.3			Disclose and discuss the marketing parameters.	
		(vii)		7.3			Disclose and discuss the economic assumptions and parameters. These factors will include, but not limited to, commodity prices and potential capital and operating costs	
		(viii)		7.3			Discuss any material risks	
		(ix)		7.3			Discuss the parameters used to support the concept of "eventual"	

			MASAMA COAL PROJECT			SAMREC GUIDANCE		
			Exploration Results	Mineral Resources	Mineral Reserves	**Exploration Results**	**Mineral Resources**	**Mineral Reserves**
4.4	Classification Criteria	(i)		7.2			Describe criteria and methods used as the basis for the classification of the Mineral Resources into varying confidence categories.	
4.5	Reporting	(i)	N/A	N/A		Discuss the reported low and high grades and widths together with their spatial location to avoid misleading the reporting of Exploration Results, Mineral Resources or Mineral Reserves.		
		(ii)	5.5	5.5		Discuss whether the reported grades are regional averages or if they are selected individual samples taken from the property under discussion.		
		(iii)	7.3			State assumptions regarding mining methods, infrastructure, metallurgy, environmental and social parameters. State and discuss where no mining related assumptions have been made.		
		(iv)	N/A			State the specific quantities and grades / qualities which are being reported in ranges and/or widths, and explain the basis of the reporting		
		(v)		7.2			Present the detail for example open pit, underground, residue stockpile, remnants, tailings, and existing pillars or other sources in the Mineral Resource statement	
		(vi)		7.5			Present a reconciliation with any previous Mineral Resource estimates. Where appropriate, report and comment on any historic trends (e.g. global bias).	
		(vii)		7.4			Present the defined reference point for the tonnages and grades reported as Mineral Resources. State the reference point if the point is where the run of mine material is delivered to the processing plant. It is important that, in all situations where the reference point is different, such as for a saleable product, a clarifying statement is included to ensure that the reader is fully informed as to what is being reported.	
		(viii)		10		If the CP is relying on a report, opinion, or statement of another expert who is not a CP, disclose the date, title, and author of the report, opinion, or statement, the qualifications of the other expert and why it is reasonable for the CP to rely on the other expert, any significant risks and any steps the CP took to verify the information provided.		
		(ix)	N/A	N/A		State the basis of equivalent metal formulae, if applied.		

			MASAMA COAL PROJECT			SAMREC GUIDANCE		
			Exploration Results	Mineral Resources	Mineral Reserves	**Exploration Results**	**Mineral Resources**	**Mineral Reserves**
Section 5: Technical Studies								
5.1	Introduction	(i)		8.1, 8.2, 8.3		Technical Studies are not applicable to Exploration Results	State the level of study - whether Scoping, Pre-Feasibility, Feasibility or ongoing Life of Mine	State the level of study - whether Pre-Feasibility, Feasibility or ongoing Life of Mine. The Code requires that a study to at least a Pre-Feasibility level has been undertaken to convert Mineral Resource to Mineral Reserve. Such studies will have been carried out and will include a mine plan or production schedule that is technically achievable and economically viable , and consider all Modifying Factors.
		(ii)						Provide a summary table of the Modifying Factors used to convert the Mineral Resource to Mineral Reserve for Pre- feasibility, Feasibility or on-going life-of- mine studies.
5.2	Mining Design	(i)		7.1, 7.3		Technical Studies are not applicable to Exploration Results	State assumptions regarding mining methods and parameters when estimating Mineral Resources or explain where no mining assumptions have been made.	
		(ii)						State and justify all Modifying Factors and assumptions made regarding mining methods, minimum mining dimensions (or pit shell) and internal and if applicable , external mining dilution and mining losses used for the techno-economic study and signed off , such as mining method , mine design criteria, infrastructure, capacities, production schedule , mining efficiencies , grade control, geotechnical and hydrological considerations, closure plans , and personnel requirements.
		(iii)						State what mineral resource models have been used in the study
		(iv)						Explain the basis of (the adopted) cut-off grade(s) or quality parameters applied. Include metal equivalents if relevant
		(v)						Describe and justify the mining method(s) to be used.
		(vi)						For open-pit mines, include a discussion of pit slopes, slope stability, and strip ratio.
		(vii)						For underground mines , discussion of mining method , geotechnical considerations, mine design characteristics, and ventilation/cooling requirements.
		(viii)						Discussion of mining rate , equipment selected, grade control methods, geotechnical and hydrogeological considerations, health and safety of the workforce, staffing requirements, dilution, and recovery.
		(ix)						State the optimisation methods used in planning, list of constraints (practicality, plant, access, exposed Mineral Reserves, stripped Mineral Reserves, bottlenecks, draw control).

			MASAMA COAL PROJECT			SAMREC GUIDANCE		
			Exploration Results	Mineral Resources	Mineral Reserves	Exploration Results	Mineral Resources	Mineral Reserves
5.3	Metallurgical and Testwork	(i)				Technical Studies are not applicable to Exploration Results		Discuss the source of the sample and the techniques to obtain the sample, laboratory and metallurgical testing techniques.
		(ii)						Explain the basis for assumptions or predictions regarding metallurgical amenability and any preliminary mineralogical test work already carried out.
		(iii)		7.3			Discuss the possible processing methods and any processing factors that could have a material effect on the likelihood of eventual economic extraction. Discuss the appropriateness of the processing methods to the style of mineralisation.	Describe and justify the processing method(s) to be used, equipment, plant capacity, efficiencies , and personnel requirements.
		(iv)						Discuss the nature, amount and representativeness of metallurgical testwork undertaken and the recovery factors used. A detailed flow sheet / diagram and a mass balance should exist, especially for multi-product operations from which the saleable materials are priced for different chemical and physical characteristics.
		(v)						State what assumptions or allowances have been made for deleterious elements and the existence of any bulk-sample or pilot-scale test work and the degree to which such samples are representative of the ore body as a whole .
		(vi)						State whether the metallurgical process is well -tested technology or novel in nature.
5.4	Infrastructure	(i)		3.1		Technical Studies are not applicable to Exploration Results	Comment regarding the current state of infrastructure or the ease with which the infrastructure can be provided or accessed	
		(ii)						Report in sufficient detail to demonstrate that the necessary facilities have been allowed for (which may include, but not be limited to, processing plant, tailings dam , leaching facilities, waste dumps, road, rail or port facilities , water and power supply , offices, housing, security, resource sterilisation testing etc.). Provide detailed maps showing locations of facilities .
		(iii)						Provide a statement showing that all necessary logistics have been considered.
5.5	Environmental and Social	(i)		2.4, 8.3		Technical Studies are not applicable to Explorat ion Results	Confirm that the company hold ing the tenement has addressed the host country environmental legal compliance requirements and any mandatory and/or voluntary standards or guidelines to which it subscribes	
		(ii)		2.4, 8.3			Identify the necessary permits that will be required and their status and where not yet obtained, confirm that there is a reasonable basis to believe that all permits required for the project will be obtained	
		(iii)		7.3, 8.3, 9.2			Identify and discuss any sensitive areas that may affect the project as well as any other environmental factors including interested and Affected Parties I&AP and/or studies that could have a material effect on the likelihood of eventual economic extraction. Discuss possible means of mitigation.	
		(iv)		8.3			Identify any legislated social management programmes that may be required and discuss the content and status of these.	
		(v)		8.3			Outline and quantify the material socio-economic and cultural impacts that need to be mitigated, and their mitigation measures and, where appropriate the associated costs.	

			MASAMA COAL PROJECT			SAMREC GUIDANCE		
			Exploration Results	Mineral Resources	Mineral Reserves	**Exploration Results**	**Mineral Resources**	**Mineral Reserves**
5.6	Market Studies and Economic criteria	(i)				Technical Studies are not applicable to Exploration Results		Describe the valuable and potentially valuable product(s), including suitability of products, co-products and by-products for marketing.
		(ii)						Describe product(s) to be sold, customer specifications, testing, and acceptance requirements. Discuss whether there exists a ready market for the product(s) and whether contracts for the sale of the product are in place or expected to be readily obtained. Present price and volume forecasts and the basis for the forecast.
		(iii)						State and describe all economic criteria that have been used for the study such as capital and operating costs , exchange rates, revenue / price curves, royalties, cut- off grades, reserve pay limits.
		(iv)						Provide a summary description, source and confidence in method used to estimate the commodity price/value profiles used for cut-off grade calculation , economic analysis and project valuation, including applicable taxes, inflation indices, discount rate and exchange rates.
		(v)						Present the details of the point of reference for the tonnages and grades reported as Mineral Reserves, e.g. material delivered to the processing facility or saleable product(s). It is important that , in any situation where the reference point is different, a clarifying statement is included to ensure that the reader is fully informed as to what is being reported .
		(vi)						Justify assumptions made concerning production cost including transportation, treatment, penalties, exchange rates, marketing and other costs. Provide details of allowances that are made for the content of deleterious elements and the cost of penalties.
		(vii)						Provide details of allowances made for royalties payable, both to Government and private concerns.
		(viii)						State type, extent and condition of plant and equipment that is significant to the existing operation(s).
		(ix)						Provide details of all environmental, social and labour costs considered
5.7	Risk Analysis	(i)		8.3, 9.2		Technical Studies are not applicable to Exploration Results	Report an assessment of techn ical, environmental, social, economic , political and other key risks to the project. Descr ibe actions that will be taken to mitigate and/or manage the identified risks.	
5.8	Economic Analysis	(i)		N/A		Technical Studies are not applicable to Exploration Results	At the relevant level (Scoping Study, Pre-feasibility , Feasibility or on-going Life-of Mine), provide an economic analysis for the project that includes:	
		(ii)		N/A			Cash Flow forecast on an annual basis using Mineral Reserves or an annual production schedule for the life of the project	
		(iii)		N/A			A discussion of net present value (NPV), internal rate of return (IRR) and payback period of capital	
		(iv)		N/A			Sensitivity or other analysis using variants in commodity price, grade , capital and operating costs, or other significant parameters, as appropriate and discuss the impact of the results.	

			MASAMA COAL PROJECT			SAMREC GUIDANCE		
			Exploration Results	Mineral Resources	Mineral Reserves	Exploration Results	Mineral Resources	Mineral Reserves
Section 6: Estimation and Reporting of Mineral Reserves								
6.1	Estimation and modelling techniques	(i)		N/A			Describe the Mineral Resource estimate used as a basis for the conversion to a Mineral Reserve.	
		(ii)		N/A			Report the Mineral Reserve Statement with sufficient detail indicating if the mining is open pit or underground plus the source and type of mineralisation, domain or ore body, surface dumps, stockpiles and all other sources.	
		(iii)		N/A				Provide a reconciliation reporting historical reliability of the performance parameters, assumptions and Modifying Factors, including a comparison with the previous Reserve quantity and qualities, if available. Where appropriate, report and comment on any historic trends (e.g. global bias)
6.2	Classification Criteria	(i)		N/A				Describe and justify criteria and methods used as the basis for the classification of the Mineral Reserves into varying confidence categories, based on the Mineral Resource category, and including consideration of the confidence in all the modifying factors.
6.3	Reporting	(i)		N/A				Discuss the proportion of Probable Mineral Reserves, which have been derived from Measured Mineral Resources (if any), including the reason(s) therefore.
		(ii)		N/A				Present details of for example open pit, underground, residue stockpile, remnants, tailings, and existing pillars or other sources in respect of the Mineral Reserve statement
		(iii)		N/A				Present the details of the defined reference point for the Mineral Reserves. State where the reference point is the point where the run of mine material is delivered to the processing plant. It is important that, in all situations where the reference point is different, such as for a saleable product, a clarifying statement is included to ensure that the reader is fully informed as to what is being reported. State clearly whether the tonnages and grades reported for Mineral Reserves are in respect of material delivered to the plant or after recovery.
		(iv)		N/A				Present a reconciliation with the previous Mineral Reserve estimates. Where appropriate, report and comment on any historic trends (e.g. global bias).
		(v)		N/A				Only Measured and Indicated Mineral Resources can be considered for inclusion in the Mineral Reserve.
		(vi)		N/A				State whether the Mineral Resources are inclusive or exclusive of Mineral Reserves.
Section 7: Audits and Reviews								
7.1	Audits and Reviews	(i)	6.5, 6.10, 6.11, 6.12	6.5, 6.10, 6.11, 6.12		State type of review/audit (e.g. independent, external), area (e.g. laboratory, drilling, data, environmental compliance etc), date and name of the reviewer(s) together with their recognized professional qualifications.		
		(ii)	6.10	6.10		Disclose the conclusions of relevant audits or reviews. Note where significant deficiencies and remedial actions are required.		
Section 8: Other Relevant Information								
8.1		(i)	6.1, 9.2	6.1, 9.2		Discuss all other relevant and material information not discussed elsewhere.		
Section 9: Qualification of Competent Person(s) and other key technical staff. Date and Signature Page								
9.1		(i)	1.1, 13	1.1, 13		State the full name, registration number and name of the professional body or Recognised Professional Organisation (RPO), for all the CPs. State the relevant experience of the CP(s) and other key technical staff who prepared and are responsible for the Public Report.		
		(ii)	1.1, 13	1.1, 13		State the CP's relationship to the issuer of the report.		
		(iii)	1.1, 13	1.1, 13		Provide the Certificate of the CP (Appendix 2), including the date of sign-off and the effective date, in the Public Report.		

			MASAMA COAL PROJECT			SAMREC GUIDANCE		
			Exploration Results	Mineral Resources	Mineral Reserves	Exploration Results	Mineral Resources	Mineral Reserves
Section 10: Reporting of for Coal Resources and Reserves								
10.1	Specific Reporting for Coal	(i)	1.1, Appendix 2	1.1, 7.1, Appendix 2		Confirm that the reports on coal deposits take cognisance of sections 54-74 of the Code and Sections 1 - 9 of Table 1.		
		(ii)	1.1	1.1, 7.1		Confirm that the Coal Exploration Results, Coal Inventory , Coal Resources and Coal Reserves are reported using the South African National Standard 10320 as the guideline.		
10.2	Geological Setting, Deposit, Mineralisation	(i)	5.1, 5.2, 5.4, 5.5	5.1, 5.2, 5.4, 5.5		Describe the project geology including coal deposit type, geological setting and coal seams / zones present.		
		(ii)	5.1, 5.2, 5.3, 5.4, 5.5	5.1, 5.2, 5.3, 5.4, 5.5		Identify and discuss the structural complexity, physical continuity, coal rank, qualitative and quantitative properties of the significant coal seams or zones on the property.		
10.3	Drilling Techniques	(i)	6.7	6.7		Report core recoveries and method of calculation. Confirm that core recoveries in cored boreholes are in excess of 95% by length within the coal seam intersection .		
	Relative Density to replace Bulk Density	(ii)	6.9,	6.9, 7.1. 7.4		Describe the apparent relative density or true relative dens ity of the coal seam(s) determined on coal samples from borehole cores using recogn ized standard laboratory methods or commonly used procedures. State the moisture basis on which the relative density determination is based and the moisture basis on which the final density value is reported (in situ or air-dried basis).		
	Bulk-Sampling and/or trial-mining	(iii)		N/A		Describe the purpose or aim of the bulk sampling programme, the size of samples, spacing/density of samples recovered. Describe the applicability of bulk sampling or large diameter core samples towards providing representative samples for tests. Compare and comment on results obtained from bulk sampling versus exploration sampling.		
10.4	Reasonable and realistic prospects for eventual economic extraction	(i)	7.1, 6.13	7.1, 7.3, 7.4, 6.13		Confirm that an appropriate coal quality is reported for all Coal Resource categories. Present and discuss the type of analysis (e.g. raw coal, washed coal at a specific cut -point density) and the basis of reporting of the coal quality parameters (e.g. air-dried basis, dry basis , etc.).		
10.5	Coal Resource Reporting	(i)		7.1, 7.4, 10			A Coal Resource only includes the coal seam(s) above the minimum thickness cut- off and the coal quality cut-off(s). Present and discuss the MTIS Coal Resource tonnage and quality.	
		(ii)		7.1, 7.4			State the reporting basis for the Coal Resource statement with particular reference to moisture and relative density.	
10.6	Coal Reserve Reporting	(i)						State the reporting basis for the Coal Reserve statement with particular reference to moisture and relative density.
		(ii)						Confirm that the Coal Reserves are reported as run-of-mine tonnages and coal quality, and also as Saleable product/s tonnages and coal quality. Present and discuss the reporting basis for the Coal Reserve statement with particular reference to moisture content and relative density.

APPENDIX 3 – BSE SECTION 12 COMPLIANCE CHECKLIST

Reference to Section 12 **Mineral Companies**	**Reference to content in this Report**
12.7 (a)	Section 1.1 and Section 13
12.7 (b)	QP is an individual see 12.7 (a) above
12.7 (c)	Section 1.1 and Section 13
12.7 (d)	To be done if required
12.7 (e)	The Competent Person, Prof. D.S. Coetzee is independent of Minergy Coal (Pty) Ltd. Section 1.1, Section 13 and Appendix 4
12.8 (a)(i)	Section 2.4
12.8 (a)(ii)	Section 2.4
12.8 (b)(i)	Exploration stage no Environmental Management Programme yet approved
12.8 (b)(ii)	Exploration stage
12.8 (b)(iii)	Exploration stage
12.8 (b)(iv)	Not Applicable
12.8 (c)(i)	Sections 5, 6, 7 and 10
12.8 (c)(ii)	Sections 6, 7 and 10
12.8 (c)(iii)	Sections 1.1, 1.2, 4, 5, 6, 7 and 10
12.8 (d)	Section 11
12.7 (e)	Figures 1, 2, 3, 4, 6, 7, 9, 10, 11, 13, 18 and 19

APPENDIX 4: COMPLIANCE STATEMENT

COMPLIANCE STATEMENTS

The information in this report that relates to Exploration Targets, Exploration Results and Mineral Resources is based on information compiled by D.S. Coetzee, a Competent Person who is registered with SACNASP, and is a Member of the GSSA.

D.S. Coetzee is an associate geologist at GM Geotechnical Consultants cc.

Neither D.S. Coetzee, the author employed in the preparation of this report, nor GM Geotechnical Consultants cc. has any beneficial interest in the assets of Minergy Coal (Pty) Ltd. or any of its holding companies or parent companies.

For all reports:

D.S. Coetzee has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2016 Edition of the 'The South African Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. D.S. Coetzee consents to the inclusion in the report of the matters based on his (or her) information in the form and context in which it appears.'

MINERGY COAL (PTY) LTD. - MASAMA COAL PROJECT

APPENDIX 5
PHYSCIAL DATABASE OF BOREHOLES DRILLED WITHIN THE FOCUS AREA
01 NOVEMBER 2016

BH ID	UTM 35S WGS			Base of	SOFT	HARD	TOTAL	A UPPER SEAM			IB 1*	A SEAM				IB 2	E SEAM				Insitu SR	Insitu SR	Terminal	REAMARKS
	EASTING	NORTHING	ELEVATION	Weathering	OB	OB	OB	FROM	TO	THICK	Thick	FROM	TO	THICK	FLOOR	Thick	FROM	TO	THICK	FLOOR	A seam only	A + E Seam	Depth	
MW01	390386.5	7336956.4	1002.6	29.0	8.77	30.35	39.12					39.12	44.12	5.00	958.46	12.12	56.24	57.52	1.28	945.1	5.22	5.44	70.14	
MW02	392726.1	7338195.3	1015.9	37.0	16.57	73.15	89.72	89.72	91.60	1.88	12.38	103.98	108.69	4.71	907.24	16.96	125.65	127.64	1.99	888.3	14.72	12.03	133.13	
MW03	391336.9	7340666.6	1028.7	26.0	8.90	35.17	44.07	44.07	45.40	1.33	13.30	58.70	63.18	4.48	965.51	17.18	80.36	82.03	1.67	946.7	8.74	8.23	91.09	
MW04	392233.0	7342679.6	1036.8	20.0	8.91	34.11	43.02	43.02	44.36	1.34	14.20	58.56	62.80	4.24	973.97	14.30	77.10	78.74	1.64	958.0	9.21	8.26	85.19	
MW05	387765.0	7339407.3	1023.3	22.0													54.13	55.53		967.8			64.16	Redrilled due to poor core recovery
MW05r	387762.9	7339406.9	1023.3	22.0	5.50	16.64	22.14	22.14	23.83	1.69	12.46	36.29	41.22	4.93	982.10	12.91	54.13	55.53	1.40	967.8	4.91	5.18	68.58	
MW06	387745.3	7341898.5	1035.3	33.0	8.91	69.94	78.85	78.85	80.62	1.77	12.70	93.32	98.45	5.13	936.83	13.67	112.12	113.58	1.46	921.7	12.13	10.82	118.02	
MW07	385273.2	7338480.1	1020.3	29.3	7.75	31.22	38.97					38.97	44.90	5.93	975.37	16.25	61.15	62.97	1.82	957.3	4.38	4.75	69.70	
MW08	387341.5	7336282.5	1017.4	45.0	10.60	50.87	61.47	61.47	63.13	1.66	12.46	75.59	80.52	4.93	936.92	12.34	92.86	94.56	1.70	922.9	10.22	8.84	100.04	POSSIBLY SLIGHTLY WEATHERED
MW09	384457.3	7341231.5	1040.0	34.0	9.00	42.80	51.80										51.80	53.54	1.74	986.5			70.30	E SEAM ONLY
MW10	391999.0	7334988.4	1002.8	31.0																			102.93	NO COAL BOREHOLE
MW11	382158.5	7341439.9	1039.5	30.0	7.86	41.74	49.60										49.60	51.34	1.74	988.2			64.15	E SEAM ONLY
MW12	382372.9	7338832.2	1021.3	15.4	2.80	17.40	20.20					20.20	25.77	5.57	995.55	18.62	44.39	46.40	2.01	974.9	2.42	3.41	68.75	
MW13	379503.5	7340213.6	1035.0	29.0	4.59	35.28	39.87					39.87	44.78	4.91	990.22	10.78	55.56	55.95	0.39	979.1	5.41	6.37	62.85	
MW14	394747.9	7336666.3	1008.0	31.6																				BH ABANDONED - NO CORE RECOVERED
MW15	376444.1	7340452.5	1040.0	31.0	7.66	50.75	58.41	58.41	60.53	2.12	13.21	73.74	79.98	6.24	960.02	6.24	86.22	86.88	0.66	953.1	7.88	7.73	92.68	
MW16	387408.5	7339045.4	1021.9																					Redrilled due to poor core recovery
MW16r	387409.7	7339047.0	1021.9	17.87	6.00	20.29	26.29					26.29	31.15	4.86	990.78						3.61		37.80	Borehole terminated above E Seam
MW17	387058.8	7339412.0	1023.9	20.26	4.30	21.28	25.58					25.58	30.30	4.72	993.64						3.61		34.59	Borehole terminated above E Seam
MW18	387060.1	7338701.8	1015.8	17.24	2.89	18.73	21.62					21.62	26.17	4.55	989.66						3.17		31.46	Borehole terminated above E Seam
MW19	382861.7	7338707.4	1020.9	19.51	2.83	23.47	26.30					26.30	31.78	5.48	989.11						3.20		37.51	Borehole terminated above E Seam
MW20	383219.5	7339118.2	1020.4	20.20	4.31																		25.79	No A Seam, Borehole terminated above E Seam
MW21	386709.0	7339053.3	1020.9	25.99	4.36																		31.47	No A Seam, Borehole terminated above E Seam
MW22	387412.6	7339757.0	1026.2	17.10	6.00	19.24	25.24					25.24	29.69	4.45	996.51						3.78		34.49	Borehole terminated above E Seam
MW23	382370.9	7339332.8	1028.0	28.50	6.00																		34.54	No A Seam, Borehole terminated above E Seam
MW24	381961.5	7339112.4	1029.3	18.57	4.21	22.50	26.71					26.71	32.10	5.39	997.17						3.30		37.50	Borehole terminated above E Seam
MW25	382110.3	7339765.8	1030.9	21.75	3.86	21.53	25.39					25.39	30.65	5.26	1000.23						3.22		34.50	Borehole terminated above E Seam
S31	385561.7	7342674.3	1038.2				60.44	60.44	61.78	1.34	15.16	76.94	81.50	4.56	956.73	15.22	96.72	98.40	1.68	939.8	11.25	9.85	220.55	
S112	393939.4	7343248.5	1037.4				61.04					39.28	42.98	3.70		18.06	61.04	62.48	1.44	974.9			85.50	Poorly developed A Seam, Weathered
S113	393854.2	7340702.5	1023.7																				43.00	No Coal Borehole
S120	391347.8	7343239.4	1039.2				69.47	69.47	70.64	1.17	13.51	84.15	88.92	4.77	950.24	16.88	105.80	107.70	1.90	931.5	11.76	10.10	110.90	
S122	395279.9	7341934.4	1030.4																					No data, No Geophysics available
S124	393874.8	7342139.6	1033.4																					No data, No Geophysics available
S126	392735.1	7340665.5	1027.6														45.17	47.00	1.83	980.6				Only E Seam Data recorded in Coffey Report, No Geophysics available to verify
S128	390419.1	7339126.7	1021.7														70.89	72.40	1.51	949.3				Only E Seam Data recorded in Coffey Report, No Geophysics available to verify
S130	391369.4	7337729.5	1014.9														103.33	105.10	1.77	909.8				Only E Seam Data recorded in Coffey Report, No Geophysics available to verify
S131	394951.5	7337468.9	1009.5																					No data, No Geophysics available
S132	389092.4	7340642.8	1026.8														73.28	74.50	1.22	952.3				Only E Seam Data in Coffey Report, No Geophysics available to verify; drilled near S320 with 5.20
S135	389118.9	7343222.3	1036.1														147.59	149.70	2.11	886.4				Only E Seam Data recorded in Coffey Report, No Geophysics available to verify
S140	395280.6	7343248.1	1032.7																					No data, No Geophysics available
S142	395286.7	7339738.0	1018.0																					No data, No Geophysics available
S281	382782.1	7343131.0	1048.0	44.00			105.80	105.80	107.00	1.20	13.10	120.10	124.30	4.20	923.67	25.80	150.10	152.00	1.90	896.0	19.06	15.95	158.00	
S282	383994.9	7343128.0	1047.3	35.90			66.80	66.80	68.00	1.20	12.90	80.90	85.70	4.80	961.56	22.30	108.00	110.40	2.40	936.9	11.24	9.56	119.47	
S289	392721.2	7343209.0	1039.8				52.30	52.30	53.60	1.30	14.00	67.60	72.15	4.55	967.64	15.25	87.40	89.00	1.60	950.8	9.90	8.98	94.00	
S297	381554.0	7341858.0	1041.4	29.00			30.00					30.00	35.10	5.10	1006.33	24.40	59.50	61.00	1.50	980.4	3.92	5.49	42.20	
S298	382792.0	7341881.0	1041.1	31.20			55.00	19.40	20.30	0.90	9.50	29.80	31.20	1.40		23.80	55.00	57.00	2.00	984.1			62.40	Poorly developed A Seam, Weathered
S299	384041.0	7341878.0	1041.1	35.80			54.30										54.30	55.8	1.50	985.3			103.00	E SEAM ONLY
S300	385305.0	7341922.0	1037.8	28.10			38.10	25.30	26.40	1.10	11.70	38.10	42.80	4.70	994.97	17.25	60.05	61.80	1.75	976.0	5.40	5.72	81.65	A Upper Seam Weathered
S301	386549.0	7341868.0	1036.2	39.00			39.30	39.30	40.90	1.60	11.80	52.70	58.00	5.30	978.19	9.40	67.40	69.20	1.80	967.0	6.63	5.83	75.44	
S302	387803.0	7341921.0	1035.4	31.00			78.00	78.00	79.80	1.80	12.40	92.20	97.20	5.00	938.18	13.30	110.50	112.20	1.70	923.2	12.29	10.50	122.35	
S305	392008.2	7341943.0	1031.2				76.24										76.24	77.80	1.56	953.4				E SEAM ONLY
S306	392741.1	7341936.0	1032.1				43.80										43.80	45.30	1.50	986.8			70.00	E SEAM ONLY
S307	393886.9	7341893.0	1032.2																					No Coal Borehole
S313	380295.0	7340626.0	1037.7	35.00			39.50	27.00	28.20	1.20	11.30	39.50	44.75	5.25	992.98	20.55	65.30	67.20	1.90	970.5	5.02	5.60	78.00	A Upper Seam Weathered
S314	381549.0	7340634.0	1036.3	25.50			32.80	19.60	21.20	1.60	11.60	32.80	38.40	5.60	997.92	20.05	58.45	60.60	2.15	975.7	3.90	4.55	72.84	A Upper Seam Weathered
S315	382803.0	7340616.0	1038.1	28.50			44.60					24.60	26.20	1.60		18.40	44.60	46.20	1.60	991.9			80.00	Poorly developed A Seam, Weathered
S316	384020.0	7340644.0	1039.2	24.00			44.00										44.00	45.40	1.40	993.8			62.12	E SEAM ONLY
S317	385290.0	7340647.0	1038.2	33.00																			72.00	NO COAL BOREHOLE
S318	386559.0	7340657.0	1030.0	27.00													26.00	27.80	1.80				75.75	Possible A seam from 14 to 18 m.; weathered, E seam partly weathered
S319	387818.0	7340667.0	1029.4	19.00			33.10	33.10	35.00	1.90	11.60	46.60	51.60	5.00	977.84	13.80	65.40	66.70	1.30	962.7	6.21	6.39	73.00	
S320	389170.0	7340646.0	1026.5	36.00			45.30	45.30	46.80	1.50	13.20	60.00	65.20	5.20	961.25	11.35	76.55	78.10	1.55	948.4	7.69	7.05	118.75	
S321	390403.0	7340663.0	1027.7	26.00			45.40	45.40	47.10	1.70	12.55	59.65	64.00	4.35	963.74	16.45	80.45	82.20	1.75	945.5	9.14	8.32	90.45	
S325	395278.4	7340703.0	1024.3																				42.00	No Coal Borehole
S329	380295.0	7339376.0	1034.4	25.00			24.20	24.20	26.20	2.00	12.00	38.20	43.15	4.95	991.26	22.55	65.70	66.85	1.15	967.6	5.14	6.64	80.00	
S330	381552.0	7339384.0	1033.1	22.40			33.80					33.80	39.20	5.40	993.90	20.60	59.80	61.20	1.40	971.9	4.17	5.33	67.00	
S331	382787.0	7339397.0	1026.5	21.17			42.40					16.50	22.00	5.50	1004.48	20.40	42.40	44.20	1.80	982.3			53.58	A seam only Weathered
S332	384019.0	7339384.0	1024.4	21.70			36.00					14.70	16.80	2.10		19.20	36.00	38.80	2.80	985.6			85.00	Poorly developed A Seam, Weathered
S333	385288.0	7339384.0	1022.6	23.00																			88.33	NO COAL BOREHOLE
S334	386568.0	7339415.0	1023.1	23.80			38.00					22.00	25.20	3.20		12.80	38.00	40.00	2.00	983.1			90.00	A seam partly weathered
S335	387817.0	7339411.0	1023.0	18.10			22.80	22.80	24.75	1.95	12.25	37.00	42.00	5.00	981.02	12.80	54.80	56.40	1.60	966.6	4.93	5.03	63.00	
S336	389055.0	7339414.0	1019.5	30.80			31.35					31.35	36.40	5.05	983.08	13.40	49.80	51.60	1.80	967.9	4.14	4.36	63.00	
S337	390402.0	7339421.0	1023.4	38.50			48.00					48.00	52.60	4.60	970.79	16.60	69.20	71.00	1.80	952.4	6.96	6.73	80.00	
S338	391356.0	7339444.0	1022.0				53.20					53.20	57.60	4.40	964.38	15.20	72.80	74.55	1.75	947.4	8.06	7.41	106.60	
S339	392749.0	7339449.0	1022.4				52.70										52.70	54.60	1.90	967.8			79.00	E SEAM ONLY
S340	393853.4	7339461.0	1020.3																				105.67	No Coal Borehole
S341	395298.1	7339451.0	1016.3																				65.00	No Coal Borehole
S344	384041.0	7338129.0	1025.0	20.00			28.40	28.40	30.40	2.00	12.00	42.40	47.75	5.35	977.25	18.05	65.80	68.40	2.60	956.6	5.28	5.07	80.41	
S345	385278.0	7338132.0	1021.3	20.00			33.10	33.10	34.90	1.80	12.60	47.50	51.80	4.30	969.53	18.20	70.00	72.40	2.40	948.9	7.36	6.54	78.00	
S346	386563.0	7338154.0	1011.6	20.00			21.40	21.40	23.60	2.20	12.60	36.20	41.20	5.00	970.40	11.60	52.80	54.30	1.50	957.3	4.83	4.90	68.62	
S347	387836.0	7338183.0	1011.3	27.50			27.80					27.80	33.20	5.40	978.05	14.80	48.00	49.60	1.60	961.7	3.43	4.06	54.00	
S348	389049.0	7338220.0	1008.2	30.70			31.45	31.45	33.25	1.80	12.25	45.50	50.00	4.50	958.21	16.75	66.75	68.20	1.45	940.0	6.74	6.97	77.29	
S349	390416.0	7338141.0	1016.5	31.00			63.80	63.80	65.50	1.70	12.85	78.35	83.35	5.00	933.13	12.65	96.00	97.75	1.75	918.7	10.45	8.99	103.00	
S350	391361.0	7338202.0	1015.0				70.20	70.20	71.95	1.75	12.45	84.40	89.50	5.10	925.50	13.10	102.60	104.20	1.60	910.8	11.03	9.70	109.50	
S351	392759.0	7338169.0	1015.8				89.40	89.40	91.20	1.80	12.25	103.45	108.20	4.75	907.61	16.60	124.80	126.90	2.10	888.9			132.00	Twin borehole MW02
S352	393842.0	7338179.0	1012.0				74.95	74.95	76.50	1.55	12.20	88.70	93.60	4.90	918.44	16.40	110.00	112.10	2.10	899.9	12.07	10.01	128.87	
S353	395313.0	7338175.0	1009.2				61.80	61.80	63.40	1.60	11.90	75.30	80.00	4.70	929.20	16.00	96.00	97.60	1.60	911.6	10.68	9.66	109.00	
S354	389053.0	7336961.0	997.6	39.00			53.40	24.40	26.00	1.60	12.25	38.25	41.90	3.65	955.72	11.50	53.40	55.20	1.80	942.4	6.99	6.09	61.00	A seam slightly weathered
S355	390421.0	7336942.0	1002.1	30.60			39.10	25.25	26.70	1.45	12.40	39.10	43.80	4.70	958.28	12.20	56.00	57.25	1.25	944.8	5.55	5.75	67.00	
S356	391365.0	7336927.0	1010.8				48.00					48.00	53.20	5.20	957.56	9.90	63.10	64.70	1.60	946.1	6.15	5.68	93.00	
S357	392758.0	7336929.0	1011.2																				70.00	Borehole Blocked
S358	393841.0	7336936.0	1010.0				74.00	60.40	62.20	1.80	11.80	74.00	78.50	4.50	931.50	17.10	95.60	97.45	1.85	912.6	10.96	9.56	103.00	

AVERAGE	27.39	6.63	33.82	46.60	49.04	50.65	1.61	12.48	50.24	54.95	4.71		15.92	72.00	73.70	1.70
MIN	15.40	2.80	16.64	20.20	19.40	20.30	0.90	9.50	14.70	16.80	1.40		6.24	26.00	27.80	0.39
MAX	45.00	16.57	73.15	105.80	105.80	107.00	2.20	15.16	120.10	124.30	6.24		25.80	150.10	152.00	2.80

* IB1 = A Sequence

MINERGY COAL (PTY) LTD. - MASAMA COAL PROJECT

APPENDIX 6
RAW COAL ANALYTICAL DATABASE FOR THEA SEAM WITHIN THE FOCUS AREA
01 NOVEMBER 2016

BH ID	UTM 35S WGS			SAMPLE ID.	SEAM THICKN	RAW COAL							
	EASTING	NORTHING	ELEVATION			RAW COAL	LAB. R.D.	C.V. MJ/kg	ASH %	MOIST %	VOL %	F.C. %	SULF %
MW01	390386.5	7336956.4	1006.3	MW01 - D+C+B	5.00	R.C.	1.51	22.78	20.9	4.6	26.1	48.3	2.63
MW02	392726.1	7338195.3	1019.8	MW02 - D+C+B	4.71	R.C.	1.48	23.19	18.6	5.5	25.1	50.8	2.83
MW03	391336.9	7340666.6	1032.2	MW03 - D+C+B	4.48	R.C.	1.49	22.58	19.1	5.3	24.7	50.8	1.91
MW04	392233.0	7342679.6	1040.6	MW04 - D+C+B	6.24	R.C.	1.60	19.24	28.4	4.7	23.2	43.7	2.30
MW05r	387762.9	7339406.9	1028.3	MW05R - D+C+B	4.93	R.C.	1.48	22.95	17.8	5.7	26.9	49.5	2.55
MW06	387745.3	7341898.5	1039.0	MW06 - D+C+B	5.13	R.C.	1.50	22.16	20.3	5.5	25.3	49.0	2.02
MW07	385273.2	7338480.1	1023.4	MW07 - D+C+B	5.93	R.C.	1.54	21.18	23.5	5.3	24.6	46.7	2.74
MW08	387341.5	7336282.5	1021.3	MW08 - D+C+B	4.93	R.C.	1.56	21.18	25.1	4.0	23.9	47.1	1.83
MW09	384457.3	7341231.5	1042.5	E Seam Only		R.C.							
MW10	391999.0	7334988.4	1007.1	No Coal Borehole		R.C.							
MW11	382158.5	7341439.9	1043.4	E Seam Only		R.C.							
MW12	382372.9	7338832.2	1025.4	MW12 - E+D+C+B	5.57	R.C.	1.52	21.65	17.2	5.2	24.9	48.2	2.60
MW13	379503.5	7340213.6	1037.7	MW13 - D+C+B	4.91	R.C.	1.60	18.82	28.3	5.3	22.9	43.5	0.84
MW14	394747.9	7336666.3	1008.0	Abandond		R.C.							
MW15	376444.1	7340452.5	1040.0	MW15 - D+C+B	6.24	R.C.	1.62	17.80	30.4	5.0	22.8	41.8	1.79
MW16r	387409.7	7339047.0	1021.9	MW16r/A Seam/4+3+2+1	4.86	R.C.	1.48	22.31	18.6	6.5	25.2	49.7	0.78
MW17	387058.8	7339412.0	1023.9	MW17/A Seam/4+3+2+1	4.72	R.C.	1.47	22.81	18.3	6.4	24.9	50.3	
MW18	387060.1	7338701.8	1015.8	MW18/A Seam/4+3+2+1	4.55	R.C.	1.48	22.73	19.0	6.4	25.3	49.3	1.12
MW19	382861.7	7338707.4	1020.9	MW19/A Seam/4+3+2+1	5.48	R.C.	1.48	22.13	18.9	6.7	23.9	50.5	0.56
MW20	383219.5	7339118.2	1020.4	No Coal Borehole		R.C.							
MW21	386709.0	7339053.3	1020.9	No Coal Borehole		R.C.							
MW22	387412.6	7339757.0	1026.2	MW22/A Seam/4+3+2+1	4.45	R.C.	1.55	22.29	19.3	6.8	24.9	48.9	2.15
MW23	382370.9	7339332.8	1028.0	No Coal Borehole		R.C.							
MW24	381961.5	7339112.4	1029.3	MW24/A Seam/4+3+2+1	5.39	R.C.	1.56	21.24	20.9	7.6	23.5	48.0	1.39
MW25	382110.3	7339765.8	1030.9	MW25/A Seam/4+3+2+2	5.26	R.C.	1.57	21.22	21.1	7.2	24.2	47.5	1.97
S31	385561.7	7342674.3	1038.2	S31/A SEAM/4-7	4.56	R.C.	1.49	22.00	18.9	7.1	23.2	50.9	1.30
S112	393939.4	7343248.5	1037.4	S112/A SEAM/1+3 (Sample 2 not available)	3.70	R.C.	1.45	23.43	15.0	7.6	22.6	54.8	0.89
S113	393854.2	7340702.5	1023.7	No Coal Borehole		R.C.							
S120	391347.8	7343239.4	1039.2	S120/A SEAM/2 (Incomplete sampling)	4.77	R.C.	1.60	21.33	22.9	5.5	22.9	48.7	1.38
S122	395279.9	7341934.4	1030.4	No data, No Qualities available		R.C.							
S124	393874.8	7342139.6	1033.4	No data, No Qualities available		R.C.							
S126	392735.1	7340665.5	1027.6	Only E Seam recorded		R.C.							
S128	390419.1	7339126.7	1021.7	Only E Seam recorded		R.C.							
S130	391369.4	7337729.5	1014.9	Only E Seam recorded		R.C.							
S131	394951.5	7337468.9	1009.5	No data, No Qualities available		R.C.							
S132	389092.4	7340642.8	1026.8	Only E Seam recorded		R.C.							
S135	389118.9	7343222.3	1036.1	Only E Seam recorded		R.C.							
S140	395280.6	7343248.1	1032.7	No data, No Qualities available		R.C.							
S142	395286.7	7339738.0	1018.0	No data, No Qualities available		R.C.							
S281	382782.1	7343131.0	1048.0	No Qualities available		R.C.							
S282	383994.9	7343128.0	1047.3	No Qualities available		R.C.							
S289	392721.2	7343209.0	1039.8	No Qualities available		R.C.							
S297	381554.0	7341858.0	1041.4	No Qualities available		R.C.							
S298	382792.0	7341881.0	1041.1	No Qualities available		R.C.							
S299	384041.0	7341878.0	1041.1	E Seam Only		R.C.							
S300	385305.0	7341922.0	1037.8	No Qualities available		R.C.							
S301	386549.0	7341868.0	1036.2	No Qualities available		R.C.							
S302	387803.0	7341921.0	1035.4	No Qualities available		R.C.							
S305	392008.2	7341943.0	1031.2	E Seam Only		R.C.							
S306	392741.1	7341936.0	1032.1	E Seam Only		R.C.							
S307	393886.9	7341893.0	1032.2	No Coal Borehole		R.C.							
S313	380295.0	7340626.0	1037.7	No Qualities available		R.C.							
S314	381549.0	7340634.0	1036.3	No Qualities available		R.C.							
S315	382803.0	7340616.0	1038.1	No Qualities available		R.C.							
S316	384020.0	7340644.0	1039.2	E Seam Only		R.C.							
S317	385290.0	7340647.0	1038.2	No Coal Borehole		R.C.							
S318	386559.0	7340657.0	1030.0	No Coal Borehole		R.C.							
S319	387818.0	7340667.0	1029.4	No Qualities available		R.C.							
S320	389170.0	7340646.0	1026.5	No Qualities available		R.C.							
S321	390403.0	7340663.0	1027.7	No Qualities available		R.C.							
S325	395278.4	7340703.0	1024.3	No Coal Borehole		R.C.							
S329	380295.0	7339376.0	1034.4	No Qualities available		R.C.							
S330	381552.0	7339384.0	1033.1	No Qualities available		R.C.							
S331	382787.0	7339397.0	1026.5	No Qualities available		R.C.							
S332	384019.0	7339384.0	1024.4	No Qualities available		R.C.							
S333	385288.0	7339384.0	1022.6	No Coal Borehole		R.C.							
S334	386568.0	7339415.0	1023.1	No Qualities available		R.C.							
S335	387817.0	7339411.0	1023.0	No Qualities available		R.C.							
S336	389055.0	7339414.0	1019.5	No Qualities available		R.C.							
S337	390402.0	7339421.0	1023.4	No Qualities available		R.C.							
S338	391356.0	7339444.0	1022.0	No Qualities available		R.C.							
S339	392749.0	7339449.0	1022.4	E Seam Only		R.C.							
S340	393853.4	7339461.0	1020.3	No Coal Borehole		R.C.							
S341	395298.1	7339451.0	1016.3	No Coal Borehole		R.C.							
S344	384041.0	7338129.0	1025.0	No Qualities available		R.C.							
S345	385278.0	7338132.0	1021.3	No Qualities available		R.C.							
S346	386563.0	7338154.0	1011.6	No Qualities available		R.C.							
S347	387836.0	7338183.0	1011.3	No Qualities available		R.C.							
S348	389049.0	7338220.0	1008.2	No Qualities available		R.C.							
S349	390416.0	7338141.0	1016.5	No Qualities available		R.C.							
S350	391361.0	7338202.0	1015.0	No Qualities available		R.C.							
S351	392759.0	7338169.0	1015.8	No Qualities available		R.C.							
S352	393842.0	7338179.0	1012.0	No Qualities available		R.C.							
S353	395313.0	7338175.0	1009.2	No Qualities available		R.C.							
S354	389053.0	7336961.0	997.6	No Qualities available		R.C.							
S355	390421.0	7336942.0	1002.1	No Qualities available		R.C.							
S356	391365.0	7336927.0	1010.8	No Qualities available		R.C.							
S357	392758.0	7336929.0	1011.2	Borehole blocked		R.C.							
S358	393841.0	7336936.0	1010.0	No Qualities available		R.C.							

WEIGHTED AVERAGES	**1.53**	**21.49**	**21.5**	**5.8**	**24.5**	**47.9**	**1.77**
MINIMUM	1.45	17.80	15.0	4.0	22.6	41.8	0.56
MAXIMUM	1.62	23.43	30.4	7.6	26.9	54.8	2.83

MINERGY COAL (PTY) LTD. - MASAMA COAL PROJECT

APPENDIX 6
RAW COAL ANALYTICAL DATABASE FOR THE E SEAM WITHIN THE FOCUS AREA 01 NOVEMBER 2016

BH ID	UTM 35S WGS			SAMPLE ID.	SEAM THICKN	RAW COAL							
	EASTING	NORTHING	ELEVATION			RAW COAL	LAB. R.D.	C.V. MJ/kg	ASH %	MOIST %	VOL %	F.C. %	SULF %
MW01	390386.5	7336956.4	1006.3	MW01 - A	1.28	R.C.	1.43	25.72	14.3	4.9	27.6	53.3	1.59
MW02	392726.1	7338195.3	1019.8	MW02 - A	1.99	R.C.	1.42	25.51	13.5	5.7	27.5	53.4	2.81
MW03	391336.9	7340666.6	1032.2	MW03 - A	1.67	R.C.	1.41	25.50	12.5	5.1	28.7	53.6	1.76
MW04	392233.0	7342679.6	1040.6	MW04 - A	1.64	R.C.	1.64	24.05	17.1	5.3	27.8	49.8	1.11
MW05r	387762.9	7339406.9	1028.3	MW05 - A	1.4	R.C.	1.41	25.43	12.6	6.3	27.7	53.5	1.18
MW06	387745.3	7341898.5	1039.0	MW06 - A	1.46	R.C.	1.90	16.60	40.3	4.0	21.5	34.3	0.72
MW07	385273.2	7338480.1	1023.4	MW07 - A	1.82	R.C.	1.68	18.52	35.3	4.1	22.3	38.3	1.77
MW08	387341.5	7336282.5	1021.3	MW08 - A	1.7	R.C.	1.60	21.00	28.1	4.0	23.6	44.3	1.65
MW09	384457.3	7341231.5	1042.5	MW09 - A_E Seam only	1.74	R.C.	1.78	15.15	43.2	3.3	23.6	29.9	2.01
MW10	391999.0	7334988.4	1007.1	No Coal Borehole		R.C.							
MW11	382158.5	7341439.9	1043.4	MW11 - A_E Seam only	1.74	R.C.	1.67	18.57	34.5	4.1	24.3	37.2	2.72
MW12	382372.9	7338832.2	1025.4	MW12 - A	2.01	R.C.	1.70	17.73	36.9	4.0	21.9	37.2	0.45
MW13	379503.5	7340213.6	1037.7	MW13 - A	0.39	R.C.	1.50	23.21	19.8	5.9	27.7	46.6	0.70
MW14	394747.9	7336666.3	1008.0	Abandoned		R.C.							
MW15	376444.1	7340452.5	1040.0	MW15 - A	0.66	R.C.	1.46	23.52	17.1	6.1	25.9	50.9	1.50
MW16r	387409.7	7339047.0	1021.9	Borehole terminated above E Seam		R.C.							
MW17	387058.8	7339412.0	1023.9	Borehole terminated above E Seam		R.C.							
MW18	387060.1	7338701.8	1015.8	Borehole terminated above E Seam		R.C.							
MW19	382861.7	7338707.4	1020.9	Borehole terminated above E Seam		R.C.							
MW20	383219.5	7339118.2	1020.4	Borehole terminated above E Seam		R.C.							
MW21	386709.0	7339053.3	1020.9	Borehole terminated above E Seam		R.C.							
MW22	387412.6	7339757.0	1026.2	Borehole terminated above E Seam		R.C.							
MW23	382370.9	7339332.8	1028.0	Borehole terminated above E Seam		R.C.							
MW24	381961.5	7339112.4	1029.3	Borehole terminated above E Seam		R.C.							
MW25	382110.3	7339765.8	1030.9	Borehole terminated above E Seam		R.C.							
S31	385561.7	7342674.3	1038.2	No Qualities available	1.68	R.C.							
S112	393939.4	7343248.5	1037.4	S112/E SEAM/4	1.44	R.C.	1.44	24.40	15.9	6.5	25.6	52.0	2.44
S113	393854.2	7340702.5	1023.7	No Coal Borehole		R.C.							
S120	391347.8	7343239.4	1039.2	S120/E SEAM/1	1.90	R.C.	1.44	25.58	12.5	4.9	27.6	55.0	1.18
S122	395279.9	7341934.4	1030.4	No data, No Geophysics available		R.C.							
S124	393874.8	7342139.6	1033.4	No data, No Geophysics available		R.C.							
S126	392735.1	7340665.5	1027.6	Raw Coal only extracted from Coffey Report	1.83	R.C.	1.37	26.05	11.09	6.0	27.64	49.6	1.54
S128	390419.1	7339126.7	1021.7	Raw Coal only extracted from Coffey Report	1.51	R.C.	1.40	26.95	11.50	5.0	28.3	50.5	1.51
S130	391369.4	7337729.5	1014.9	Raw Coal only extracted from Coffey Report	1.77	R.C.	1.51	23.39	18.14	6.0	29.7	40.5	2.41
S132	389092.4	7340642.8	1026.8	Raw Coal only extracted from Coffey Report	1.22	R.C.	1.68	21.98	20.77	6.0	32.3	35.3	0.91
S135	389118.9	7343222.3	1036.1	Raw Coal only extracted from Coffey Report	2.11	R.C.	1.58	22.11	22.28	6.0	28.8	37.3	2.61
S140	395280.6	7343248.1	1032.7	No data, No Geophysics available		R.C.							
S142	395286.7	7339738.0	1018.0	No data, No Geophysics available		R.C.							
S281	382782.1	7343131.0	1048.0	No Qualities available	1.90	R.C.							
S282	383994.9	7343128.0	1047.3	Raw Coal only extracted from Coffey Report	2.40	R.C.	1.57	18.88	30.4	6.0	25.7	32.34	1.48
S289	392721.2	7343209.0	1039.8	No Qualities available	1.60	R.C.							
S297	381554.0	7341858.0	1041.4	Raw Coal only extracted from Coffey Report	1.50	R.C.	1.51	22.94	20.1	5.0	25.1	45.0	
S298	382792.0	7341881.0	1041.1	Raw Coal only extracted from Coffey Report	2.00	R.C.	1.63	18.69	30.7	5.0	23.9	35.7	
S299	384041.0	7341878.0	1041.1	Raw Coal only extracted from Coffey Report	1.50	R.C.	1.55	22.33	21.7	5.0	23.2	45.4	
S300	385305.0	7341922.0	1037.8	No Qualities available	1.75	R.C.							
S301	386549.0	7341868.0	1036.2	No Qualities available	1.80	R.C.							
S302	387803.0	7341921.0	1035.4	Raw Coal only extracted from Coffey Report	1.70	R.C.	1.66	17.27	36.8	5.0	23.5	30.0	0.46
S305	392008.2	7341943.0	1031.2	Raw Coal only extracted from Coffey Report	1.56	R.C.	1.43	24.65	16.5	5.0	26.2	47.5	1.28
S306	392741.1	7341936.0	1032.1	Raw Coal only extracted from Coffey Report	1.50	R.C.	1.40	26.60	11.1	5.0	27.0	52.2	
S307	393886.9	7341893.0	1032.2	No Coal Borehole		R.C.							
S313	380295.0	7340626.0	1037.7	Raw Coal only extracted from Coffey Report	1.90	R.C.	1.47	24.28	16.8	5.0	26.1	47.3	
S314	381549.0	7340634.0	1036.3	Raw Coal only extracted from Coffey Report	2.15	R.C.	1.64	16.77	37.7	5.0	20.6	31.9	2.39
S315	382803.0	7340616.0	1038.1	No Qualities available	1.60	R.C.							
S316	384020.0	7340644.0	1039.2	Raw Coal only extracted from Coffey Report	1.40	R.C.	1.58	20.70	25.8	5.0	23.7	40.9	
S317	385290.0	7340647.0	1038.2	No Coal Borehole		R.C.							
S318	386559.0	7340657.0	1030.0	No Coal Borehole	1.80	R.C.							
S319	387818.0	7340667.0	1029.4	Raw Coal only extracted from Coffey Report	1.30	R.C.	1.43	25.50	13.9	5.0	27.6	48.8	
S320	389170.0	7340646.0	1026.5	No Qualities available	1.55	R.C.							
S321	390403.0	7340663.0	1027.7	Raw Coal only extracted from Coffey Report	1.75	R.C.	1.46	24.33	17.6	5.0	27.8	44.8	0.55
S325	395278.4	7340703.0	1024.3	No Coal Borehole		R.C.							
S329	380295.0	7339376.0	1034.4	Raw Coal only extracted from Coffey Report	1.15	R.C.	1.49	21.64	23.9	5.0	27.3	39.1	1.50
S330	381552.0	7339384.0	1033.1	Raw Coal only extracted from Coffey Report	1.40	R.C.	1.50	23.51	18.7	5.0	25.0	46.6	
S331	382787.0	7339397.0	1026.5	Raw Coal only extracted from Coffey Report	1.80	R.C.	1.49	22.52	21.0	7.0	25.4	40.1	3.03
S332	384019.0	7339384.0	1024.4	Raw Coal only extracted from Coffey Report	2.80	R.C.	1.59	19.74	30.7	6.0	22.4	35.3	
S333	385288.0	7339384.0	1022.6	No Coal Borehole		R.C.							
S334	386568.0	7339415.0	1023.1	Raw Coal only extracted from Coffey Report	2.00	R.C.	1.50	23.07	19.1	6.0	25.5	43.8	
S335	387817.0	7339411.0	1023.0	Raw Coal only extracted from Coffey Report	1.60	R.C.	1.48	23.41	16.6	6.0	24.5	47.2	1.55
S336	389055.0	7339414.0	1019.5	Raw Coal only extracted from Coffey Report	1.80	R.C.	1.50	22.97	19.3	6.0	25.9	42.3	
S337	390402.0	7339421.0	1023.4	Raw Coal only extracted from Coffey Report	1.80	R.C.	1.38	26.48	9.8	7.0	27.3	49.5	
S338	391356.0	7339444.0	1022.0	Raw Coal only extracted from Coffey Report	1.75	R.C.	1.39	25.99	13.4	7.0	28.0	45.1	1.00
S339	392749.0	7339449.0	1022.4	Raw Coal only extracted from Coffey Report	1.90	R.C.	1.44	25.18	12.9	7.0	24.9	49.6	
S340	393853.4	7339461.0	1020.3	No Coal Borehole		R.C.							
S341	395298.1	7339451.0	1016.3	No Coal Borehole		R.C.							
S344	384041.0	7338129.0	1025.0	No Qualities available	2.60	R.C.							
S345	385278.0	7338132.0	1021.3	Raw Coal only extracted from Coffey Report	2.40	R.C.	1.58	19.95	26.8	6.0	23.8	36.9	
S346	386563.0	7338154.0	1011.6	Raw Coal only extracted from Coffey Report	1.50	R.C.	1.59	19.59	26.9	7.0	28.6	31.0	1.50
S347	387836.0	7338183.0	1011.3	Qualities incomplete no other available	1.60	R.C.	1.42		11.8				
S348	389049.0	7338220.0	1008.2	Raw Coal only extracted from Coffey Report	1.45	R.C.	1.44	24.85	14.0	7.0	26.4	46.1	2.55
S349	390416.0	7338141.0	1016.5	Raw Coal only extracted from Coffey Report	1.75	R.C.	1.38	26.52	9.7	7.0	27.3	49.6	
S350	391361.0	7338202.0	1015.0	Raw Coal only extracted from Coffey Report	1.60	R.C.	1.38	25.52	12.2	7.0	28.2	46.1	0.82
S351	392759.0	7338169.0	1015.8	Raw Coal only extracted from Coffey Report	2.10	R.C.	1.51	23.20	17.9	7.0	23.2	45.5	
S352	393842.0	7338179.0	1012.0	Raw Coal only extracted from Coffey Report	2.10	R.C.	1.37	25.76	12.3	7.0	26.0	48.2	0.91
S353	395313.0	7338175.0	1009.2	Raw Coal only extracted from Coffey Report	1.60	R.C.	1.46	25.11	13.9	7.0	26.1	46.5	2.86
S354	389053.0	7336961.0	997.6	Raw Coal only extracted from Coffey Report	1.80	R.C.	1.42	25.56	12.1	7.0	26.0	48.5	
S355	390421.0	7336942.0	1002.1	Raw Coal only extracted from Coffey Report	1.25	R.C.	1.41	25.69	12.4	7.0	27.3	46.9	0.54
S356	391365.0	7336927.0	1010.8	Raw Coal only extracted from Coffey Report	1.60	R.C.	1.38	26.57	9.6	7.0	27.7	49.2	
S357	392758.0	7336929.0	1011.2	Borehole blocked		R.C.							
S358	393841.0	7336936.0	1010.0	Raw Coal only extracted from Coffey Report	1.85	R.C.	1.48	23.69	16.7	7.0	24.7	45.2	

WEIGHTED AVERAGES	1.70		**1.51**	**22.49**	**20.3**	**5.6**	**25.4**	**43.1**	**1.04**
MINIMUM	0.39		1.37	15.15	9.58	3.30	20.62	29.90	0.45
MAXIMUM	2.80		1.90	26.95	43.20	7.00	32.34	55.00	3.03

Logistics Report

Wireline Logging Survey

For

Barkarama (Pty) Ltd

Masama Project Area

Botswana

Prospecting Licence 278/2012

January 2013

Poseidon Geophysics

Logistics Report

Wireline Logging

Masama Project Area

For

Barkarama

INTRODUCTION

The logistics report gives an account of the wireline logging which was completed by Poseidon Geophysics (Pty) Ltd for Barkarama (Pty) Ltd within prospecting licence 278/2012 called the Masama Project Area.

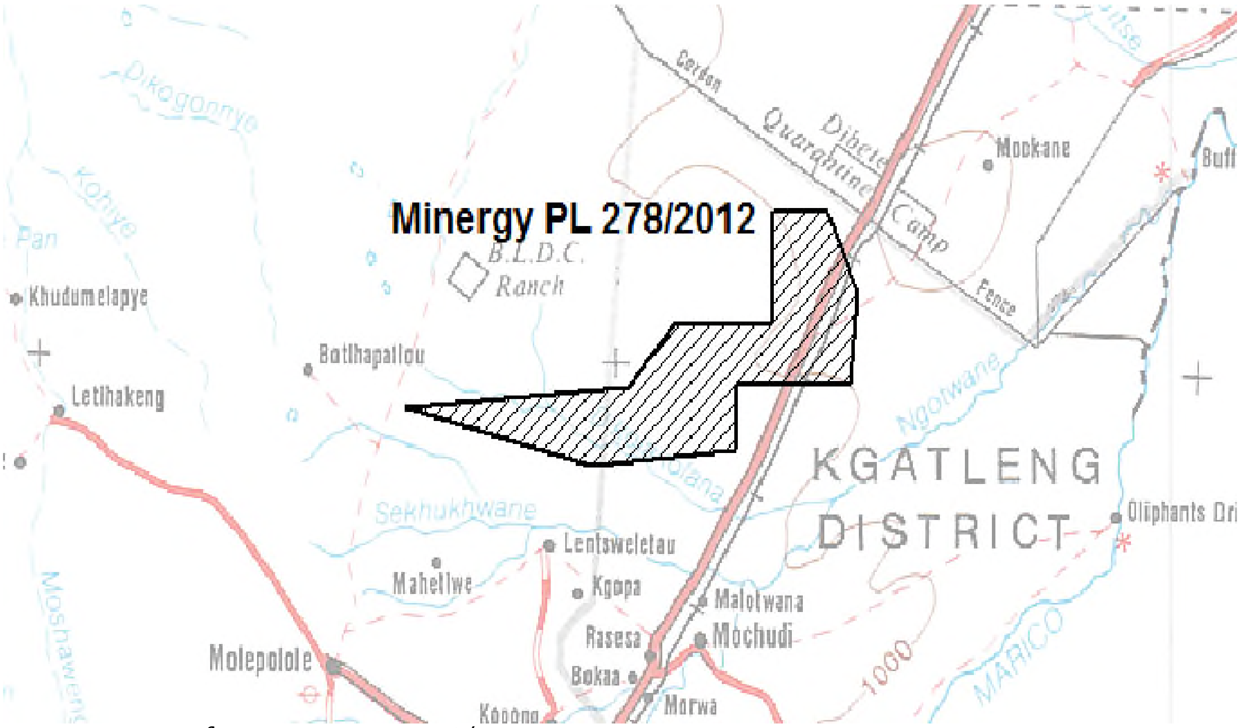

Figure 1: Location of Prospecting Licence 278/2012

Poseidon Geophysics (Pty) Ltd was contracted to undertake wireline logging of boreholes, drilled within the above Prospecting Licence areas. To this end Poseidon provided an Auslog logging unit comprising of a DLS5, 600m single conductor winch, dual density and deviation tools. Only MW 01 and MW 02 were logged with the deviation tool.

Drilling was completed using coring rigs owned and operated by Diabor from South Africa. A total of eighteen boreholes, comprising of some 1 920.7 logged metres, were logged between the 26th

October and 15th December 2012 within this licence area. Fieldwork was completed on a call-out basis from Gaborone.

SURVEY PERSONNEL

The following Poseidon Geophysics crew carried out the survey with the help of one locally hired labourer;

Table 1 : Survey Personnel

NAME	*POSITION*	*DUTIES*
Bill McLellan	Manager	Client Liaison, Reporting, Quality Control
Morris Nyamandi	Geophysicist	Wireline Data Acquisition and Processing
Duncan Sejoe	Technician	Wireline Data Acquisition
Theo Leesemane	Technician	Wireline Data Acquisition

The project diary which lists the boreholes logged and the logging dates is tabulated in Appendix I.

SURVEY EQUIPMENT, METHODOLOGY AND DATA PROCESSING

The wireline logging was undertaken using an Auslog Logging System, the specifications for the instruments are appended to this report as Appendix II. Only five parameters were recorded, namely natural gamma, single-arm and three-arm calliper, long and short spaced density in all the holes. MW 01, MW 02 were surveyed as well with the deviation tool to determine the orientation of these holes and the deviation with depth.

The sondes were calibrated prior to and upon completion of the project. On site daily checks were made of the equipment to ensure that the operation was within manufacturer's specification.

The Auslog system collects data directly from the winch using Windows based programmes called WellVision and AusWin. The sonde parameters are set within the software and thus all the shifts for the instrument offsets are completed automatically. Plotting of the data was completed using WellCAD, as per the geologists' requirements. Final plots of the data at 1:20 scale were produced on site to assist the geologists in their core logging. Two sets of logs were produced, one for the consultant's representative, the other for the client's representative.

Accompanying this report are the digital archives of the logs in WellCAD and LAS format, On the CD-ROM is the WellCAD reader software which makes it possible to review these logs, change scales and layouts by the user, if so required.

Respectfully submitted,

14th January 2013

William H. McLellan
Managing Director

For

Poseidon Geophysics (Pty) Ltd
Private Bag X018
The Village
Gaborone

APPENDIX I – SURVEY DIARY

Date	Activity	Borehole Identity	Logged Depth (m)	Tools Logged
26-Oct-12	Logging	MW01	69.4	Deviation, Dual Density
		MW02	128.2	
10-Nov-12	Logging	MW03	90.6	Dual Density
		MW04	84.7	
		MW05	48.7	
19-Nov-12	Logging	MW05R	72.5	Dual Density
		MW06	116.8	
		MW07	69.4	
24-Nov-12	Logging	MW08	99.5	Dual Density
		MW09	68.9	
		MW07R	69.5	
4-Dec-12	Logging	MC 01	126.7	Dual Density
		MW 11	63.8	
		MW 12	68.4	
10-Dec-12	Logging	MW 13	62.5	Dual Density - Depth Counter Inaccurate - Re-log Required
		MC 02	155.7	
12-Dec-12	Logging	MW 13	62.5	Dual Density
		MW 15	93.0	
13-Dec-12	Logging	MC 02	155.7	Dual Density
		MC 03	118.1	
15-Dec-12	Logging	MC04	96.4	Dual Density
	Total		***1920.7***	

APPENDIX II – INSTRUMENT SPECIFICATIONS

Auslog Logging System

WellCAD Software

Logistics Report

Wireline Logging Survey

For

Barkarama (Pty) Ltd

Masama Project Area

Botswana

Prospecting Licence 278/2012

May 2016

Poseidon Geophysics

Logistics Report

Wireline Logging

Masama Project Area

For

Barkarama

INTRODUCTION

The logistics report gives an account of the wireline logging which was completed by Poseidon Geophysics (Pty) Ltd for Barkarama (Pty) Ltd within prospecting licence 278/2012 called the Masama Project Area.

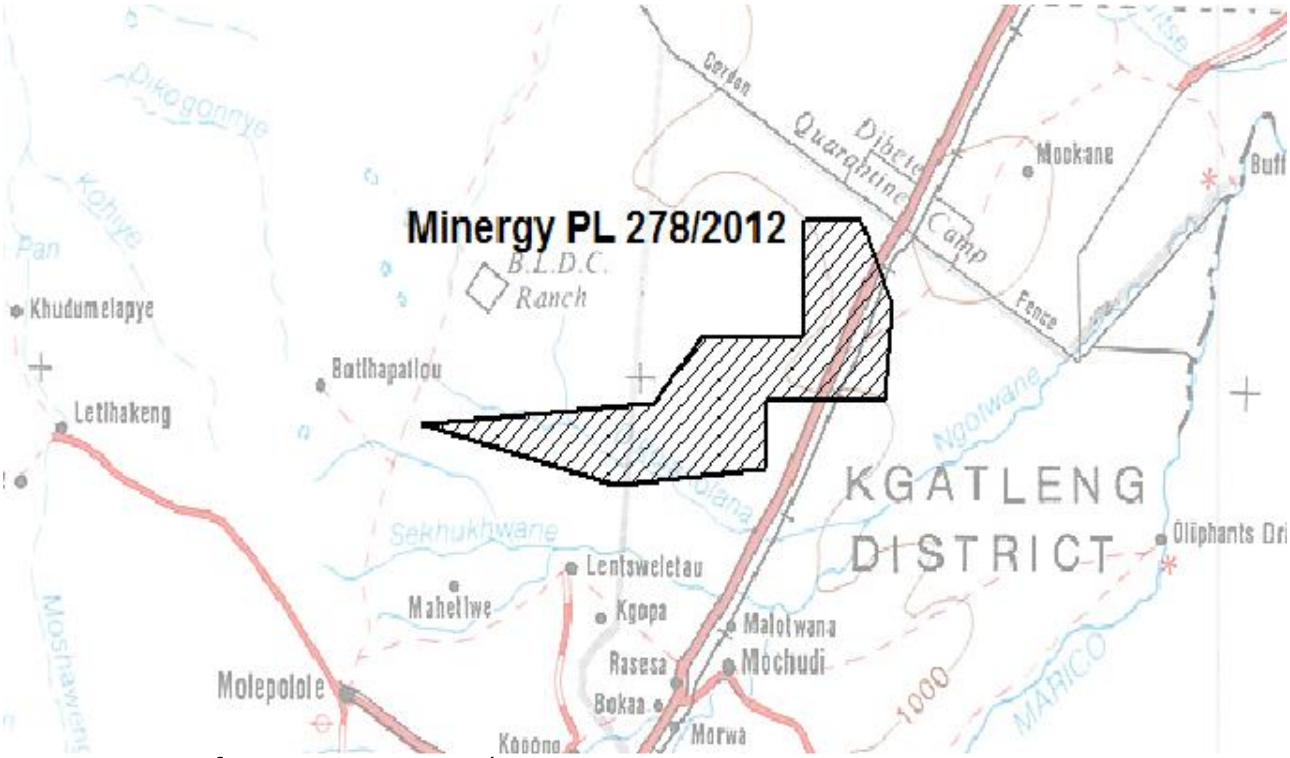

Figure 1: Location of Prospecting Licence 278/2012

Poseidon Geophysics (Pty) Ltd was contracted to undertake wireline logging of boreholes, drilled within the above Prospecting Licence areas. To this end Poseidon provided an Auslog logging unit comprising of a DLS5, 600m single conductor winch and a dual density and tool.

Drilling was completed using coring rigs owned and operated by Diabor from South Africa. A total of nine boreholes, comprising of some 300.27 logged metres, were logged on the 29th April and 7th May 2016 within this licence area. Fieldwork was completed on a call-out basis from Gaborone.

SURVEY PERSONNEL

The following Poseidon Geophysics crew carried out the survey;

Table 1 : Survey Personnel

NAME	*POSITION*	*DUTIES*
Bill McLellan	Manager	Client Liaison, Reporting, Quality Control
Irikidzai Sigauke	Senior Geophysicist	Wireline Data Acquisition and Processing
Nliki Buchena	Geophysicist	Wireline Data Acquisition

The project diary which lists the boreholes logged and the logging dates is tabulated in Appendix I.

SURVEY EQUIPMENT, METHODOLOGY AND DATA PROCESSING

The wireline logging was undertaken using an Auslog Logging System, the specifications for the instruments are appended to this report as Appendix II. Only four parameters were recorded, namely natural gamma, single-arm, long and short spaced density in all the holes. The sonde was calibrated prior to and upon completion of the project.

The Auslog system collects data directly from the winch using Windows based programmes called WellVision and AusWin. The sonde parameters are set within the software and thus all the shifts for the instrument offsets are completed automatically. Plotting of the data was completed using WellCAD, as per the geologists' requirements. Final plots of the data at 1:100 scale were produced for each hole. Holes where coal was intersected, additional plots at a scale of 1:50 were produced.

Accompanying this report are the digital archives of the logs in WellCAD and LAS format, On the CD-ROM is the WellCAD reader software which makes it possible to review these logs, change scales and layouts by the user, if so required.

Respectfully submitted,

11 May 2016

William H. McLellan
Managing Director

For

Poseidon Geophysics (Pty) Ltd
Private Bag X018
The Village
Gaborone

APPENDIX I – SURVEY DIARY

Date	*Borehole ID*	*Drilled Depth*	*Logged Depth*
29-Apr-16	MW16	34.61	34.45
29-Apr-16	MW16 Re-drill	37.60	36.90
29-Apr-16	MW17	34.59	34.35
29-Apr-16	MW18	31.46	31.40
29-Apr-16	MW19	37.50	37.30
7-May-16	MW20	25.59	25.65
7-May-16	MW21	31.41	31.35
7-May-16	MW22	34.49	34.45
7-May-16	MW23	34.54	34.42
	Total	***301.79***	***300.27***

APPENDIX II – INSTRUMENT SPECIFICATIONS

Auslog Logging System

W600-1 Winch

DLS5 Logging System

A605 Dual Density, Single Arm Calliper, Natural Gamma

WellCAD Software