

## Power Generation and Coal Export Project Developments

**Investor Presentation August 2018** 



## AFR is developing two principal businesses



# **1.** Power Generation

- SESE JV with First Quantum Minerals Ltd
  - Unit 1 is 225MW (gross) = 188MW net sales
  - Power sales to FQM (Zambia) = 100MW
  - Power sales to third parties = 88MW
  - Low cost, low emission, reliable power
  - Can sell power at competitive tariff
  - Good return on equity at this tariff
  - Subsequent Units have higher ROE
  - EIA recently upgraded to 500MW
  - Approved Mining Licence
  - Almost fully permitted
  - RAP (relocation) in progress.
- MMC Mmamantswe Coal and Power Project
  - Up to 600MW for sale to South Africa
  - Conditional sale to South African developer
  - 25km from border with South Africa

# 2. Coal Exports

### **MMBW** • High-quality thermal coal

- Increasing global coal prices
- Upgrade to measured resource in Q3
- 2015 Prefeasibility study on export mine
- Coal specs developed for power stations
- Major market emerging in South Africa
- Can produce Eskom quality coal
- Can produce Richards Bay export coal
- EIA submitted for mine and power station
- Land rights application submitted
- Seeking South African project partner



**Business development over the next 6 months** 



# Sese JV

- Finalise negotiations for:
  - > PPA for 100MW sold to FQM,
  - > MOU and Draft PPA to sell 88MW balance
  - Use of system charges and
  - Wheeling costs (ie costs to transmit the power through third party countries such as Zimbabwe)
- Commence financing process
- Finalise Generation and Export Licence, which is the only outstanding major permit required
- > Complete Resettlement Action Plan (RAP)

# **Mmamabula West**

- Upgrade portion of resource to Measured category
- > Commence marketing for coal exports
- > Secure South African project partner
- Finalise EIA and Land Rights approvals
- Finalise Mining Licence application

### **Regional power supply-demand trends**



- Zambia (2,734MW) and Botswana (489MW) are the key markets relevant to Sese JV. Both markets have steadily growing demand as more of the population is connected to grid power.
- Over 80% of installed generation in Zambia is hydro-electric which is not always available due to seasonal rainfall variation – Zambia has been a net importer for some years now
- Current Botswana demand can only be met by importing from Eskom AND running expensive diesel emergency units (see graph)
- Botswana will run at deficit for years to come due to Morupule-A not yet fully refurbished and Solar+Storage not yet even awarded, so well behind schedule
- Eskom has been selling its net surplus in last few years to Zambia, Botswana, and Namibia, forming a barrier to entry for new energy projects
- Eskom' surplus is fragile: as shown by recent load shedding in Botswana, Zambia and South Africa (see Appendix 1)

UTILITY	OPERATING CAPACITY (MW)	PEAK DEMAND (MW)	PEAK PLUS RESERVE MARGIN (MW)	BALANCE (MW)
ESKOM	48,463	38,897	44,732	+3,731
ZESCO	2,734	2,194	2,523	+211
BPC	489	610	702	-243

Capacity vs demand for key utilities (SAPP published data 2017)



BPC Forecast supply and demand (BPC Annual Report 2017)

## Key drivers supporting Sese development



### **1. TARIFF INCREASES ARE INEVITABLE**

- Current tariffs to residential and industrial users are not cost reflective, and must increase to make the utilities financially independent from government bail-outs
- Eskom tariff likely to escalate very rapidly over next three years and continue to rise (see Appendix 2), potentially doubling by 2025
- Major cost of supply review underway in Zambia, likely to see significant increase announced later this year
- Sese is able to supply at competitive tariff to utilities and still generate an attractive return on equity

### 2. ESKOM SURPLUS IS UNSUSTAINABLE

- Eskom surplus is fragile and under pressure from rising coal costs, underinvestment in infrastructure and likely closure of older plants (Appendix 1)
- Recent strike action caused widespread load shedding in southern Africa as unions resist power station and coal mine closures
- Any increase in domestic demand would rapidly wipe out the surplus

Country	Current Tariff US c/kWh
Botswana	8.5
Zambia	9.3
South Africa	7.0
Zimbabwe	7.8
Namibia	11.3



### BPC Annual Report 2017

## Sese JV: project update



- Approved 25-year Mining Licence covering 51km<sup>2</sup> which contains enough coal to fuel multiple 450MW power projects
- Approved Manufacturing Development Approval Order sets fiscal regime for the power project
- Approved Environmental permits to allow up to 500MW of power generation and associated coal mining
- Approved water allocation from Shashe Dam and fully executed 30-year Water Supply Agreement
- Approved 50-year Land Lease Agreement covering 110km<sup>2</sup>
- Resettlement Action Plan nearing completion with 25 of 28 households resettled.
- Power Sales Agreement between Sese JV and FQM's copper operations in Zambia at final draft stage
- ✓ Financial modelling shows robust return on equity for power sales at under US 10c per kWh
- ✓ AFR's equity contribution will be loan carried by FQM



### **Sese JV Project Business Plan**





- Sese can provide reliable supply and very competitive power prices to meet the market opportunities highlighted in previous slides
- Sese is being developed by majority owner FQM, primarily to provide reliable and affordable power to its copper operations in Zambia
- > 100MW to be be imported into Zambia
- This will leave 88MW available for purchase in Botswana for BPC, local customers or export
- Negotiations required to finalise the following:
  - Commercial aspects of importing power into Zambia
  - Offtake arrangements for the 88MW balance of supply available in Botswana
  - Finance options for funding the construction of the project
- Negotiating teams ready to finalise scope and set parameter limits for these discussions

## **Coal exports: 12 months of energy price gains**





Steady increase in global coal prices in three key markets: Australia (NEWC), South Africa (RB) and Europe (DES ARA)



Coal price increases have generally matched the steady increase in global oil and gas prices

## **Coal export market opportunities**



- Increased prices for coal exported from Richards Bay in RSA (see previous slide)
- Flow through impact on domestic sales price of coal in South Africa
- Eskom increasingly reliant on numerous small scale (inefficient) mines in South Africa, where costs are rising
- Coal prices to Eskom rapidly increasing due to these pressures
- Eskom will be forced to increase tariffs if local coal prices it pays continue to rise
- Opportunity for new, efficient mines in Botswana to replace high marginal cost mines in South Africa
- AFR's Mmamabula West coal project is close to rail infrastructure providing access to Eskom's power stations in Witbank and Waterberg areas



Existing and proposed rail routes linking Botswana and Eskom's power stations near Grootegeluk (Waterberg) and in the Witbank area (red ellipse)

# Mmamabula West: export quality thermal coal







### **Mmamabula West project summary**



- Significant resources of exportable coal within the overall 2,443Mt Indicated and Inferred resource (refer Appendix 3)
- 65km from rail with direct access to South African markets, including Eskom power stations
- Prefeasibility Study published in May 2015 for a conventional 4.4 Mtpa underground coal mine and associated coal export infrastructure
- Initial capital cost of US \$113M
- Can produce Eskom quality coal for US \$15/t at the mine gate + \$8/t road haulage = \$23/t loaded onto train linked to South African markets
- Can produce seaborne export coal for US \$25/t at the mine gate + \$8/t road haulage = \$33/t loaded onto train
- > EIA and Land Rights applications submitted
- Environmental baseline studies for surface and ground water ongoing for last three years



20-year Life of Mine mining schedule for proposed 4.4 Mtpa conventional underground coal mine on the lower A-Seam at Mmamabula West

### **Mmamabula West development plan**



- Upgrade ~70Mt portion of the Indicated resource to Measured Resource to underpin bankable feasibility study
- Pursue EIA and Land Rights applications
- Apply for Mining Licence once EIA and Land Rights approved
- AFR seeking to market MMBW coal to South African markets, including Eskom
- Eskom's policy is to only buy coal from black South African majority owned businesses (>50% BBBEE)
- AFR therefore seeking South African partner to take a majority position in the project to access coal sales opportunities to Eskom and other industrial users



### **Cautionary Statements**



This presentation has been prepared by and issued by African Energy Resources Limited ("African Energy") to assist it in informing interested parties about the Company and its progress. It should not be considered as an offer or invitation to subscribe for or purchase any securities in the Company or as an inducement to make an offer or invitation with respect to those securities. No agreement to subscribe for securities in the Company will be entered into on the basis of this presentation.

You should not act or refrain from acting in reliance on this presentation material. This overview of African Energy does not purport to be all inclusive or to contain all information which its recipients may require in order to make an informed assessment of the Company's prospects. You should conduct your own investigation and perform your own analysis in order to satisfy yourself as to the accuracy and completeness of the information, statements and opinions contained in this presentation and making any investment decision.

The Company has not verified the accuracy or completeness of the information, statements and opinions contained in this presentation. Accordingly, to the maximum extent permitted by law, the Company makes no representation and give no assurance, guarantee or warranty, express or implied, as to, and takes no responsibility and assume no liability for, the authenticity, validity, accuracy, suitability or completeness of, or any errors in or omission, from any information, statement or opinion contained in this presentation. The contents of this presentation are confidential.

This presentation includes certain "Forward- Looking Statements". The words "forecast", "estimate", "like", "anticipate", "project", "opinion", "should", "could", "may", "target" and other similar expressions are intended to identify forward looking statements. All statements, other than statements of historical fact, included herein, including without limitation, statements regarding forecast cash flows and potential mineralisation, resources and reserves, exploration results, future expansion plans and development objectives of African Energy Resources Limited are forward-looking statements that involve various risks and uncertainties. There can be no assurance that such statements will prove to be accurate and actual results and future events could differ materially from those anticipated in such statements.

The Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (the 'JORC Code') sets out minimum standards, recommendations and guidelines for Public Reporting in Australasia of Exploration Results, Mineral Resources and Ore Reserves. The information contained in this announcement has been presented in accordance with the JORC Code and references to "Measured Resources", "Inferred Resources" and "Indicated Resources" are to those terms as defined in the JORC Code.

Information in this report relating to Exploration results, Mineral Resources or Ore Reserves is based on information compiled by Dr Frazer Tabeart (an employee of African Energy Resources Limited) who is a member of The Australian Institute of Geoscientists. Dr Tabeart has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person under the 2012 Edition of the Australasian Code for reporting of Exploration Results, Mineral Resources and Ore Reserves. Dr Tabeart consents to the inclusion of the data in the form and context in which it appears.

## **Appendix 1: Eskom: the key regional utility**



### **Generation capacity risks**

- Coal supplies have moved away from tied supply to open market sourcing due to Eskom inability to recapitalise it's captive mines
- Eskom policy requires all coal supply to be from majority BEE (Black Economic Empowerment) owned mines
- Coal quality is decreasing and transport costs have escalated as more is transported by road (not rail)
- Coal supply is now more fragmented and more expensive, almost 50% of fleet now without long term supply contracts
- Over 50% of Eskom's fleet cannot meet emissions standard agreed at the Paris Convention, and is at risk of closure or output restriction
- R400 billion investment required for environmental compliance
- Eskom's planned plant closure program will be strongly opposed by unions, making industrial action likely (as seen recently, and which caused widespread load shedding)

### **Cost drivers**

- Cost of coal increasing (see previous comments)
- Eskom staffing levels have increased by 46% since 2007, but unions opposing any reductions
- Salary levels high, and recent industrial action led by unions seeking further increases
- > Budget shortfall of R72 billion by end of 2019
- Current debt of R368 billion (gearing ratio 72%)
- Liquid assets dropped to R9 billion in February, resulting in R20 billion rescue loan from public pension fund, due for repayment in August 2018
- Current debt obligations being serviced by new debt.
- New generation (Medupi, Kusile, renewables) is higher cost than older plants with sunk capital
- Current tariff no longer cost reflective of levelized cost of power to Eskom
- Govt has said it will not bail out Eskom, but few alternatives on the table
- Tariffs must increase to make Eskom sustainable

## **Appendix 2: Regional power tariff trends**



### South Africa

- Current tariff US ~7.0c per kWh (13R = 1USD)
- Eskom requested a 19.9% increase for 2018/19
- > NERSA approved 5.23% increase for 2018/19
- Eskom has taken the unprecedented step of taking NERSA to court as it is confident NERSA made several material errors in its deliberation
- Likely that courts will favour a higher increase than the 5.23% currently approved
- NERSA has approved a one off claw-back of R32.7 billion to account for changes in previous assumptions
- R32.7 billion recovery mechanism still under discussion, but could be recovered through additional tariff increases of 6% above the norm over the next three years
- Additional 8% per year tariff increase required until 2024 to cover the cost of Medupi and Kusile
- If fully implemented, these changes almost double the tariff by 2025

### Zambia

- Current tariff US 9.35c per kWh
- IMF/World Bank loans to Zambia linked to Zesco reform and financial sustainability
- Cost of Supply report due imminently
- Likely to recommend a higher tariff to ensure financial stability/sustainability of power in Zambia
- Significant tariff increase highly likely

### **Implications for Sese JV**

- Real power tariffs in the two largest markets set to increase significantly beyond current levels
- Sese can provide robust financial returns at <10c per kWh, and is therefore highly competitive
- Sese can provide lower cost power than the competition due to low input coal costs
- Sese has a competitive advantage due to low costs and stable fiscal/labour regime in Botswana

## **Appendix 3: Global Coal Resource Statement**



#### Global Coal Resources for AFR Limited Coal Projects in Botswana

Sese Coal & Power Project: Resource Summary (Raw coal on an air-dried basis), FQML 65%, AFR 35%								
Resource Zone	In-Situ Tonnes*	CV (MJ/kg)	CV (kcal/kg)	Ash %	IM%	VM%	FC%	S %
MEASURED (Block-C)	333 Mt	17.6	4,200	30.2	7.9	20.6	41.4	2.1
MEASURED (Block-B)	318 Mt	16.0	3,820	34.8	7.4	20.4	37.4	1.7
INDICATED	1,714 Mt	15.3	3,650	38.9	6.6	18.7	35.8	2.0
INFERRED	152 Mt	15.0	3,600	39.1	6.4	19.5	34.9	2.2
TOTAL	2.517 Mt			-				

Sese West Project: Resource Summary (Raw coal on an air-dried basis) FQML 65%, AFR 35%								
Resource Zone	In-Situ Tonnes*	CV (MJ/kg)	CV (kcal/kg)	Ash %	IM%	VM%	FC%	S %
INFERRED	2,501Mt	14.6	3,500	40.2	6.1	19.8	31.9	2.0
TOTAL	2,501Mt							

Mmamabula West Project: Resource Summary (Raw coal on an air-dried basis) AFR 100%								
Resource Zone	In-Situ Tonnes*	CV (MJ/kg)	CV (kcal/kg)	Ash %	IM%	VM%	FC%	S %
MEASURED	N/A							
INDICATED	892 Mt	20.2	4,825	25.5	6.0	26.0	41.0	1.5
INFERRED	1,541 Mt	20.0	4,775	25.5	5.7	25.9	41.2	1.7
TOTAL	2,433 Mt							

Mmamantswe Project: Resource Summary (Raw coal on an air-dried basis) AFR 100%								
Resource Zone	In-Situ Tonnes*	CV (MJ/kg)	CV (kcal/kg)	Ash %	IM%	VM%	FC%	S %
MEASURED	978 Mt	9.5	2,270	56.5	3.9	15.8	21.8	2.0
INDICATED	265 Mt	7.9	1,890	62.3	3.3	14.2	18.1	2.1
INFERRED	N/A							
TOTAL	1.243 Mt							

\* In-Situ tonnes have been derived by removing volumes for modelled intrusions, burnt coal and weathered coal and then applying geological loss factors to the remaining Gross In-Situ Tonnes

## **Appendix 4: Corporate Summary**



<b>Directors and Senior Management</b>						
Alasdair Cooke	<i>Executive Chairman</i> , >25 years experience in project development, mining and resource sector					
Frazer Tabeart	<i>Executive Director,</i> >25 years experience in international exploration and development projects,					
Bill Fry	<i>Executive Director,</i> >25 years experience in finance, funds management and commercial management					
Valentine Chitalu	<i>Non-executive Director,</i> >25 years experience in finance and funds management, based in Zambia					
lan Hume	<b>Non-executive Director,</b> >35 years experience in international finance, one of the founders of Sentient Group					
John Dean	<b>Non-executive Director,</b> Commercial Manager at First Quantum's Sentinel copper operation in Zambia					
David Walton	<b>Project Manager,</b> >30 years experience with power development, generation and power sales/marketing					
Daniel Davis	<b>Company Secretary and Financial Accountant,</b> >12 years experience in accounting and resource sector					

ASX Code	AFR
Shares on issue	623 million
Market Cap (@ \$0.024)	AUD \$15M
Cash (30 June 2018)	AUD \$3.1M
Debt	Nil
Major Shareholders	
The Sentient Group	22%
First Quantum Minerals	14%
Management	10%
Top 20 (in <mark>c</mark> ludes above)	65%