

# **An Independent Competent Persons' Report on the Material Coal Assets of Sentula Mining Limited**

Report Prepared for  
**Sentula Mining Limited**

Report Number 431395

March 2011

Report Prepared by



### **Explanatory Note**

This document has been written in accordance with the requirements of the International System of Units (SI Units) as applied in South Africa. The SI is the only system of units that is universally recognised, so that it has a distinct advantage in establishing a dialogue globally. Even so, some readers will be unfamiliar with the conventions of SI Units. For example, in this document, the comma is used as the decimal marker and the space is used for the thousands separator (for numbers larger than 9999).

In other words, 10 148, 32 denotes ten thousand one hundred and forty-eight point three two. The word ‘ton’ denotes a metric ton (1000 kg), unless otherwise stated. More information is at the website of the Bureau International des Poids et Mesures, BIPM, at [www.bipm.org](http://www.bipm.org). The website offers a comprehensive, 88 page guide to SI Units in pdf format.

In some instances, non SI units are included. For instance, base-metal prices are commonly quoted in US dollars per pound (USD/lb). In most such instances, the inclusion of the metric equivalent is deemed unnecessary.

### **Compliance**

This Competent Persons’ Report Complies with:

- The Section 12 Requirements of the JSE Limited (Annotated with the words JSE);
- The 2007 South African Code for Reporting of Mineral Resources and Mineral Reserves known as the SAMREC Code (“SAMREC”) Code (Annotated with the words SR); and
- The 2008 South African Mineral Asset Valuation Committee (“SAMVAL”) Code (Annotated with the words SV).

**COMPLIANCE CHECKLIST REFERENCING JSE LISTINGS REQUIREMENTS**

JSE 12.9(d)	Reference to Section 12 General / Exploration Companies	Report Section
	12.9 (a)	1.2
	12.9(b)	1.2
	12.9(c)	N/A
	12.9(d)	This Table and in the margin of this CPR and in the SAMREC and SAMVAL compliance tables which follow
	12.9(e)	1.1.2
	12.9(f)	14
	12.9(g)	The company has undertaken to publish the CPR on its website
	12.9(h)(i)	Executive Summary
	12.9(h)(ii)	Executive Summary
	12.9(h)(iii)	Executive Summary
	12.9(h)(iv)	Executive Summary
	12.9(h)(v)	Executive Summary
	12.9(h)(vi)	Executive Summary
	12.9(h)(vii)	Executive Summary
	12.9(h)(viii)	Executive Summary
	12.9(h)(ix)	Executive Summary
	12.9(h)(x)	Executive Summary
	12.9(h)(xi)	Executive Summary
	12.9(h)(xii)	Executive Summary

## **Executive Summary – Table of Contents (JSE 9(h))**

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# **An Independent Competent Persons' Report on the Material Assets of Sentula Mining Limited**

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**SRK Project Number 431395**

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## Executive Summary

### ES1 Purpose

JSE 12.9(h) (i)	SRK Consulting (South Africa) (Proprietary) Limited has been commissioned by Sentula Mining Limited (“Sentula Mining” or “the Company”) to compile an Independent Competent Persons’ Report (“CPR”) on the Material Assets of coal operations / projects and associated infrastructure located in South Africa, Botswana and Zambia: Material Assets are those assets that have a determinable value. These are as follows:
-	
SR T1.1, T1.2	<p><b>Production Property/Asset:</b></p> <ul style="list-style-type: none"> <li>• Nkomati Mine;</li> </ul> <p><b>Development Properties/Assets:</b></p> <ul style="list-style-type: none"> <li>• Bankfontein Project;</li> <li>• Mulungwa (Indongo) Project (Zambia) (25% interest);and</li> <li>• Schoongezicht Project.</li> </ul> <p><b>Exploration Property/Asset:</b></p> <ul style="list-style-type: none"> <li>• Asenjo Energy (Botswana) (25% interest).</li> </ul>
-	
SV T1.1, T1.2	

All of Sentula Mining’s assets are shown in Table ES1 and Figure ES1. Key information pertaining to the coal operations / projects is summarised in Table ES1.

Sentula Mining has re-evaluated its strategy for bringing certain assets into production which has resulted in a re-classification of the Development Assets since the last SRK report dated April 2009.

The company will be structured into three functional divisions as described in Figure ES1:

**Production Property/Asset:** these are assets that are currently in production;

**Development Properties/Assets:** these are assets that are being prepared for coal production and for which economic viability has been demonstrated; and

**Exploration Property/Asset:** these are assets that are being actively explored but for which economic viability has not been demonstrated.

This CPR evaluates only the Material Coal Assets.

Asenjo Energy is a joint venture between Jonah Coal and Aquila Resources while Jonah Coal is a joint venture between Jonah Capital and Sentula Mining (Figure ES2). Jonah Capital is a Pan African investment company focusing on mining, financial services and infrastructure industries. Sentula Mining is a JSE-listed company with a market capitalization of ZAR1 700 million specializing in open cast contract coal mining. Aquila Resources is an ASX-listed Australian company with a market capitalization of A\$3 182 million producing coal and with iron ore, manganese and coal exploration projects.

**Table ES1: Summary Table of Mining Properties**

Property	Mining Method	Status	Location	Licence		
				Type	Expiry Date	Area
Nkomati Mine	oc and ug	Operating	Komatipoort, South Africa	New Order Mining Right	29-Sep-20	10 000 ha
Bankfontein Project	oc and ug	Development	Ermelo, South Africa	New Order Mining Right	Application Pending	513 ha
Schoongezicht Project	oc	Development	Delmas, South Africa	New Order Mining Right	Application Pending	94,3 ha
Mabapa Project	oc and/or ug	Exploration Project	Messina, South Africa	Prospecting Right	08-Feb-11 (Renewal pending)	2300 ha
Goedvertrouwd Project	oc and/or ug	Exploration Project	Witbank, South Africa	Prospecting Right	02-Apr-11 (Renewal pending)	558 ha
Mulungwa Project	oc	Development	Sinazongwe District, Zambia	Mining Licence	09-Dec-19	900 ha
Mulungwa Project	oc	Prospecting Project	Sinazongwe District, Zambia	Prospecting Licence	09-Dec-11	445.53 ha
Asenjo Energy (PL053)	oc and/or ug	Exploration Project	Central District, Botswana	Prospecting Licence	31-Mar-12	247.4 km <sup>2</sup>
Asenjo Energy (PL054)	oc and/or ug	Exploration Project	Central District, Botswana	Prospecting Licence	31-Mar-12	269.4 km <sup>2</sup>
Asenjo Energy (PL055)	oc and/or ug	Exploration Project	Central District, Botswana	Prospecting Licence	31-Mar-12	212.0 km <sup>2</sup>
Asenjo Energy (PL056)	oc and/or ug	Exploration Project	Central District, Botswana	Prospecting Licence	31-Mar-12	296.2 km <sup>2</sup>
Asenjo Energy (PL057)	oc and/or ug	Exploration Project	Central District, Botswana	Prospecting Licence	31-Mar-12	312.0 km <sup>2</sup>

oc – open cast mining  
ug – underground mining

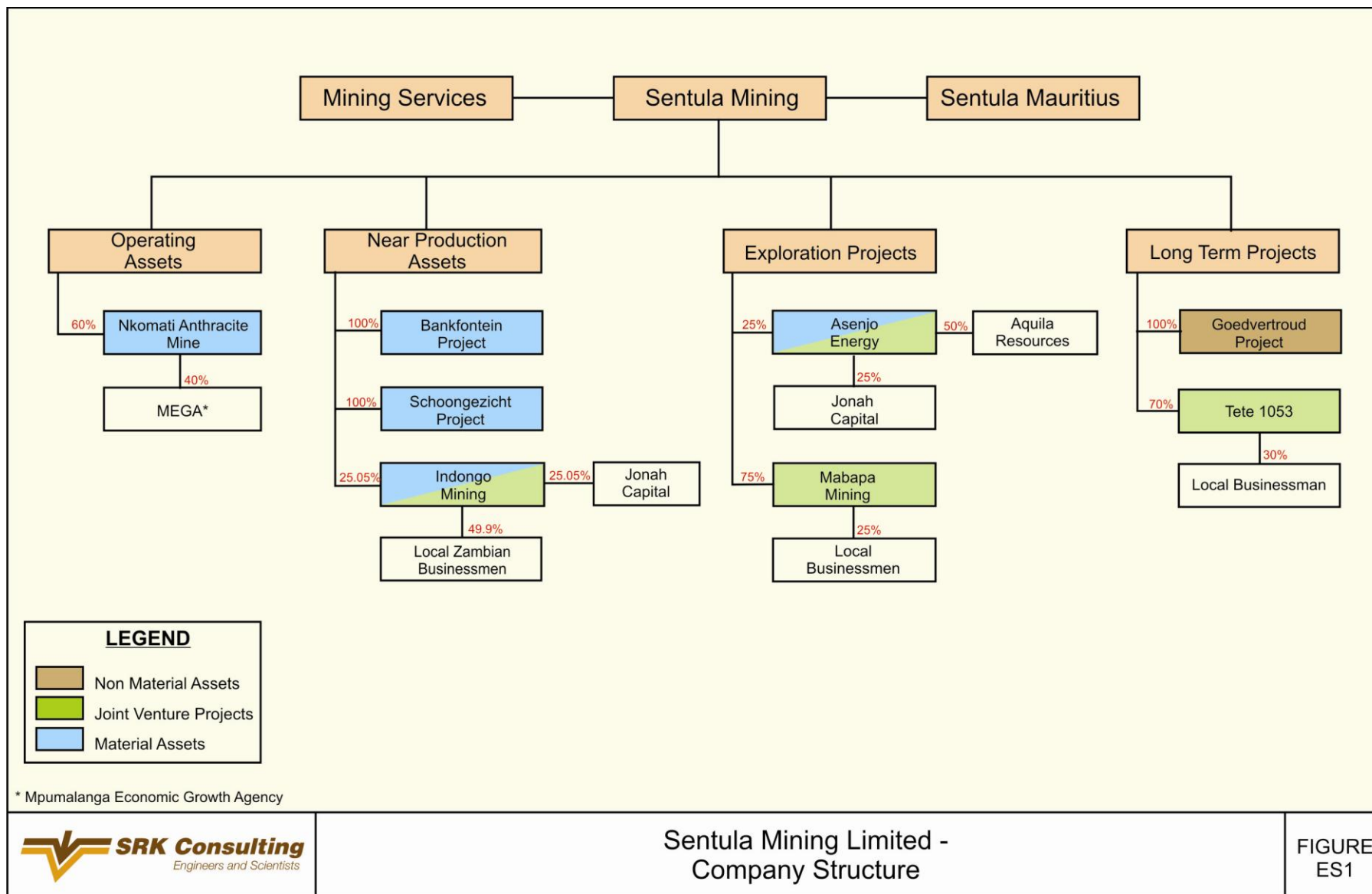


Figure ES1: Sentula Shareholding Structure

## ES2 Project Outline

JSE  
12.9(h)(ii)  
-  
SR  
T1.2, T1.3  
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SV  
T1.2, T1.4

### Sentula Mining

Sentula Mining, previously known as Scharrig Mining, began business operations as a mining contractor more than 30 years ago. As the company continued to grow, offices were opened in Ladysmith and energies were focused on road and dam building in the Drakensberg and Transkei areas. However, from 1985 the company started to move in a new direction with a number of contracts awarded for earthmoving operations on opencast mines. These contracts included topsoil stripping, access roads, rehabilitation and closure of old mines and opencast mining projects for major mining and engineering companies in Gauteng.

Offices and workshops were opened in Middelburg in the late 1990s to service the increasing mining activities in the Mpumalanga coalfields.

Over the years Sentula Mining acquired coal mining entities or entered into agreements with owners of such entities, which led to Sentula Mining becoming an owner and operator of mines and processing.

**Table ES2: Summary of Material Mining and Developing Properties**

Property	Method	LoM (years)	RoM (kt)
Nkomati Anthracite Mine	oc and ug	10	4 520
Mulungwa (Indongo) Project	oc	8 (starting in 2013)	4 500
Bankfontein Project	oc and ug	11 (starting in 2013)	6 825
Schoongezicht Project	oc	12 (starting in 2013)	8 615

In addition to the assets shown in Table ES2, Sentula Mining has a joint venture with Jonah Capital's subsidiary, Jonah Coal, which has a 50% interest in Asenjo Energy, an exploration company drilling for coal in Botswana. Figure ES6 shows the shareholding structure of Asenjo Energy.

### Nkomati Mine

In the past, the Nkomati Mine operation has comprised several small, sequential opencast pits. Economical opencast mining opportunities are limited due to the presence of established townships and dwellings in certain suitable areas, and a complex geological structure. An underground operation has been established on the resource area and the company is currently negotiating the purchase of the surface rights to the Matadeni area, some 6 kms away from the underground operation. The underground operation and nearby processing plant is some 46 kms from the town of Komatipoort. Mining commenced in the area in 1987 and was undertaken by Messina Limited, with intermittent mining by various companies since then and finally by Benicon Mining, which sold the company to Scharrighuisen Mining in 2006. Figure ES2 shows the locality of Nkomati Mine.

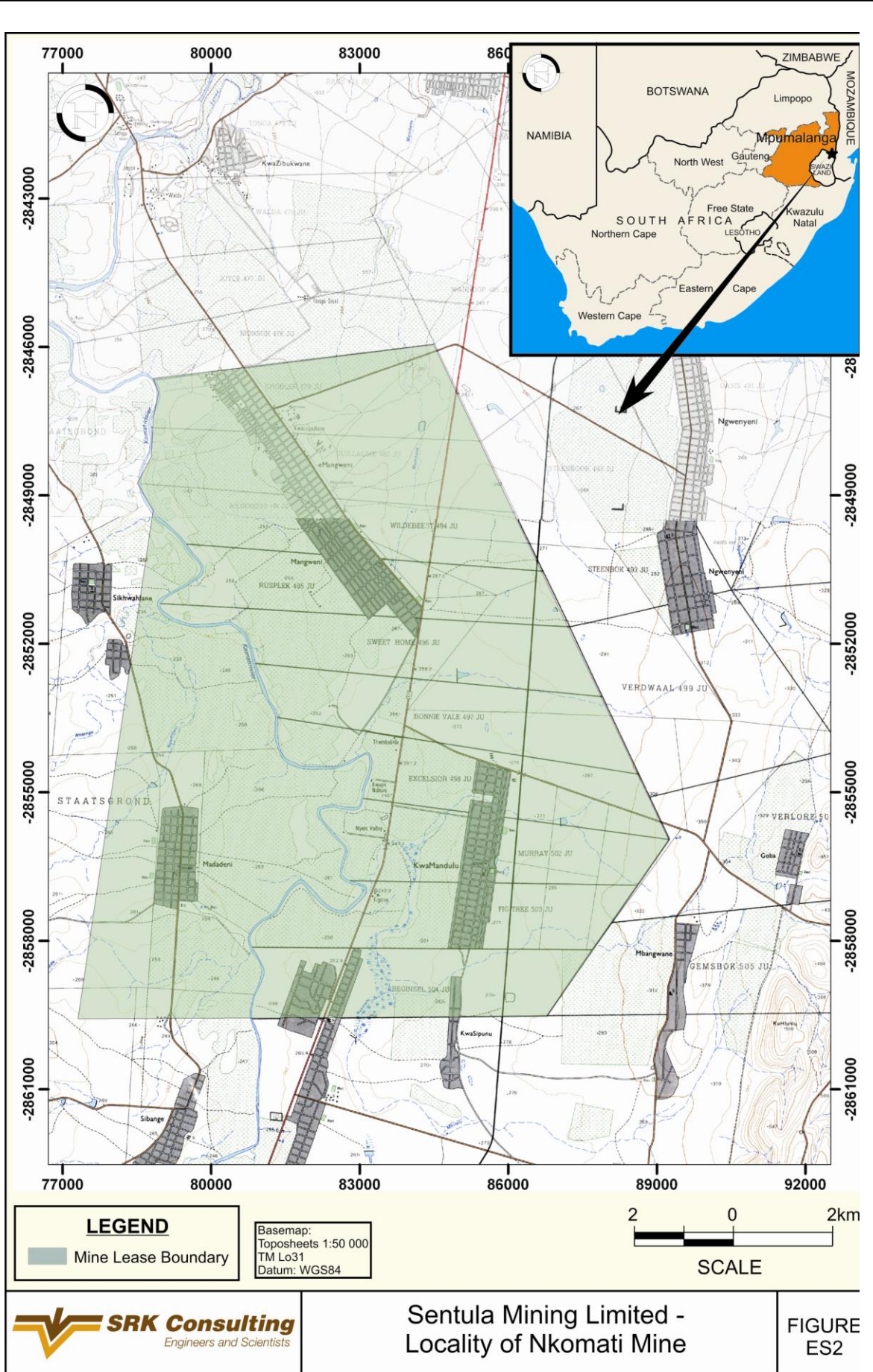


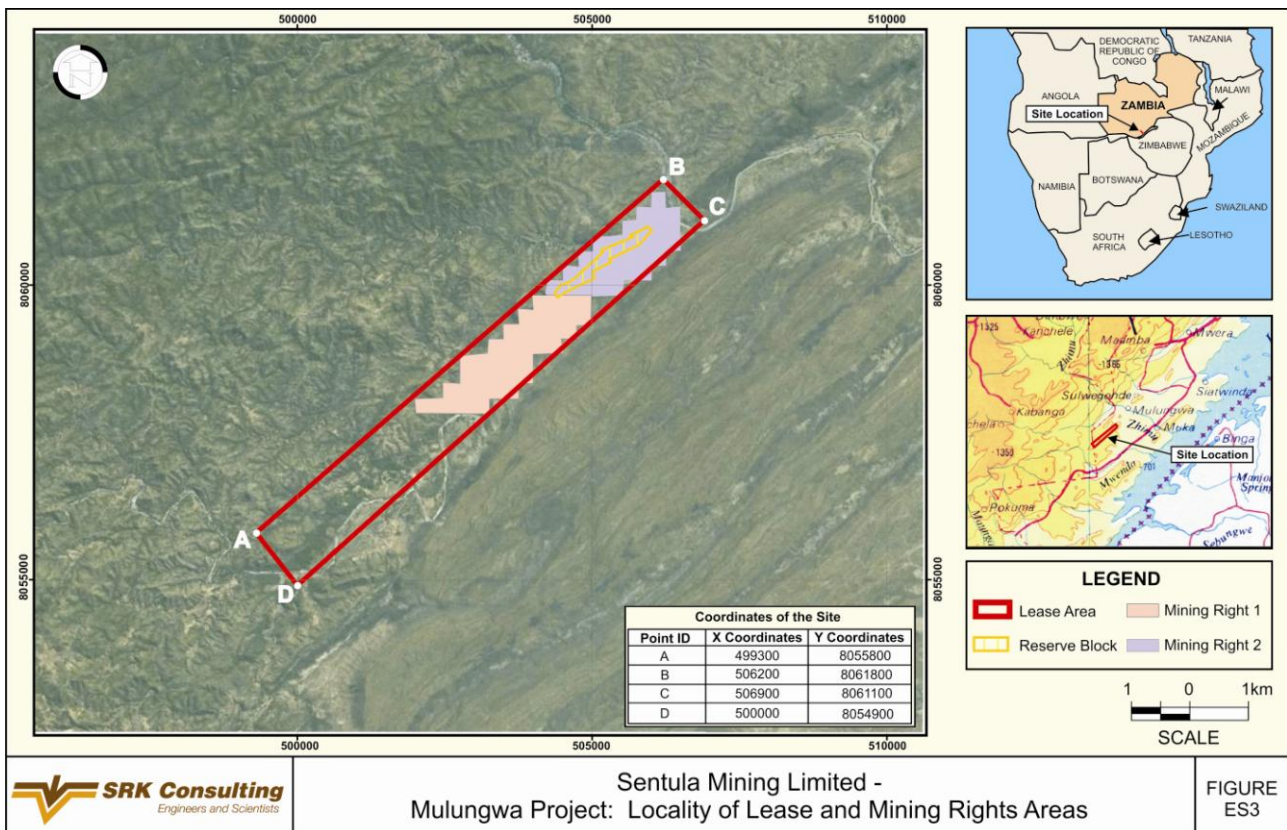
Figure ES2 Locality of Nkomati Mine

Nkomati Mine hosts a significant coal deposit over an area of 10 000 hectares. Road access to the mining areas is via reasonable gravel roads from the tarred roads from Komatipoort and Malelane. These roads allow for the transport of personnel and coal to the screening and washing plant, as well as transport of product to the rail siding and customers. The presence of the nearby Mangweni Township restricts the ability of Nkomati to optimise the mining schedule as the main opencastable reserves extend under the Township and agricultural land. Current mine planning allows underground operations to extend as far as the boundary of agricultural land. Underground mining is being conducted via two adits driven from a box cut.

Nkomati’s new order mining right was granted on 30 September 2010 and is valid until 29 September 2020. Previously Nkomati was in possession of a mining licence granted in 18 February 1998 and valid until 19 October 2015.

**Mulungwa Project**

The Mulungwa Coal Project is located some 270 km south west of Lusaka, the capital city of Zambia and is some 150 km from Livingstone. It is situated 30 km from the town of Maamba, in Sinazongwe District of Southern Province. The Mulungwa Coal Project can be accessed via the main Great North Road from Turnpike junction up to Batoka-Maamba junction. The property covers approximately 1 104 hectares in the province Mulungwa, Zambia shown by beacons A,B,C and D in Figure ES3. Lease area refers to the entire licence area held by Indongo Mining. Mining Right areas refer to areas converted to mining right licences. The portion not covered by mining licences is held under a prospecting licence.



**Figure ES3: Mulungwa Project – Locality of Lease and Mining Rights Areas**

The Mines and Minerals Act (No. 31 of 1995) (“the Act”) makes provision with respect to prospecting for and mining of minerals. In terms of the Act, all rights of ownership in searching for, mining of and disposal of minerals are vested in the president of Zambia on behalf of the republic. A prospecting licence confers on the holder of the license the exclusive right to carry out prospecting operations in the prospecting area for the minerals specified in the license. A prospecting programme, which must be adhered to, forms a part of the prospecting license. The following conditions are binding on the holder of the right:

- A prospecting license is granted for a period of 2 years and is renewable for a period of 2 years at a time.
- The holder of a license must relinquish 50% of the original area on the first renewal of the right.
- The holder must commence with prospecting operations within 3 months of the issue of the license. Indongo Mining, the company which owns the Mulungwa Project, was granted a prospecting license for coal in terms of Section 14 of the Act on 4 September 2007. The license has been issued for a period of two years, and is renewable. The four corners of the right have been surveyed and the corner pins have been set in concrete by a qualified surveyor. In terms of the Act, a K90 000 license fee and a K39 600 area fee was paid to the Mines Development Department. An acknowledgement of acceptance of the conditions set out in the offer to accept a license had to be made to the Mines Development Department within 30 days of issue of the license, failure to which the offer would have been nullified. Indongo Mining followed all the correct procedures to secure the prospecting license.

Surface rights are vested in the local chief at Mulungwa.

In terms of Section 54 of the Act, no license or permit can be transferred without the consent of the Minister. The Act prescribes that consent under Section 54 shall not be unreasonably withheld. An application for consent must contain particulars in the prescribed form, and must be accompanied by a transfer fee.

Sentula has an effective 25% interest in the Mulungwa Project through its effective 25% interest in Indongo Mining.

### **Bankfontein Project**

The Bankfontein Project forms part of the farm Bankfontein 215 IS in the magisterial district of Ermelo in Mpumalanga Province. It is located 9 km to the northwest of the town of Breyten. The R36 and N11 main roads lie 5 km east and 6 km north of the property. The Ermelo – Carolina railway line passes through Breyten. The defunct collieries of Bankfontein and Consolidated are located immediately east and west of the property respectively. The mines were both originally connected to Breyten by a narrow gauge railway. Refer to Figure ES4.

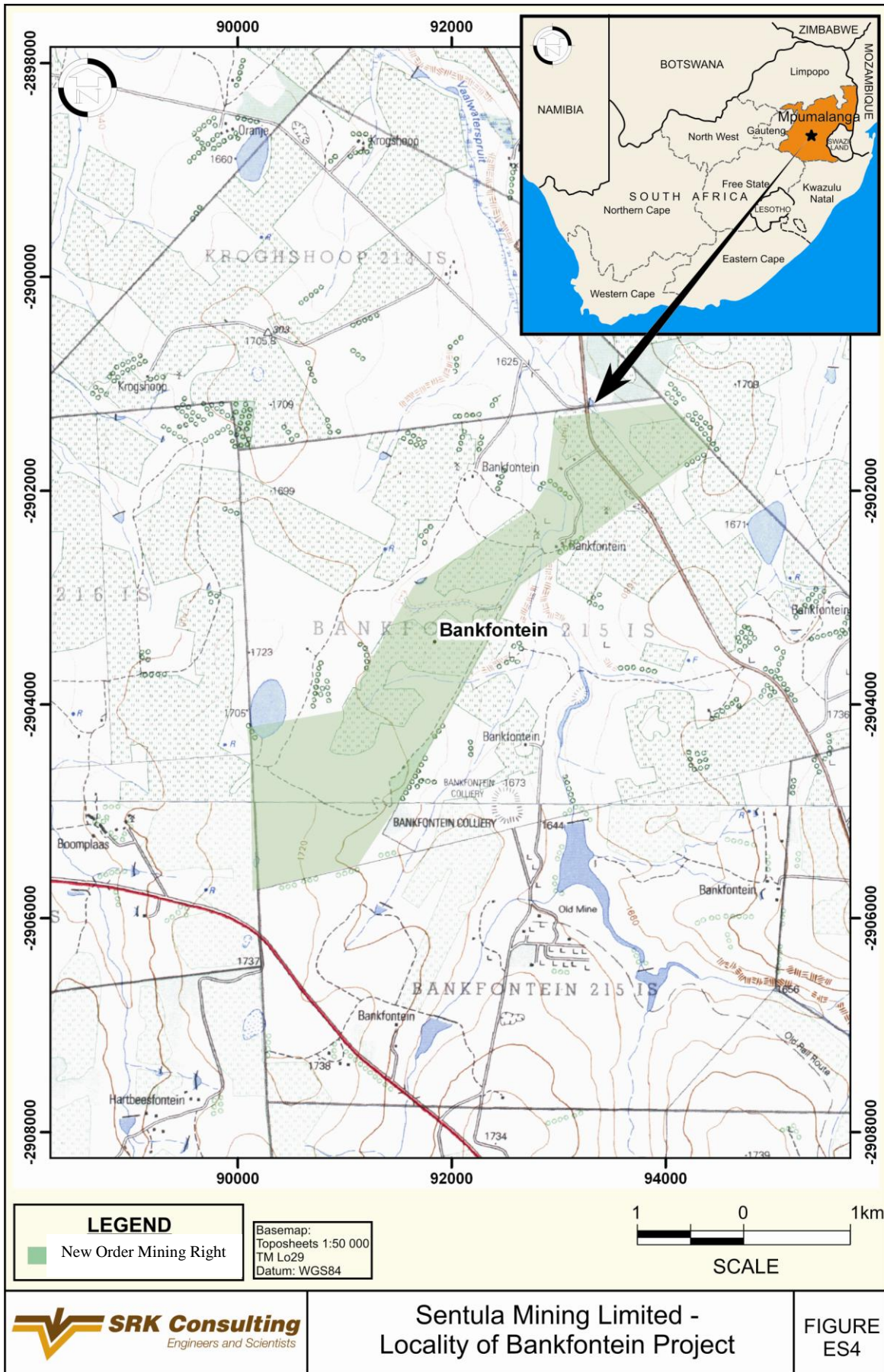


Figure ES4: Locality of Bankfontein Project

The Bankfontein Project has submitted all the necessary documentation required for an application for a new order mining right to the Department of Minerals and Energy (“DME”), South Africa, which was accepted on 20 November 2008 and the company awaits the granting of the mining right. In terms of NEMA, the project has received permission to establish the surface infrastructure required for mining.

### **Schoongezicht Project**

The Schoongezicht Project is located 11 km northeast of Delmas in Mpumalanga Province. It lies approximately 2 km south of the N12 highway. Argent rail siding is located about 4 km to the northeast. Refer to Figure ES5.

Sentula Mining acquired the asset from Merafe who had acquired a prospecting right over Portion 7 and the Remaining Extent of the farm Schoongezicht 225 IR in the Delmas District, Mpumalanga Province. This coal deposit was identified in 1984 by two cored holes drilled by BP Coal. It was at the time considered to be too small and low grade to be of interest. Subsequent drilling in 1990, with a total of twenty new cored holes, outlined a 5 to 6 Mt outlier to the Delmas section of the Witbank Coalfield.

The Schoongezicht Project has submitted all the necessary documentation required for an application for a new order mining right to the DME, which was accepted on 6 February 2009 and the company awaits the granting of the mining right. In terms of NEMA, the project has received permission to establish the surface infrastructure required for mining.

Figure ES5 shows the locality of the Schoongezicht Project.

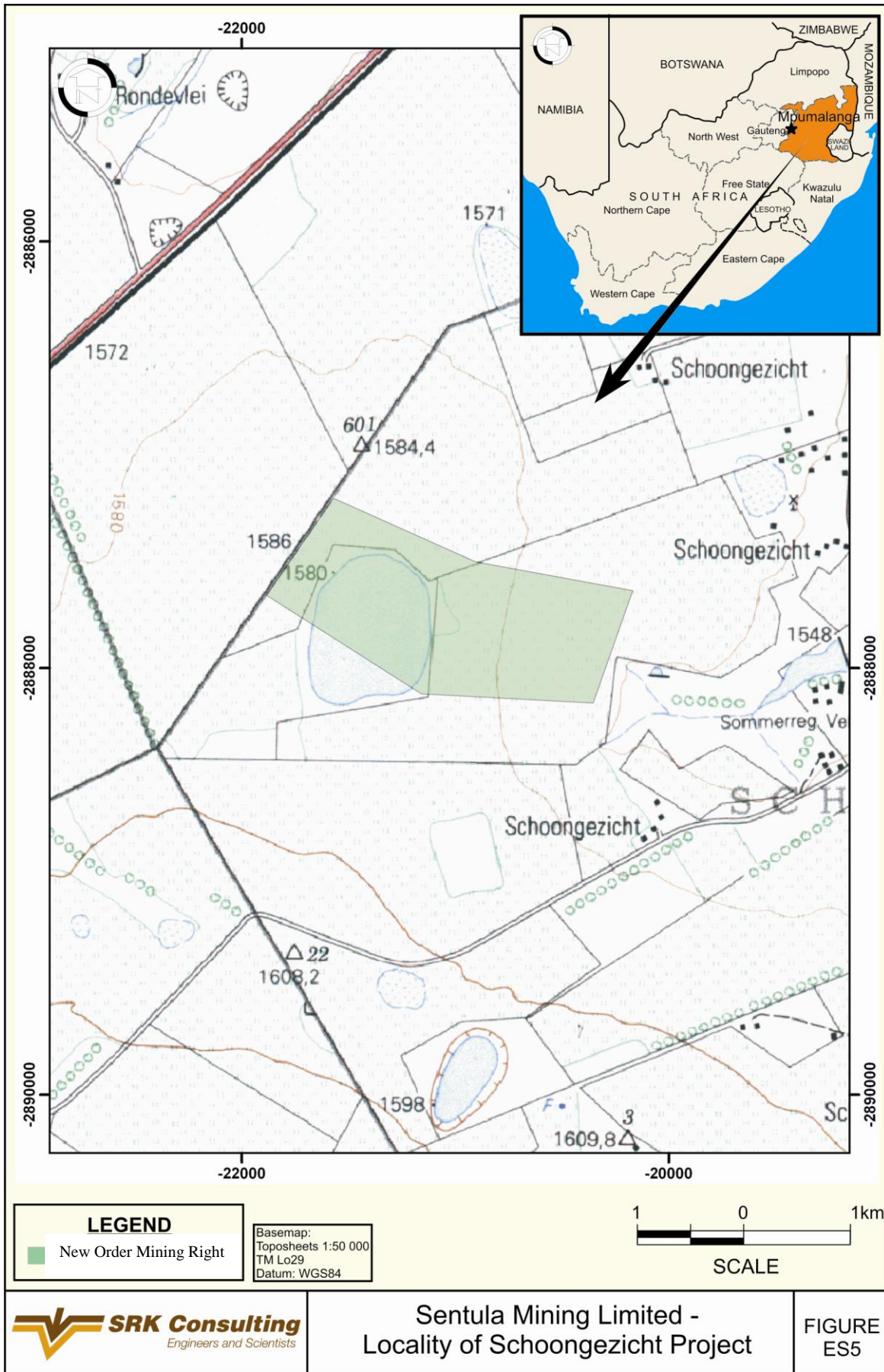
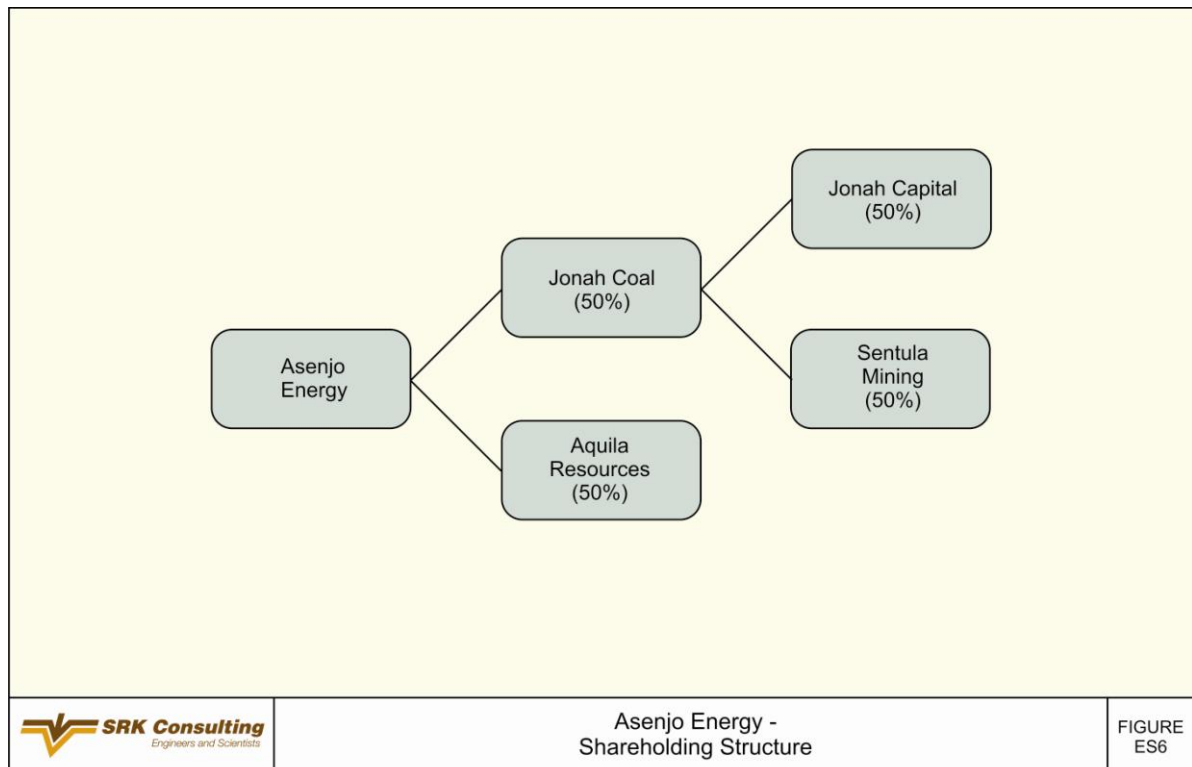


Figure ES5: Locality of Schoongezicht Project

## Asenjo Energy

African Energy Botswana (“AEB”) is a 50:50 Joint Venture (“JV”) between Jonah Coal Limited and Aquila Resources Limited, formed in August 2007. Refer to Figure ES6.



**Figure ES6: Asenjo Energy – Shareholding Structure**

All information on Asenjo Energy presented in this report is derived from the following reports prepared by SRK Consulting in October 2010, which the reader is referred to for more detail:

- An Independent Technical Report (ITR NI 43 – 101) on African Energy Botswana’s Dukwe Exploration Property,
- An Independent Technical Report (ITR NI 43 – 101) on African Energy Botswana’s Mmamabula East and West Exploration Property, and
- An Independent Technical Report (ITR NI 43 – 101) on African Energy Botswana’s Lechana and Tshimoyapula Exploration Property.

AEB currently has material assets in six Prospecting Licences in Botswana:

- PL 53/2005 (Lechana);
- PL 54/2005 (Tshimoyapula);
- PL 55/2005 (Dukwe);
- PL 56/2005 (Mmamabula West);
- PL 57/2005 (Mmamabula East); and
- PL 222/2007 (Kodibeleng).

Kodibeleng is not covered in this report since no exploration has been done on the tenement.

### 1. Mmamabula East and West

The Mmamabula East and West Prospecting Assets (“Mmamabula Prospecting Asset”) covers some 608.2 km<sup>2</sup> in the Kweneng and Kgatleng Districts of Botswana. The Prospecting Licences PL 56/2005 and PL 57/2005 all expire on 31 March 2012. The Mmamabula Prospecting Asset is located at:

- Latitude 23°49’40” South, Longitude 25°47’50” East (Mmamabula West); and
- Latitude 23°49’40” South, Longitude 26°07’15” East (Mmamabula East).

The Mmamabula Prospecting Asset is some 80 km north of the capital city of Gaborone. The elevation of the project area is some 1 130 m above mean sea level.

Mmamabula Prospecting Asset PL 56/2005 falls within the Kweneng District under the traditional jurisdiction of the Bakwena Tribal Authority.

License area PL 57/2005 falls within the Kgatleng District Council, within the traditional jurisdiction of the Bakgatla tribal territory. PL 57/2005 licence area has Artesia Sub Land Board and Cub Council as its local authorities. The Kgatleng Land Board is located in the town of Mochudi.

In the Kweneng District, by 1995, 65% of the land was identified as communal/pastoral/residential land, while in the Kgatleng District 36% of the land was identified as communal land with freehold farms identified as 64% of the land. There was no land that was identified as State Land.

### 2. Dukwe

The Dukwe Prospecting Asset covers some 212 km<sup>2</sup> in the Central District of Botswana. Dukwe consists of a single prospecting license: PL 55/2005 expiring 31 March 2012.

The Dukwe Prospecting Asset is located at Latitude 20°34’40” South, 26°15’00” East, some 40 km south of the town of Nata and approximately 150 km northwest of the city of Francistown, in the northern part of the Central District of Botswana. The small town of Sowa is located within the Dukwe Prospecting Asset. The elevation of the project area is some 920 m above mean sea level.

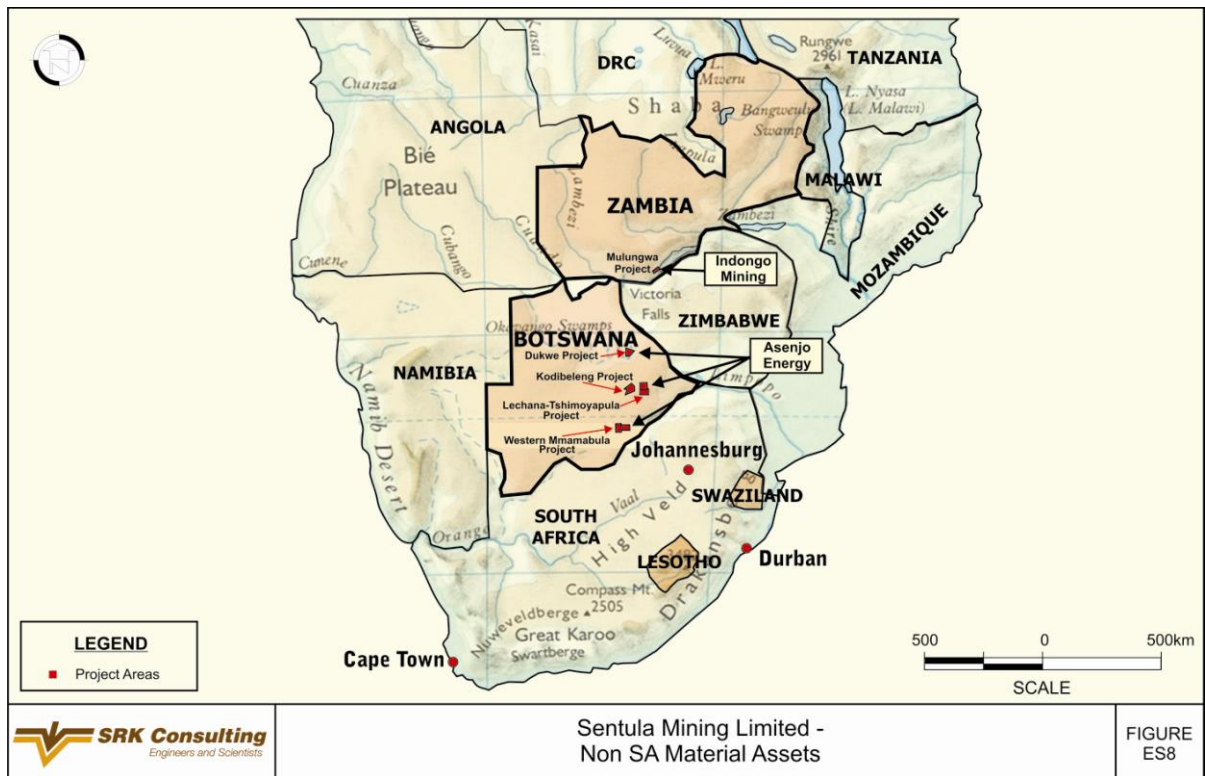
Dukwe Prospecting Asset falls within the jurisdiction of the broader Sowa Town Council area. The Sowa Town Council applies the main legislative rules when undertaking the land allocation procedure, these are, the Town and Country Planning Act (Cap: 32: 09), the Townships Act (Cap: 40: 02), the Building Control Act (Cap: 65: 02) and the State Lands Act (Cap: 32: 02). All land allocations within Council area are undertaken by the Council, without any interaction from traditional authority.

### 3. Lechana - Tshimoyapula

The Lechana - Tshimoyapula Prospecting Assets cover some 247 km<sup>2</sup> and 269 km<sup>2</sup>, respectively, in the Central District of Botswana with the Prospecting licences expiring 31 March 2012.

The project area is located at Latitude 22°09’24” South, 26°58’48” East, some 47 km north-northwest of the town of Palapye. The elevation of the project area is some 1 000 m above mean sea level.





**Figure ES8: Sentula Mining – Non-SA Material Assets**

## ES4 Legal Aspects and Tenure

JSE  
12.9(h)(iv)

SRK has not verified or validated the mineral title aspects of the Material Assets, details of which are included in Table ES1.

In consideration of all legal aspects relating to the Material Assets, SRK has placed reliance on the legal representatives of Sentula Mining Limited, Werksmans Attorneys.

## ES5 Geological Setting and Tenure

JSE  
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SR  
T2.3  
-  
SV  
T1.5

The Sentula material South African properties are spread over two South African coalfields namely; the Kangwane Coalfield (16 in Figure 3.1) where the Nkomati Athracite mine is found and the Highveld Coalfield (7 in Figure 3.1) where the Bankfontein and Schoongezicht projects are located.

The Sentula material non-South African properties are located in Zambia and Botswana (Figure ES3).

### Nkomati Mine

The Kangwane Coalfield is divided in a northern sector and a southern sector. The coal measures of the Kangwane Coalfield are lithostratigraphically confined to the north-eastern Volksrust Formation and the Vryheid Formation of the Ecca Group of the Karoo Supergroup (Figure 3.1).

The Kangwane Coalfield has subsequently been sub-divided into a Northern portion referred to as Kangwane Anthracite; a Central portion referred to as Nkomati Anthracite and a Southern portion referred to as Southern Anthracite.

The deeply sand-covered area produced by extensive weathering in the area gently slopes in a westerly direction towards the Komati River. As a result of the deep sand cover, outcrops are limited and geological mapping was essentially based on borehole information.

The strike of the sedimentary sequence is generally north-northeast south-southwest and the regional dip of the strata ranges between 3° and 20° eastwards and steepens from west to east defining the Lebombo monocline with a north-northeast south-southwest trending fold axis.

Prominent faults which have affected the coal horizons appear to be strike faults with vertical throws of up to 100 m. These faults dissect the coal measures into isolated blocks. Tensional forces that prevailed during the deformation history of the area probably contributed to fault formation including graben structures delineated by exploration drilling.

The geology within Nkomati Mine is dominated by sandstones, mudstones and shales dipping approximately 5° to 15° towards the east, and with a gentle gradient of about 2° towards the south. The easterly dip is accentuated by faulting, downthrown to the east.

A number of dolerite intrusions into the sedimentary sequence have negatively affected the coal resources in places. A major transgressive dolerite sill outcrops in two geographic areas in the northern part of the Nkomati Mine lease area known as the Mangweni Block. Numerous sub-vertical north-south trending dolerite dykes of variable thickness have been delineated by an aeromagnetic survey conducted in the Mangweni Block.

These dolerite dykes have occasionally been seen to break through the coal measures in underground operations, consequently limiting previous underground operations due to a loss of coal and bad ground conditions resulting from abnormal stress conditions. The structural complexity in the northern sector has discouraged exploitation in that region.

The upper Volksrust Formation in the northern sector contains the much thinner (rarely more than 2 m thick) 8, 6 and 2/4 Seams approximately 300-400 m above the 1 Seam in the Vryheid Formation. The 8, 6 and 2/4 Seams are usually associated with shale and mudstone. The 1 Seam can be up to 10 m thick in places, but the coal is generally of low grade.

The coal measures of the Vryheid Formation in the southern sector are 9 Seam (Top Seam), 7 Seam (Upper Seam), 5/6 Seam (Middle Seam) and 3 Seam (Lower Seam) that occur over a total thickness of ±70 m of sandstone. Regionally the Lower Seam (up to 8 m thick) and the Middle Seam are the most prominent coal measure, while the Upper and Top Seams are sporadic and excluded from resource calculations.

## **Mulungwa Project**

The coal seams at Mulungwa Coalfield are developed in the coal-bearing Gwembe Formation of the Lower Karoo Supergroup in the mid-Zambezi Valley of Zambia. Three coal-bearing sub-basins occur in the Zambezi Valley:

- Nkandabwe Coalfield where the Chinese-operated Collum Mine is situated;
- Siankondobo Coalfield where the state-ZCCM IH-operated Maamba Colliery is situated; and
- Mulungwa Coalfield where the Project is situated.

The Lower Karoo Supergroup rocks have undergone brittle deformation, and generally strike northeast-southwest and are dipping 25° - 65° towards the southeast.

The selected area of the Mulungwa Coalfield is covered by a thick layer of Tertiary/Recent sand. The sand cover, ranging in thickness from 5 m to 12 m, has most probably been produced by extensive weathering in a zone of deeply dissected topography, flanking the Zambezi Valley in which the Mulungwa River runs. As a result of the deep sand cover, outcrops are limited to river courses in the area and geological mapping was essentially based on information obtained from exploration boreholes and trenches supplemented by sporadic outcrop information.

The near-surface sedimentary succession in the selected area of the Mulungwa Coalfield comprises mainly mudstone, often carbonaceous, which includes horizons of micaceous sandstones, siltstones and subordinate glauconitic mudstones.

The coal seams found in the project area are, named from bottom upward, the A Seam and the B Seam. Both seams are further subdivided into lower and upper units. The seams in the project area have a general average dip of 38° towards southeast.

Dolerite intrusions have been intersected only in two boreholes but these intrusions occur higher up in the stratigraphy and have no apparent effect on the coal below.

The project area has been affected by faulting from which five faulted and adjoining blocks have already been identified in the northeastern section of the project area. However, more work still needs to be done to fully understand their position and their effect on the coal seams.

## **Bankfontein Project**

The Bankfontein Project coal deposit is located within the Ermelo Coalfield which extends from Carolina in the north to Dirkiesdorp in the south and includes the Hendrina, Breyten, Davel, Ermelo and Morgenzon districts. It is flanked by the Witbank, Highveld, Klip River and Utrecht Coalfields. Historical exploration and mining in the Ermelo Coalfield has been concentrated in the northern and central parts. The Karoo Supergroup sedimentary succession, resting on a glaciated pre-Karoo basement, consists of the Dwyka Group, overlain by the Ecca Group (Pietermaritzberg, Vryheid and Volksrust Formations) with localized occurrences of the Beaufort Group in topographically high areas in the south of the field.

The Vryheid Formation contains five major coal seams, named from the base upwards, E, D, C, B and A. The C Seam is usually the most economically attractive. However, the B, E and occasionally the D Seam may attain mineable thicknesses over limited areas. The irregular pre-Karoo palaeotopography influenced depositional patterns until at least D Seam times and was an important

factor in the control of coal seam distribution, and thickness, with seams typically thinning or pinching out over palaeo-highs and thickening above palaeo-lows. The present day topography has further modified seam distribution with the stratigraphically higher seam usually only preserved in areas of elevated relief. During the late Jurassic period the Karoo strata were invaded by dolerite dykes and sills resulting in seam displacements and devolatilization of coal over extensive areas.

The frequency of intrusives increases southwards. Structurally the seams are relatively flat-lying except in localized areas where they have been disturbed by transgressive sills or faults. The frequency of faulting increases southwards with throws of up to 250 m recorded. Faults are usually invaded by dolerite intrusions.

The Bankfontein deposit is located in the northern sector of the Ermelo Coalfield where the abbreviated stratigraphic succession of the Karoo Supergroup comprises only sediments of the Dwyka Group and Vryheid Formation. The Dwyka Group is characterized by sediments of glacial origin including tillites, diamictites and varvites. The Vryheid Formation predominantly comprises a stacked, deltaic, arenaceous sequence of sandstone and conglomerates with subordinate siltstones and coal seams. In the area under consideration, three major coal seams have been identified and are named from the top downwards B, C and D. The E Seam may also be present, however, to date no boreholes have been drilled to this stratigraphic level. The lateral extent of the B and C Seams is topographically controlled. Distribution is limited to regions of higher relief with both seams sub-outcropping along hillsides. The deeper-lying D Seam does not appear to outcrop on the property but was intersected in four boreholes, with thicknesses ranging from 0,42 m to 0,82 m. Given the thin nature of the seam and the relatively deep occurrence below surface, it cannot be considered a mining target at this time. In certain areas, both the B and C Seams represent open-cut mining targets at economically acceptable stripping ratios.

The B and C Seams are relatively flat-lying in the northern and southern parts of the property. However both seams exhibit an abrupt change in elevation of about 25 m in the central area. This could be due to an east-west trending fault or is more likely to be the result of a major dolerite sill transgressing from a stratigraphic position above the B Seam in the northern half of the property to a position below the C Seam in the southern portion. The position of the sill possibly coincides with an east-west trending watercourse and a low scarp to the south. It has been projected through Borehole B11 which was terminated on intersecting the dolerite 8.5 m below surface.

### **Schoongezicht Project**

The Schoongezicht Project deposit forms part of the Delmas-Vischkuil Coalfield which is the connecting link between the Springs Coalfield in the west and the Witbank Coalfield in the east. The greater Springs-Witbank Coalfield extends approximately 180 km in an east-west direction from Belfast to Brakpan. The northern extent of the coalfield is delimited by the outcrop of Vryheid Formation sediments against pre-Karoo basement rocks of the Transvaal Sequence, the Waterberg Group and Bushveld Igneous Complex ("BIC"). The southern limit of the central sector of the coalfield is marked by a series of BIC inliers known as the Smithfield Ridge. In the East and West sectors the southern limit is somewhat arbitrary and poorly defined.

The Springs-Witbank Coalfield borders the northern limit of the Karoo basin. In this area the stratigraphic sequence is abbreviated with only the Dwka Group and Vryheid Formation of the Ecca Group present. The Dwyka Group is characterized by sediments of glaciogenic origin including

tillites, diamictites and rhythmites whereas the Vryheid Formation comprises a predominantly arenaceous sequence of sandstones with sub-ordinates siltstones and mudstones arranged in a series of upward coarsening sequences. Each sequence represents a major cycle of deltaic outbuilding and is usually capped by a coal seam. The five major coal seams of the coalfield are contained within a 70 m thick stratigraphic interval and are numbered from the base upwards, 1, 2, 3, 4, and 5. The distribution and thickness of seams was controlled primarily by pre-Karoo palaeotopography and modified by the present day topography with the stratigraphically higher seam preserved only in areas of elevated relief. In late Jurassic times the Karoo strata were invaded by dolerite dykes and sills which resulted in seam displacement and the devolatilization of coal over extensive areas.

In the area under consideration, three shallow-lying coal seams ranging in thickness from 0.5 m to 4.8 m, occur in a small, elongated synclinal Karoo outlier extending approximately 1.5 km by 1.0 km. The seams are thought to represent splits of the No. 2 Seam and have been named No. 2 Upper Top, No. 2 Upper Main and No. 2 Lower. Stratigraphically higher seams have been eroded.

All seams sub-outcrop to the north, west and south. The eastern extents of the seams have yet to be delimited but are considered unlikely to extend much beyond the borders of the property. The economic extent of the seams is controlled by depth of weathering which ranges from about 10 to 30 m below surface. All seams dip gently towards the centre of the synclinal basin with a maximum dip of almost 3° developed in the No. 2 Lower Seam. There is no evidence of igneous intrusions or faulting in the area.

The thicknesses of the No. 2 Upper Top and No. 2 Upper Main Seams are remarkably consistent across the deposit. The No. 2 Lower Seam exhibits a greater thickness range. In the east/central area, minimal thicknesses coincide with maximum seam elevations suggesting palaeotopographic control of coal deposition. However, it cannot be discounted that the seam thicknesses in this area may have also been reduced by washouts.

## **Asenjo Energy**

### **1. Mmamabula East and West**

There is very little outcrop of the Karoo in the part of the west Mmamabula Coalfield under PL56/2005 and PL57/2005,

A brief description of the Karoo stratigraphy in the West Mmamabula area is given below. Structurally, the Karoo gently warps and dips rarely exceed 2° to the north and northeast in Block B. In Block A there are some E W horst/graben structures; which have resulted in the northern and southern portions of the sediments to dip to the central area. All glaciogenic sediments in the West Mmamabula and Letlhakeng Coalfields are grouped in the Dukwe formation of the Dwyka Group. They mainly consist of a succession of upward fining beds of arkoses, sandstones, siltstones and rhythmically banded mudstones. In other areas the base, unconformably overlying the Waterberg Supergroup, predominantly consists of stratified pebble conglomerates and tillites. The Ecca Group, that hosts the economic coal seams, comprises the Formations described below. It is more widespread than the Dukwe Formation in the Mmamabula region.

The Mosomane Formation has been defined to include the Lower Mmamabula Sandstone (LMS) and the Middle Mmamabula Sandstone (MMS) (Smith, 1984). It consists of a succession of medium to coarse grained whitish feldspathic sandstones with a distinctly single persistent intercalation of coal

and coaly mudstones (the E Seam). The base of the Mosomane is the medium to coarse feldspathic sandstones above the predominantly dark grey shale and fine grained sandstones. The E Seam Member has a basal unit of dark grey current bedded sandy shale; which is conformably overlain by a seam of bright and dull coal with pyrite and siderite bands.

The Mmamabula Formation includes carbonaceous mudstones, coal successions, and various intercalations of fine to coarse grained sandstones which overlie the Mosomane. Hence the three Members of this Formation are – the Middle Mmamabula Coaly Mudstone (MMCM) (which hosts the A Seam); the Upper Mmamabula Sandstone (UMS); and the Upper Mmamabula Coaly Mudstone (UMCM) (which hosts the K Seam).

The coal measures in the western Mmamabula Coalfield comprise numerous coal seams interbanded with coaly mudstones, carbonaceous shales and siltstones and sandstones of variable thicknesses. There are, however, three seams that have developed to noteworthy economic thicknesses, namely the K Seam, the A Seam, and the E Seam. Both licence areas blocks have been tectonically disturbed, especially with regards to depth to the coal seams. In PL 56/2005 there are a series of NE SW trending horsts and grabens. While in PL 57/2005 there is a complex set of faults that sub-divide the resource block.

In PL 56/2005 the E Seam is generally thin (1.0 m or less). The best developed coal seams are the A and K Seams, attaining thicknesses of 4.0 to 5.0 metres in the Upper Mmamabula Coaly Mudstone. The A Seam has the best developed thick seams in the northern part of PL 56/2005.

In PL 57/2005, Groupe Carbonages France Botswana (Pty) Limited (“CdF”) considered the E and A Seams to have economic thickness. The A Seam has a much higher Ash Content than that of the E Seam.

## 2. Dukwe

Most of the coal seams are in the Tlapana Formation, where they are generally of variable thicknesses and inter banded with carbonaceous and coaly mudstones. This is the most economically significant formation as it hosts the thick Basal Coal Seam. There are other seams, some attaining thicknesses of up to a metre or two, but these have not been sampled at this stage. The Tlapana varies in thickness from 27.80 m in AD3 (east) to 62.58 m in AD2 (west) in the Aquila holes; essentially comprising massive black to carbonaceous mudstones inter banded with coal seams of variable thicknesses, and only occasionally inter banded with siltstones. Vertical and subvertical joints have been observed, which may be extensions from the more competent formations. The coal seams above the Basal Coal Seam tend to be mixed bright and dull thinly banded coals with enriched sulphide stringers and nodules, and have a scattering of coarse siderite grains. The Basal Seam, on the other hand is essentially a dull light to heavy coal with only minor very thin bright stringers, often lustrous in parts with partings of coaly mudstones. It is a discrete seam bounded by clastic sedimentary rocks. Within the coal seam, however, there are almost always a number of intra-seam partings present comprising predominantly mudstones and minor siltstones. Several of these intra-seam partings are persistent and can be correlated over fairly large areas within the basins. These partings often represent minor changes in the palaeo-depositional environments of peat accumulation and coal formation. The Basal Coal Seam has a minimum thickness of 0.55 m, a maximum thickness of 12.5 m and averages at 5.5 m. The coal seam occurs at an average depth of 145 m below surface.

### 3. Lechana - Tshimoyapula

The coal-bearing carbonaceous sequence comprises up to 100 m of interbedded carbonaceous mudstones and mudstones with lesser amounts of siltstone and lenticular sandstone bands interbedded with the coal seams. The Karoo strata do not outcrop but rather sub-outcrop below ( $\pm 20-30$  m) the Kalahari Sands, consisting predominantly of sand and calcified sand.

The Morupule formation, as defined in the Lechana Basin, extends from the base of the Morupule Main Seam to the base of the Middle Coal zone (Taukome Bright Seam). Sediments consist mainly of mudstones and coals with some sandstones and rare mudstone conglomerates above and within the Morupule Main Seam

Three main coal horizons have been recognized in the Lechana basin.

The Upper Coal Zone has generally been discounted as an economic mining target because of its complex nature. However, in the extreme east section it occurs in thickness greater than 1.0m and limited quality parameters indicate a reasonable quality coal.

The Tshimoyapula Basin, to the north of the Lechana Basin, is underlain by the Lower Coal Zone with the Middle and Upper Coal Zones not forming well developed or consistent horizons.

The mineral deposit being investigated and reported on is coal. The coal deposit type is described as a multiple seam deposit type comprising discrete coal seams of decreasing age progressing upwards through the sedimentary sequence. The economic coal seams occur at an average depth of 134 m below surface for Taukome Seam and 103 m for Morupule Seam in Lechana while Taukome Seam occurs at 166 m and 220 m for Morupule Seam in Tshimoyapula.

JSE  
12.9(h)  
(vi)

## ES6 Exploration Programme and Budget

Exploration will be undertaken on an ongoing basis and these costs have been included in the operating costs, details of which are provided in Section 12 of the CPR.

JSE  
12.9(h)(vii)  
-  
SR  
T2.5, T7  
-  
SV  
T1.7

## ES7 Brief Description of Key Modifying Factors

### Nkomati Mine

The resource boundaries had been modified based on the boreholes affected by transgressive sills and dykes and non availability of surface rights by GM Geotech. It was further modified by SRK based on the quality, the probable continuity of the seam and the influence of the sills and dykes. The structural interpretation, interpreted from the Aero- Magnetic data, show a vast amount of NNE trending dykes, the Rooi Rand Dyke Swarm, that fully cover the entire area.

A detailed modelling of the deposit/intrusives was not in the scope of work, which is deemed essential to ascertain the resource and the extent of burning and devolatilisation of coal.

## **Mulungwa Project**

The data received from Sentula Mining comprised an electronic excel database containing borehole details relating to the collar positions, lithology, coal zones, qualities and washability data.

17 historical boreholes were excluded from the modelling process leaving only nine recent boreholes to be processed. Data was modelled using Micromine Mining and Exploration Software version 11.0.5. The modelling algorithm used is the Inverse Distance based on the scarcity of borehole data points and it is applied on a grid cell size of 50 m x 50 m.

SRK used the coal resource boundary as provided by Sentula Mining. SRK understands that this resource boundary was arrived at considering the depth of the coal seams and the apparent faulting in the project area, therefore the resources reported are only for the resources occurring within this resource boundary.

## **Bankfontein Project**

Sentula Mining provided useable data comprising a borehole database in Excel format of both historical boreholes within or immediately adjacent to the property as well as data provided from the late 2008 drilling programme in which 34 boreholes were drilled. It consisted of borehole details relating to the collar positions, lithology, coal zones. The original lithological logs were not provided so detailed correlations of seams and depositional analysis could not be reviewed.

Digital analytical laboratory results, in Excel format, of boreholes from the 2008 exploration programme were supplied to SRK by Sentula Mining. Analyses were conducted by McLachlan and Lazar (latterly M&L Inspectorate) which is currently a SANAS and ISO/IEC 17025:2005 accredited laboratory. In accordance with standard industry practice, whole core samples were submitted to the laboratory. The relative density of all raw samples was determined prior to analysis.

The 2009 Mineral Corporation report, reported the Bankfontein Resources and Qualities in terms of five discrete resource blocks. This took into account the effects of contemporaneous erosion and seam displacement by transgressive dolerite sills, which have both caused major differences in the coal qualities in each of the defined blocks.

This differs from previous reports which divided the Bankfontein property into two sectors namely: a Northern and Southern sector.

There has been no change to the Resource boundary since then, and the 34 additional boreholes drilled in the 2008 exploration programme have provided sufficient information for these divisions to be made. SRK deemed this an acceptable approach and it is followed again in this review..

Detailed lithological logs were not provided but seam correlations have been based on elevation and coal quality. Dips of more than a few degrees are rare in the area under consideration and the seams are, for the most part, near horizontal.

The C Seam consistently displays superior quality parameters in comparison to the B Seam, particularly with regard to ash content. This criterion alone is sufficient to differentiate between the two seams.

## Schoongezicht Project

This review is based on information contained in “*Estimate of Coal Resources on Certain Portions of the farm Schoongezicht 225 IR, near Delmas, Mpumalanga Province*” compiled by The Mineral Corporation in February 2009.

An assessment of the following data is included in this section:

- Ground Survey: No detailed ground topographic surveying appears to have been conducted.
- Borehole Drilling: All boreholes were fully cored. The size of core was not recorded and the drilling contractor is unknown.
- Borehole Survey: Computer printouts suggest that the borehole collar positions were professionally surveyed but this cannot be verified.
- Core Recoveries: Recorded core recoveries in coal appear to generally exceed 95% which is the minimum requirement in accordance with the SAMREC Code and SANS 10420-2004 guidelines.
- Borehole Geological Logging: The identity of the geologist responsible for logging and sampling the two BP boreholes is unknown (initials D. N.). The Frigate boreholes were logged and sampled by Mr. Colin Taylor. It is not known whether the latter was SACNASP registered. Apart from some minor clerical errors, few discrepancies were detected in the borehole logs and it is considered that the overall standard of logging is above average.

Analysis of all samples from the BP and Frigate (a company that formerly held the exploration rights) boreholes was conducted by McLachlan and Lazar (latterly M&L Inspectorate) which is currently a SANAS and ISO/IEC 17025:2005 accredited laboratory. In accordance with standard industry practice, it has been assumed that whole core samples were submitted to the laboratory. The relative density of all raw samples was determined prior to analysis.

Samples from the BP boreholes were analysed for proximate, CV and sulphur at raw and at sink/float densities of 1.40, 1.50, 1.60, 1.70 and 1.80. The minus 0.5 mm material liberated on crushing was also similarly analysed.

All raw samples from the Frigate exploration programme were submitted for proximate analysis. Selected samples from both the No. 2 Upper Main and No. 2 Lower Seam were combined and washed at relative densities of 1.55, 1.65, and 1.75 and the sink/float fractions analysed for proximate, calorific value and sulphur. The minus 0.5 mm material was also similarly analysed. Three samples were analysed for phosphorus content.

## ES8 Description of Key Environmental Issues

This section includes discussion and comment on the environment, social, and health and safety aspects associated with the material assets.

JSE
12.9(h)(viii)
-
SR
T5.2, T5.3
-
SV
T1.7

## **Nkomati Mine**

**Compliance:** Nkomati's new order mining right was granted on 30 September 2010 and is valid until 29 September 2020. Previously Nkomati was in possession of a mining licence granted on 18 February 1998 and valid until 19 October 2015.

The original EMP for the operation was compiled and submitted to the Department of Mineral Resources ("DMR") in 1999 under the old Minerals Act. This document was approved and a mining permit issued. In 2005 as part of the conversion process required by the MPRDA, the mine submitted an amended Environmental Management Programme ("EMP") in compliance with the requirements of the DMR. Included with this submission was a Social and Labour Plan ("SLP"). The EMP includes both underground and opencast mining methods but does not specify the areas to be mined. The EMP and SLP have been approved by the DMR with the granting of a new order mining right.

In the absence of the relevant approvals Nkomati had until 30 September 2010, not implemented the EMP and SLP. Given this, the previous review indicated that Nkomati is likely to be in non-compliance with some or all of the SLP and EMP commitments.

An EMP Amendment for the Matadeni pit was submitted on 13 October 2010 to the DMR for approval. On 1 March 2011 Nkomati was served by DMR with an order in terms of Section 93 1(B) (I) of the MPRDA to cease operations at the Matadeni pit and to resubmit by 1 April 2011 an amended EMP addressing DMR and DWA comments. The order is based on an inspection conducted by DMR on 27 January 2011 in which it noted that the Matadeni pit was being operated without an approved EMP. Nkomati submitted the revised EMP Amendment on 11 March 2011 and received approval from the DMR on 8 April 2011. The DMR has not issued a retraction of the order in terms of Section 93 1(B) (I) of the MPRDA nor have stamped approved copies of the EMP or the amendment thereto been provided to Nkomati. Management and its attorneys, DLA Cliffe Dekker Hofmeyr, have been in contact with the DMR in order to get evidence, in the form of a stamped EMP and amendment, that the document has been approved. This evidence has not been provided to SRK. SRK has had sight of a letter from the DMR to the Directors indicating that the financial provision in the EMP is acceptable to the DMR and that the funds must be lodged with DMR by the 31 July 2011. This has been achieved by means of an amendment to the existing Bank Guarantee dated 21 June 2011. Therefore, although correspondence around the EMP amendment has been seen by SRK, SRK has not seen proof that Nkomati can mine the pit legally.

No internal or external compliance audits have been undertaken by the colliery. Action will reportedly be taken in this regard once licensing issues have been resolved with the relevant authorities.

On 15 December 2010 Mpumalanga Department of Economic Development, Environment and Tourism ("DEDET") issued Nkomati with a written warning of their intent to issue a compliance notice in terms of Section 31L of NEMA for the illegal commencement of the following listed activities by operating the Matadeni pit:

- Regulation R386 item 1 (m) "any purpose in one in ten year flood line of a river or stream, or within 32 metres from the bank of a river or a stream where the flood line is unknown,

excluding purposes associated with residential use but including: canals, channels, bridges, dams and weirs”.

- GNR 387 item 1 (e) and 1 (h) “the construction of facilities or infrastructure, including associated structures or infrastructure for:
  - 1 (e) any process or activity which requires a permit or license in terms of legislation governing the generation or release of emissions, pollution, effluent or waste and which is not identified in GNR 386 of 2006.
  - 1 (h) the storage of diesel tanks on site and the construction of an unlined dam which the mine deposit waste water, without authorisation either from the DWA as required by law”.
- 15 “the construction of road that is wider than 4 metres or that has a reserve wider than 6 metres, excluding roads that fall within the ambit of another listed activity or which are access roads of less than 30 metres long”.

Nkomati corresponded with DEDET to seek clarification on the listed activities, to inform the department of the appointment of the Group Sustainability Coordinator (GSC) and stakeholder engagement consultant, and requested a meeting to discuss an application for rectification of the unlawful activities. Further notifications that DEDET intend proceeding with the issuing of a formal compliance notice were issued to Nkomati on 10 and 24 February 2011. Nkomati submitted the Section 24G application on 23 March 2011. In terms of NEMA an administrative penalty of up to R1 million can be issued for each unlawful activity regardless of the approval of a Section 24G application. Nkomati may thus be liable for a penalty of up to R4 million.

It is reported that all water uses have been registered and that an Integrated Water Use Licence (IWUL) application was submitted to DWAF in 2008. A revised Integrated WUL application, for opencast and underground operations was submitted and a site visit undertaken by Department of Water Affairs (“DWA”) in October 2009 which provided comments on the application. Nkomati was on 9 December 2010 issued by DWA with a notice of intent to issue a directive in terms of Section 63(1) of the NWA for engaging in water use activities without authorisation. Nkomati has been in ongoing communication with DWA and has reportedly addressed DWA’s comments in the revised Integrated WUL application which was resubmitted to DWA on 3 March 2011. The licence has as yet not been issued by the DWA. While operating without a WUL is a legal non-compliance, it is currently unlikely that the operation will face prosecution as there are many mines that have made application that have not yet been approved. The lack of WUL is hampering Nkomati’s efforts to improve water management. The colliery wishes to construct additional dirty water storage capacity but is reluctant to proceed without the correct authorisation

An assessment of the compliance of the mine with GN 704 was included in the resubmission of the IWUL application made in March 2011. This identified areas where the colliery is not compliant with GN 704. Commitments have been made to re-engineer water management facilities where this is possible or an exemption is requested from the specific requirement of GN 704.

Observations made by SRK on site, indicate that clean and dirty water separation is not fully compliant with GN 704 and improvements are required. This is particularly the case with the

Matadeni pit where overburden has been dumped across a water course, resulting in the accumulation of water on the upstream side of the dump. The wetland specialist report has indicated that the Present Ecological State of this system is very low. As this wetland has been rated as having a high Ecological Importance and Sensitivity, the downstream impacts on the wetland are potentially significant.

**Stakeholder engagement:** Nkomati has since the last review taken several actions to address previous deficiencies as regards stakeholder engagement including:

- The preparation of a report on consultations undertaken by the mine from early 2008 to September 2010 for submission to the relevant authorities. This report is supported by records and where these are not available an affidavit by Nkomati's MD is included.
- The appointment in December 2010 of a suitably qualified and experienced consultant to assist Nkomati with stakeholder management and community facilitation in the local communities. The consultant's brief is to:
  - Engage further with the affected chieftainships;
  - Establish proper lines of communication with stakeholders;
  - Propose structures for ease of engagement and effective decision-making;
  - Establish an effective Community Forum that is representative of all relevant stakeholders.
- The appropriate organisation and facilitation of public consultation meetings with the two of the three affected communities in support of the NWA, NEMA and MPRDA licensing processes. Issues and concerns were reported and are according to Sentula being addressed by the mine. A meeting to address the concerns raised by the community is reportedly being scheduled. A meeting with the third community was not held due to being marred by violence. Nkomati recognises the need for public order policing to enable this meeting to proceed. The Matadeni community meeting has not been rescheduled.
- The formal recording of stakeholder engagement meetings.

**Grievance management:** Two complaints registers were developed in May 2010; one for community complaints and one for employee complaints. The former is housed at the mine entrance and the latter at the plant. No new entries have been made into either register since the last review. The reasons for this should be investigated by Nkomati and actioned as part of the environmental and social management systematisation initiative.

**Community health and safety:** Nkomati has since the last review taken steps to address impacts concerning the health and safety of the community. The operational areas have been fenced to prevent unauthorised access by people and animals, a mine haul road has been built between the Matadeni pit and the plant to avoid the use the public road which passes through the settlements, a cattle dip located within the fenced area will be rebuilt once the community has agreed a new location, blast and vibrations inspections have been undertaken to assess the integrity of community infrastructure, a dust monitoring programme has been initiated (buckets have however not been

located within the communities but on the perimeter of the mine lease area), and dust suppression is undertaken. Nkomati should consider extending these actions to include community noise monitoring, and HIV/AIDS and road safety awareness initiatives. The mine plans to formalise the provision of discard to the community into an enterprise development project. It should consider undertaking a feasibility study, which includes community consultation, prior to implementing this initiative.

**Implementation of SLP and EMP commitments:** Prior to the granting of the new order mining right (30 September 2010) Nkomati had not implemented the social and environmental commitments documented in its SLP and EMP (with the exception of compensation of farmers, laboratory analyses, community costs, donations and consulting services). Ad hoc management has been undertaken such as the provision of bursaries (as described in the SLP) and donation of air conditioners to local schools. Based on SRK's understanding of the budget, there does not appear to be provisions for the rehabilitation of the defunct opencast pits, with the rehabilitation of these pits required by DWA.

SRK is of the opinion that the budget for environmental and social management may not be adequate to manage the collieries risks, particularly the capital budget for the construction of new water management activities.

The EMP Amendment for the Matadeni pit was only completed subsequent to the opening of the pit resulting in the construction phase management measures not being implemented.

In keeping with the spirit of the MPRDA Nkomati should in SRK's opinion have implemented its EMP and SLP commitments despite the delayed conversion of the old order mining right.

**Social and labour plan:** The SLP states that implementation will commence following the receipt of a mining right. As SLP approval was not granted until 30 September 2010 no financial provision was made for implementation of LED commitments in the 2009-2010 and 2010-2011 budgets. Nkomati however spent R548,000 from April 2010 to February 2011 on various community projects including community housing upgrades, cash and equipment donations to the SAPS, pastor and chief, bursaries and awards to local schools, and repairs and maintenance to community infrastructure.

The approved SLP is generic and does not provide information by way of planning commitments (objectives, activities, targets, budgets are not provided - except for training and local economic development ("LED")). The SLP is four years old and as such the LED projects listed therein are no longer relevant to the Integrated Development Plans ("IDP"). Nkomati recognises this and is in the process of updating the document. Discussions regarding LED projects have reportedly been held with the Municipality.

**Environmental Management Programme Report 2005:** The EMP approved by the DMR could be improved by addressing the following:

- The project description is incomplete;
- Limited or no baseline data (e.g. single sampling run for water);
- Questionable impact assessment methodology;

- Generic management measures;
- Monitoring commitment that is not appropriate.

As a result it is SRK's opinion that Nkomati may not be managing all the risks and impacts of its activities. This may result in unforeseen expenditure during operations and at closure to manage risks and liabilities. There is however, the opportunity to address some of these shortcomings through appropriate aspect and impact identification and procedure development as part of the ISO system.

**EMP Amendment:** The Matadeni pit EMP Amendment was submitted to the DMR on 13 October 2010. The previous review provided comment on the shortcomings of this document which may result in Nkomati not managing all the risks and impacts of its activities. Nkomati submitted the revised EMP Amendment on 11 March 2011 and received approval from the DMR on 8 April 2011.

**Water Use Licence Application:** As indicated an initial application for a WUL was made in 2008 and then following the issuing of a pre-directive by DWA, an updated WUL application was submitted in March 2011. A review of the Integrated WUL application indicates that this document is generally appropriate to meet the needs of the authorities. However, as the public consultation required for license approval has not been fully completed, it is unlikely that the WUL will be issued until this is completed. SRK is also concerned that the impacts associated with the placement of overburden across a wetland area, in the flow path of a non perennial stream, has not been appropriately considered in the Integrated WUL application. The impact of this is that the management measures proposed may not be adequate. This may further hamper the issuing of a WUL.

**Emergency preparedness and response:** An emergency preparedness and response plan has not been prepared. A list of public emergency services and their contact numbers is displayed on the office notice board. Not all staff are familiar with the relevant commitments in the EMP and EMP amendments. Nkomati has reported that staff are familiarised with the contents and commitments at induction and that a service provider has been arranged to offer emergency services to employees as required. Mine emergencies that may compromise the health and safety of adjacent communities still need to be addressed.

**Integrated water and waste management:** Residues from the washing plant are deposited in the slurry ponds for drying and then are stockpiled at the mine entrance for collection by the communities for use as fuel. General wastes are disposed by the mine at the local municipal waste disposal site. The mine is unaware if this site is licensed. Oils and hazardous wastes from the operation are reportedly collected by a contractor for disposal. No evidence is available in support of this.

**Process waste handling:** As indicated the coarse arisings from the plant are buried in one of the open pits and the slurry fraction discarded in slurry ponds to the north of the plant until dry and then stockpiled for use by the community. Both the drying of the slurry and stockpiling for collection by the community have been included as water uses in the WUL application. Currently there are no signs of acidity liberated from the slurry and static geochemical tests have indicated that acid generation is unlikely.

It is expected that once underground mining activities commence there will be a need for a surface discard facility. As the mine has limited space available, it has been necessary to design the dump to fit in the southern corner of the lease area. This has resulted in an “L-shaped” dump with apparently steep slopes. This shape may make management of the facility difficult and the steepness of the slopes is likely to impact on closure requirements. This is due to the fact that steeper slopes are likely to be more prone to erosion and the washaway of cover material.

**Water Contamination:** Recent monitoring data indicate that there is currently no indication of an impact on the surface water. However, the groundwater is showing indications of an impact associated with mining, as opposed to processing activities. This impact is associated with an increase in sulfate concentrations, although not yet to a level which would be considered an environmental risk. It must be noted that acidity is not yet being generated. Two of the boreholes downgradient of the plant indicate high TDS, derived mainly from sodium chloride. These concentrations are anomalous to the other boreholes on the mine site. No evidence has been provided to indicate whether this is a mining related or natural occurrence.

It is noted that two boreholes, one in the plant area and one north of the Matadeni opencast are beginning to show evidence of contamination with nitrate. The source of this can either be sewage impacting on groundwater, or blasting residues washing from coal and discard into the aquifer. It is understood that there is currently no human exposure to this, however, if long term exposure were to occur, potentially post closure, health impacts may be manifested.

The EMP indicates that the geohydrological work that was undertaken for the underground mine indicates the potential for decant on the eastern edge. Although this is the side furthest away from the river, there is still the potential that this decant will flow towards the river and impact on water quality. It has also been indicated that there is an expected 275 m<sup>3</sup>/day decant that is expected from the open pits as they fill with water. These decants are seen as a risk to the operation as they are likely to require management either during operations or at closure.

**Rehabilitation:** The old northern and southern pits are in various stages of rehabilitation, with the final work on the pits still being required. It is reported by the mine that there is sufficient material available in the overburden and topsoil dumps to backfill the pit to approximately the original topography, therefore, no final void will remain at either pit. The intention is to place sufficient topsoil to allow the area to be used for the cultivation of sugar cane. This will require a layer of 600 mm, but it is reported that there is insufficient topsoil available to achieve this. It must be noted that the placement of a 600 mm topsoil layer has been included in the closure costing undertaken for the operation. The mine has prepared a Mine Rehabilitation plan to support the Integrated WUL application. This plan is generic and provides a program as to when certain activities will occur. The plan is not supported by a risk assessment and there is no consideration of residual risks as required by the MPRDA. There is therefore, no certainty that the risks associated with the open pits and their rehabilitation are fully addressed.

**Air emissions:** Nkomati has, with the assistance of SHE Systems, established an air quality monitoring programme which includes installation of dust buckets at the underground, open pit and plant sections, with dust buckets positioned to capture fallout. This system has recently been commissioned, and although the dust buckets were observed to have been installed, no monitoring data is currently available.

**Water monitoring:** Environmental consulting company, Geovicon, conducts quarterly water quality monitoring. This monitoring indicates that there is no obvious impact on the Nkomati River but that the groundwater is showing signs of impacts of the mine. A review of the report by SRK indicates that appropriate parameters are monitored at appropriate intervals to assess impact. However, SRK is concerned that data verification is not rigorously undertaken as evidenced by anomalies reported in the trend data.

Sentula's GSC appears to have a sound understanding of Nkomati's key environmental and social risks. Nkomati would benefit from the inputs of appropriately qualified and experienced professionals to assist in the development of plans to address these risks.

**Decommissioning and Closure Liabilities:** An independent closure costs assessment was undertaken in 2009. This assessment does not take the Matadeni pit into account. The appendices of this assessment were not provided for review so a verification of the results is not possible. However a review of the rates contained in the document (albeit a limited data set), indicate that the rates used are generally appropriate. The assessment indicates that the liability excluding water treatment is ZAR92 million. SRK is of the opinion that this is sufficient for the mines liability. Currently the Matadeni pit does not represent a significant liability as it is still in the early stages of mining and the allowance made in the closure assessment is sufficient to address the current liability.

A detailed assessment of the water treatment liability has not been undertaken by SRK; however, SRK is of the opinion that water treatment will cost R5.5 million to construct a plant, with the plant requiring replacement every 10-15 years. The operating costs are likely to be in the range of ZAR2-5 million per annum in perpetuity. As indicated this liability has not been provided for in the closure liability estimate.

In 2009 a Bank Guarantee to the value of ZAR4.3 million was in place to address the liability. No evidence was provided as to whether additional guarantees had been put in place since 2009. It is likely that the mine will encounter difficulty in obtaining authority approval for new projects, without the liability being fully funded to the satisfaction of the DMR. This could result in the mine being required to obtain additional guarantees.

The mine makes a journal provision for rehabilitation and as of the 31 March 2010, and the balance sheet provision for April 2011 is R67.8 million.

The liability and risk costs for the mine are presented in the Table ES3.

**Table ES3: Environmental Liabilities and Risks (ZAR million)**

	Liability <sup>1</sup>		Risk <sup>2</sup>		Funding Mechanism	
	Mine <sup>3</sup> (ZARm)	SRK <sup>4</sup> (ZARm)	Mine <sup>3</sup> (ZARm)	SRK <sup>4</sup> (ZARm)	Type	Amount (ZARm)
Nkomati Mine	112	112	Not costed	5.5 every 10 to 15 years <sup>5</sup> 2 – 5 per annum <sup>6</sup>	Guarantee	8.6

1 – Liability is an eventuality to which a monetary value can be assigned with some degree of certainty

2 – Risk is an eventuality to which a monetary value can be assigned with limited certainty

3 – Mine – liabilities assessment undertaken by mine

4 – SRK opinion of likely liability

5 – Capex

6 - Opex

## Mulungwa Project

SRK understands that the document provided was prepared to meet the requirements of the Zambian Authorities in terms of obtaining environmental approval for the project. SRK further understands that the document was not prepared to meet any other international standards such as the Equator Principles and Performance Standards of the International Finance Corporation.

SRK is of the opinion that the document could meet the requirements of the local authorities. However, SRK has certain concerns as described below. SRK is also of the opinion that should international financing be required for the operation at a later stage, financial institutions subscribing to the Equator Principles would require significant additional work to be undertaken as the documented work does not currently meet international standards.

General concerns with regards to the Environmental Impact Study (EIS) are listed below and where necessary expanded upon:

- There is very limited project description in the document, making it very difficult to assess the nature, extent and significance of possible impacts
- Insufficient baseline data has been collected with no cognisance being made of possible differences that may occur between the wet and the dry season. In some cases no baseline data has been collected for example:
  - Noise;
  - Air;
  - Hydrology, although water quality in the rivers has been determined; and
  - Aquatic ecosystems.
- As insufficient baseline data has been collected SRK is concerned that the assessment of impacts may not be complete;
- Although SRK recognises that impact assessment is by its nature subjective, SRK is of the opinion that some of the ranking that has been used may understate the impact;
- SRK is concerned that some impacts may not have been considered. Impacts not considered include:
  - No detail is provided with regard to which lithologies have been subjected to geochemical testing with samples only described by position in the core. Therefore, it is not possible to assess whether risks and possible impacts associated with generation of an acidic and or saline and or metal rich effluent have been adequately considered. This relates to leachate generation from the transient overburden stockpiles while on surface, prior to being backfilled into the pit as well as the possibility that a contaminating leachate will be generated from the pit post closure;
  - As the hydrology of the project area has not been adequately described, it is not possible to determine how, if at all, the pit could impact on the baseflow in the river. It is also not possible to determine whether there is any risk of flooding in the pit as a result of its proximity to the river;
  - There does not appear to be any consideration of how the pit will impact on the yield of the boreholes which are used for water supply to communities as there is no quantification of groundwater make to the pit nor is there any quantification of the draw-down associated with the planned dewatering of the pit;
  - Based on the information presented to SRK, there is no evidence that dewatering requirements ahead of mining have been adequately considered. SRK considers this

- a potentially significant risk given the location of the proposed pit adjacent to the river and at the base of the valley;
- The report states that water dewatered from the pit as well as from the dewatering boreholes will be discharged to river after undergoing settlement in a pollution control dam. There is no indication of the volume of water to be discharged and how this may affect baseflow and subsequent aquatic ecology. Furthermore, there does not appear to be adequate consideration of the potential chemical impacts on the river as a result of this discharge, recognising that the groundwater in the region has been shown to be highly mineralised. This concern holds for the effluent generated during coal processing, which is also understood to be discharged to the river after undergoing settlement; and
  - Potential community health impacts associated with dust generation.
- SRK is of the opinion that the management measures that have been developed for the risks and impacts that have been adequately assessed are generally appropriate. However, as not all risks and impacts have been considered, there are likely to be management measures that have not been considered;
  - SRK understands that there are 53 households that are likely to be displaced during mining operations. According to the EIS, a Resettlement Action Plan (RAP) has been prepared. However, it has not been included in the EIS. Furthermore, SRK is of the opinion that the social impacts have not been adequately addressed in the EIS. Therefore, based on the information presented to SRK, SRK cannot comment on whether the mitigation measures around all social impacts are appropriate;
  - SRK is of the opinion that the assessment of alternatives which are included in the document is not adequate to demonstrate that alternatives have been considered with regard to potential environmental impacts;
  - Without an adequate project description in the document, it is difficult to assess whether the quantum of the financial calculation of closure liability is adequate. However, based on the items included in the assessment, SRK is of the opinion that the rates that have been used for the assessment are indicative of actual costs to be incurred; and
  - SRK is of the opinion that the environmental monitoring that is proposed in the document is generally adequate, with appropriate use of guidelines.

In conclusion, while SRK recognises that the EIS could meet the requirements of the local authority with regard to obtaining environmental approval for the project, SRK is of the opinion that the possible risks and environmental impacts have not been adequately addressed in the EIS. This may result in unforeseen expenditure during operations and at closure to manage or mitigate these risks and impacts.

### **Bankfontein Project**

The resource is located adjacent to an important river system, hence there will be additional focus on the proposed mine from the various authorities. Mining has previously taken place to the north and south of the property, which is more likely to be a negative than a positive factor depending on the degree of compliance of these earlier operations.

The Bankfontein Project's EMP was approved by the DMR on 17<sup>th</sup> March 2010.

Since operations are scheduled to commence in 2013, no current liabilities or provisions exist for this project. Closure costs have been provided for at a rate of ZAR2.61/RoM tonne in the economic assessment.

The financial model includes a capital expenditure closure provision of ZAR9.6 million and an operating cost closure provision of ZAR17.8 million.

### **Schoongezicht Project**

The occurrence of a water pan within the coal zone appears to be the one significant environmental issue which could adversely affect the potential of this project. The pan expands and contracts with the seasons, but its maximum area may be as much as 21 ha and, with the addition of the statutory 100 m pillar, the total sterilized area becomes approximately 30.5 ha. The area that is most probably sterilized by the pan could contain 3.8 Mt of coal, assuming a total coal thickness of 8.0 m and a relative density of 1.57.

The Schoongezicht Project's EMP was approved by the DMR on 20 November 2006. In the Mining Right Application to the DMR, it was indicated that the water pan will need to be de-watered prior to the mining of the property and the pan re-established on completion of the mining, and that provision will be made in the mine closure funds to do this.

Since operations are scheduled to commence in 2013, no current liabilities or provisions exist for this project. Closure costs have been provided for at a rate of ZAR2.56/RoM tonne in the economic assessment.

The financial model includes a capital expenditure closure provision of ZAR15 million and an operating cost closure provision of ZAR22.1 million.

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## ES9 Coal Resource and Reserve Statements

### Nkomati Mine

Tables ES4 and ES5 provide details of the Nkomati Mine Coal Resources and Coal Reserves.

**Table ES4: Nkomati Mine - Coal Resources at 28 February 2011**

Resources	Seam	Area (ha)	Thickness (m)	RD	GTIS (Mt)	TTIS (Mt)
<b>Mangweni Block</b>						
MAN.A.	No.2 Lower	4.51	6.24	1.49	0.42	0.38
MAN.B.	No.2 Lower	10.60	6.51	1.52	1.05	0.95
<b>Total Indicated</b>					<b>1.47</b>	<b>1.32</b>
<b>Matadeni Block</b>						
MAT.C.	No.2 Upper	37.93	2.12	1.64	1.32	1.19
	No.2 Lower o/c	32.70	3.67	1.53	1.84	1.65
	No.2 Lower u/g	4.78	3.47	1.53	0.25	0.22
	No1	36.10	1.21	1.52	0.66	0.60
MAT III	No.2 Lower	14.53	3.95	1.52	0.87	0.79
<b>Total Indicated</b>					<b>4.94</b>	<b>4.44</b>
<b>Grand Total</b>					<b>6.41</b>	<b>5.77</b>

1. Coal Resources have been reported in accordance with the classification criteria of the South African Code for the Reporting of Mineral Resources and Mineral Reserves (the SAMREC Code).
2. Coal Resources are inclusive of Coal Reserves.
3. Coal Resources are not Coal Reserves and have not been evaluated for economic viability.
4. Coal Resources are reported on an air-dried, uncontaminated basis (ad, uc).
5. GTIS – Gross Tonnes In-situ.
6. TTIS – Mineable Tonnes In-situ

**Table ES5: Nkomati Mine – Coal Reserves at 28 February 2011**

Resources	Factor	Model Estimation Error	Layout Loss	Extraction	Mining Efficiency	TTIS to RoM (Mt)
<b>Opencast</b>	TTIS (Mt)	5%	5%	95%	95%	81%
Mangweni						
Matadeni	3.63	3.45	3.28	3.11	2.96	2.96
Total o/c	3.71	3.52	3.35	3.18	3.02	3.02
<b>Underground</b>	TTIS (Mt)	5%	5%	85%	95%	73%
Mangweni	1.32	1.25	1.19	1.01	0.96	0.96
Matadeni	0.82	0.78	0.74	0.63	0.60	0.60
Total u/g	2.14	2.03	1.93	1.64	1.56	1.56
<b>Grand Total</b>	<b>5.77</b>					<b>4.52</b>

### Mulungwa Project

SRK has assessed the Coal Resource Classification in terms of the SAMREC Code which refers to the South African Guidelines for Estimating and Reporting of Inventory Coal, Coal Resources and Coal Reserves. This guideline stipulates the required minimum exploration borehole densities (number of boreholes per unit area) per coal resource classification category (Measured, Indicated and Inferred). Based on this classification (Table ES6) the Mulungwa Resource classification ranges from Measured to Indicated.

Table ES6 provides detail of the Mulungwa Project Mine Coal Resources.

The A-Coal Seam hosts approximately 70% of the Mulungwa Coal Resources hence it is the target seam, however the B-Coal Seam Resources are reported as well (Table ES6).

**Table ES6: Mulungwa Project - Coal Resources at 28 February 2011**

Seam	Area <sup>1</sup> (m <sup>2</sup> )	Thickness (m)	Volume (m <sup>3</sup> )	RD	GTIS <sup>2, 3, 4, 5, 6</sup> (Mt)	TTIS <sup>2, 3, 4, 5, 7</sup> (Mt)
<b>A-Lower</b>	302 050	12.53	3 784 686.50	1.56	5.92	4.74
<b>A-Upper</b>	302 050	4.95	1 495 147.50	1.79	2.68	2.14
<b>B-Lower</b>	225 852	4.67	1 054 728.84	1.67	1.76	1.41
<b>B-Upper</b>	295 504	2.47	729 894.88	1.81	1.32	1.05
<b>Total Measured</b>					<b>11.68</b>	<b>9.34</b>
<b>A-Lower</b>	13 538	12.53	169631.14	1.56	0.27	0.2
<b>A-Upper</b>	13 538	4.95	67 013.10	1.79	0.12	0.09
<b>B-Lower</b>	19 292	4.67	90 093.64	1.67	0.15	0.11
<b>B-Upper</b>	15 931	2.47	39 349.57	1.81	0.07	0.05
<b>Total Indicated</b>					<b>0.61</b>	<b>0.46</b>
<b>Total Resource (Measured + Indicated)</b>					<b>12.28</b>	<b>9.8</b>

- (1) Area has been corrected for dip
- (2) Coal Resources have been reported in accordance with the classification criteria of the South African Code for the Reporting of Mineral Resources and Mineral Reserves (the SAMREC Code).
- (3) Coal Resources are inclusive of Coal Reserves.
- (4) Coal Resources are not Coal Reserves and have not been evaluated for economic viability.
- (5) Coal Resources are reported on an air-dried, uncontaminated basis (ad, uc).
- (6) GTIS – Gross Tonnes In-situ, TTIS – Total Tonnes In-situ

The different composition of the different coal seams give rise to a large variation in the coal qualities and this is seen in the quality data of the four coal seams with the A-Lower Seam having the most superior quality while the B-Upper exhibits the most inferior quality of all the seams.

Within the resource boundary the total overburden volume was calculated to be 20.8 Mm<sup>3</sup> and the coal seam tonnage to be 12.3 Mt. Average seam relative density is 1.65. Under normal circumstances the strip ratio of 1.7 would be obtained. However, considering the steep inclination of the coal seams and the probable mining method to be employed it is likely that the strip ratio would be significantly higher. Coal Reserves are shown in Table ES7.

**Table ES7: Mulungwa Project – Coal Reserves and Modifying Factors used by SRK**

Resources	Factor	Model Estimation Error	Layout loss	Extraction	Mining Efficiency	TTIS to RoM (Mt)
Opencast	TTIS (Mt)	5%	20%	80%	75%	46%
<b>Total o/c</b>	<b>9.8</b>	<b>9.3</b>	<b>7.4</b>	<b>6.0</b>	<b>4.5</b>	<b>4.5</b>

### Bankfontein Project

Table ES8 provides details of the Bankfontein Project Coal Resources.

**Table ES8: Bankfontein Project - Coal Resources at 28 February 2011.**

Block	Seam	Thick (m)	Area (m <sup>2</sup> )	RD (gm/cc)	GTIS (Mt)	TTIS (Mt)
<b>Far South</b>	A	0.64	1 302 520	1.4	1.20	0.90
	B	3.05	1 967 991	1.7	10.10	7.58
<b>South</b>	B	2.03	171 113	1.5	0.51	0.38
	C	1.3	362 001	1.4	0.70	0.53
<b>North</b>	B	2.53	236 762	1.5	0.90	0.68
	C	0.8	363 114	1.5	0.40	0.30
<b>East</b>	B	3.22	67 333	1.6	0.30	0.23
	C	0.6	227 798	1.5	0.20	0.15
<b>Far East</b>	B	2.95	19 276	1.6	0.10	0.08
	C	2.08	128 609	1.5	0.40	0.30
<b>TOTAL</b>					<b>14.8</b>	<b>11.1</b>

The C Seam total tonnage is too small to be mined using underground methods and too deep to be mined using open cast methods therefore it is not expected to be mined. The Reserve calculation in Table ES9 excludes the C Seam.

**Table ES9: Bankfontein Project – Coal Reserves at 28 February 2011**

Resources	Factor	Model Estimation Error	Layout loss	Extraction	Mining Efficiency	TTIS to RoM (Mt)
Opencast	TTIS (Mt)	5%	10%	80%	90%	62%
<b>Total o/c</b>	<b>11.1</b>	<b>10.6</b>	<b>9.5</b>	<b>7.6</b>	<b>6.9</b>	<b>6.9</b>

### Schoongezicht Project

Table ES10 below shows resources contained within a selected mining area delimited by the extent of the No 2 Upper Main Seam. The estimated total mineable resource is 8.83 Mt. The combined thickness of the three seams within this area reduces the stripping ratio to less than 2 to 1 (bcm waste overburden plus interburden / tonne coal).

**Table ES10: Schoongezicht Project - Coal Resources at 28 February 2011**

Seam	PLY	Thickness m	Volume m <sup>3</sup>	RD	GTIS Mt	GL %	TTIS Mt
<b>Measured Resources</b>							
<b>No.2 Upper Top</b>		0 .64	343 349	1 .52	0.5	10%	0.5
<b>No. 2 Upper Main</b>	Upper	0 .74	610 653	1 .68	1.0	10%	0.9
	Lower	3 .76	3 005 718	1 .53	4.6	10%	4.1
<b>No. 2 Lower</b>		3 .01	2 221 110	1 .65	3.7	10%	3.3
<b>Total</b>					<b>9.8</b>		<b>8.8</b>
<b>Indicated Resources</b>							
<b>No.2 (all Seams)</b>	-	-	-	-	-	-	-
<b>Inferred Resources</b>							
<b>No.2 (all Seams)</b>	-	-	-	-	-	-	-

- (1) Coal Resources have been reported in accordance with the classification criteria of the South African Code for the Reporting of Mineral Resources and Mineral Reserves (the SAMREC Code).
- (2) Coal Resources are inclusive of Coal Reserves.
- (3) Coal Resources are not Coal Reserves and do not have demonstrated economic viability.
- (4) Coal Resources are reported on an air-dried, uncontaminated basis (ad, uc).

The Schoongezicht Project is expected to have high extraction ratios.

**Table ES11: Schoongezicht Project - Coal Reserves at 28 February 2011**

Resources	Factor	Model Estimation Error	Layout Loss	Extraction	Mining Efficiency	TTIS to RoM <sup>1</sup> (Mt)
Opencast	TTIS (Mt)	0%	2%	100%	100%	98%
Total o/c	8.8	8.8	8.6	8.6	8.6	8.6

- (1) Coal Reserves have been reported in accordance with the classification criteria of the South African Code for the Reporting of Mineral Resources and Mineral Reserves (the SAMREC Code).

The difference between Bankfontein and Schoongezicht extraction and mining efficiency percentages is attributed to the geological nature of the deposits. Bankfontein is characterized by significant faulting and intrusions, and the Schoongezicht resource has limited losses due to such geological factors.

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## ES10 Competent Person Validation

The Competent Person, Hilton Ashton, hereby declares that the Executive Summary is a true reflection of the full Competent Person's Report.

### Table ES12: Competent Persons / Valuator

Name	Address	Membership/s
Hilton Ashton	SRK, 265 Oxford Road, Illovo, 2196	SAIMM [No.35784] IASSA
David Mosuwe	SRK, 265 Oxford Road, Illovo, 2196	Pr.Sci Nat [No. 100049/05] GSSA

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## ES11 Summary Valuation Table

Table ES13 provides details of the risks identified and the mitigation measures for the identified risks.

### Table ES13: Risks and Mitigating Factors

Risks	Mitigation Measure/s
<b>Technical Risk</b>	
Coal LoM plans and targets not achieved	- Management has significant experience in coal mining and is currently mining the primary asset, Nkomati Anthracite.
Environmental/Social Compliance risk	- SRK have quantified the risks associated with environmental and social compliance
<b>Economic Risk</b>	
Coal Price Risk (Reserve Risk) - Revenue	- SRK has assessed the Coal Prices using various sensitivities (-30% to +30%) - SRK has used current market price for coal
Macroeconomic Factors Risk (Reserve Risk)	- SRK has used current market factors for the macroeconomic parameters applied in the financial models
Economic Viability Risk (Reserve Risk) - Operating Costs	- SRK has assessed the Operating Costs using various sensitivities (-30% to +30%)
Economic Viability Risk (Reserve Risk) - Capital Expenditure	- SRK has assessed the Capital Expenditure using various sensitivities (-30% to +30%)
<b>Political Risk</b>	
Legislative Risk	Awareness of key changes and drivers of South African, Zambian and Botswanan legislation and the effect on the business of Sentula Mining

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This section provides a summary valuation for Sentula Coal based on an aggregation of the following:

- Net Asset Value ("NAV") for the Material Assets as represented by the NPVs determined in Section 14 of the CPR;
- The Mulungwa Project NPV value has been converted at an exchange rate of ZAR/USD7.4;
- The Present Value of unallocated corporate expenses valued on the basis of a DCF approach for the duration of the LoM; and

- Balance sheet adjustments to account for debt and cash position at 28 February 2011.

**Table ES14: Material Assets– Primary (Cashflow) Valuation Range as at 1 March 2011**

Asset / adjustment	Applied Discount Rate (%)	Min: WACC + 2%			Max: WACC - 2%			Equity Stake (%)
		Preferred	Preferred	Preferred	Preferred	Preferred	Preferred	
Nkomati Mine (including Inferred Resources)	10.70%	613	648	686	60%	368	389	412
Mulungwa	13.70%	115	130	148	25%	29	33	37
Bankfontein Project	13.70%	207	230	256	100%	207	230	256
Schoongezicht Project	13.70%	302	341	386	100%	302	341	386
At Cost								
Asenjo Energy		222	222	222	25%	56	56	56
<b>Value of Material Assets (ZAR Millions)</b>		<b>1,460</b>	<b>1,571</b>	<b>1,698</b>		<b>962</b>	<b>1,048</b>	<b>1,146</b>
<b>Adjustments</b>								
Unallocated Corporate Expenses <sup>1</sup>						(10)	(10)	(10)
Exploration Expenditure						-	-	-
Mark-to-Market Value of Financial Instruments						-	-	-
Net debt/cash position (31 March 2011) <sup>2</sup>						(472)	(472)	(472)
<b>Equity Value (ZAR Millions)</b>		<b>1,460</b>	<b>1,571</b>	<b>1,698</b>		<b>480</b>	<b>566</b>	<b>664</b>

1. Unallocated Corporate Expenses (general and administrative, head office and other costs, that cannot be allocated by activity, of ZAR1.5 million per annum) for LoM, discounted at the base case real WACC.

2. Net debt/cash position from Sentula Mining Limited Results Presentation as at 31 March 2011

Using the primary valuation methodology produces a preferred value of ZAR566 million with a range of ZAR480 to ZAR664 million.

**Table ES15: Secondary Valuation (Market Approach) for Material Coal Assets**

	Coal Resources			Reserve RoM	Equity Stake (%)	
	Inferred	Indicated	Measured			
<b>Nkomati</b>	Mt		6.61	4.52		60%
<b>Mulungwa</b>	Mt		0.46	9.34		25%
<b>Bankfontein</b>	Mt		11.9	2.9		100%
<b>Schoongezicht</b>	Mt			8.8		100%
<b>Asenjo (at cost)</b>						25%
	Min Value ZARm	Preferred Value ZARm	Max Value ZARm	Sentula Attributable		
				Min ZARm	Preferred ZARm	Max ZARm
<b>Nkomati</b>	146	279	405	88	167	243
<b>Mulungwa</b>	77	97	145	19	24	36
<b>Bankfontein</b>	83	124	163	83	124	163
<b>Schoongezicht</b>	70	88	132	70	88	132
<b>Asenjo (at cost)</b>	222	222	222	56	56	56
<b>Gross Value (ZARm)</b>	<b>598</b>	<b>810</b>	<b>1066</b>	<b>315</b>	<b>458</b>	<b>629</b>

Using this methodology a range between ZAR315 and ZAR629 million is obtained with a preferred value of ZAR458 million.

**Table ES16: Valuation as at 1 March 2011**

Asset / adjustment	Low ZARM	Preferred ZARM	High ZARM
Market Approach	315	<b>458</b>	629
Cashflow Approach	480	<b>566</b>	664
	450	<b>512</b>	660

The range of values obtained from the two methodologies gives a lower boundary at ZAR315 million and an upper boundary of ZAR664 million. The preferred values for the two methodologies are ZAR566 million and ZAR 458 million. In SRK's opinion an equal weighting to each of the Primary and Secondary (Market Approach) Valuation Methods gives a fair valuation of the assets. The average value of the methods amounts to ZAR512 million with a range of ZAR450 to ZAR660 million.

SRK considers that the resulting in the Equity Value range of ZAR450 to ZAR660 million is based on sound reasoning, engineering judgement and technically achievable plans, within the context of the specific risks mentioned in Table ES13 and the general risks associated with the South African mining industry.

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31 March 2011

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31 March 2011