



South African Coal

Desktop Study



INTRODUCTION	2
THE SOUTH AFRICAN COALFIELDS	3
1. Witbank.....	4
2. Highveld.....	4
3. Waterberg.....	5
4. Vereeniging-Sasolburg.....	5
5. Ermelo.....	6
6. Klipriver.....	7
7. Vryheid.....	7
8. Utrecht.....	8
9. Nongoma.....	8
10. Somkele.....	9
11. Soutpansberg.....	9
12. Kangwane.....	9
13. Thuli.....	10
THE SOUTH AFRICAN COAL MINES	11
WITBANK COALFIELD	11
1. Douglas-Middelburg Operations.....	11
2. Khutala Colliery.....	12
3. Matla Coal.....	12
4. Optimum Colliery.....	12
5. Shanduka Resources.....	13
6. Goedehoop Colliery.....	13
7. Zibulo Colliery.....	13
8. Arnot Colliery.....	14
9. Arthur Taylor/ ATCOM.....	14
10. Tweefontein Collieries.....	14
11. Middelkraal Colliery.....	15
12. Mafube Colliery.....	15
13. Kleinkopje Colliery.....	15
14. Goedgevoden Colliery.....	16
15. Landau Colliery.....	16
16. Greenside Colliery.....	16
17. Klipspruit Colliery.....	17
18. Glisa (North Block Complex).....	17
19. Vulna Colliery (Zonnebloem).....	17
20. Leeuwpan Colliery.....	18
HIGHVELD COALFIELD	18
1. Sasol Secunda.....	18
2. Kriel Colliery.....	19
3. Isibonelo Colliery.....	20
4. New Denmark Colliery.....	20
WATERBERG COALFIELD	20
Grootegeluk Colliery.....	20
VEREENIGING-SASOLBURG COALFIELD	21
New Vaal Colliery.....	21
ERMELO COALFIELD	21
Savmore Colliery.....	21
KLIPRIVIER COALFIELD	22
1. Slater Coal (Forbes Coal).....	22
2. Springlake Colliery.....	22
NONGOMA COALFIELD	23
Zululand Anthracite Colliery.....	23
SOMKELE COALFIELD	23
Somkhele Colliery.....	23
VRYHEID COALFIELD	24
Vaalkrantz Colliery.....	24
SOUTPANSBERG COALFIELD	24
Tshikondeni Coal Mine.....	25
KANGWANE COALFIELD	25
Nkomati Anthracite.....	25
THULI COALFIELD	25
Vele Coal.....	25
APPENDIX I	27
APPENDIX II	28
APPENDIX III	29
APPENDIX IV	31
APPENDIX V	32
APPENDIX VI	33

INTRODUCTION

XMP Consulting (XMP) has been requested to compile a desktop study on the Coal industry in South Africa.

The report includes the following:

Study of each of the 11 producing Coalfields

ERMELO, HIGHVELD, KANGWANE, KLIPRIVIER, NONGOMA, SOUTPANSBERG, UTRECHT, V-SASOLBURG, VRYHEID, WATERBERG and WITBANK

- Coal resources/reserves and ROM/Saleable production for each Coalfield;
- Geology of the Karoo System of each Coalfield;
- List of collieries for each Coalfield.

Details of coal mines; major and junior with >3Mtpa in each Coalfield

- Name of Colliery and Holding Company;
- Detailed location (coordinates) and farms comprising each coal mine;
- Main shareholders of each coal mine;
- Status of each coal mine (in production/ greenfield or exploration stage);
- Mining method (opencast/underground), average stripping ratio for opencast mines;
- Resources/reserves/ROM/Saleable annual production tonnage of each mine;
- Coal type (Steam/PSS/ PCI/ Anthracite etc.) produced by each coal mine;
- Standard/expected coal quality (proximate analysis/ultimate analysis/ash fusion temperature/ash analysis/trace elements etc.);
- Cost analysis (mining costs/ transportation costs and port charges etc.);
- Status of permit or right under the PRMDA.

Transportation details for each coal mine

- Shipping port for export mines (RBCT, Durban, Maputo, etc);
- Distance from mine to shipping port;
- Status of rail contract (already secured or not), if secured, tonnage per year;
- Export allocation and capacity in Mtpa from RBCT/ Durban/Maputo/etc.;
- Export and domestic supply tonnage;
- Principal buyer (domestic market) and saleable tons to them per year.

THE SOUTH AFRICAN COALFIELDS

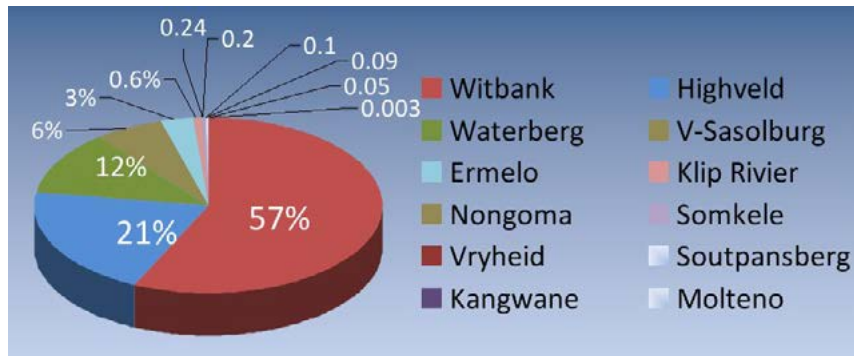
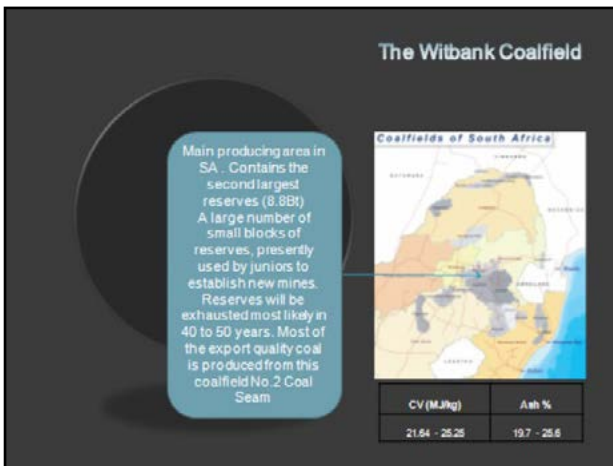


Fig. 1 Coalfield Ranking by ROM production (2009)

COAL RESERVES 2009		
COALFIELDS	RESERVES 2009 (Mt)	%
HIGHVELD	9 474.6	29.2
WITBANK	8 509.3	26.2
WATERBERG	6 114.0	18.8
ERMELO	4 387.5	13.5
V-SASOLBURG	1 708.4	5.3
SOUTH RAND	715.5	2.2
UTRECHT	540.7	1.7
KLIPRIVIER	528.8	1.6
SOUTPANSBERG	257.4	0.8
KANGWANE	145.9	0.4
VRYHEID	99.6	0.3
NONGOMA	5.8	0.02
TOTAL	32 487.5	100

1. Witbank



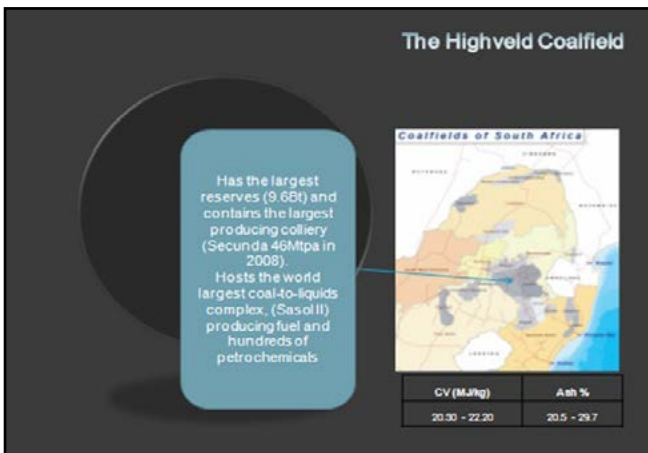
The Witbank Coalfield extends from Brakpan in the west through to Belfast in the east. The northern boundary is a very irregular sub-crop against the pre-Karoo basement rocks of predominantly Waterberg sandstones with the most northerly limit about 15km NW of Witbank, with many “inlets” to the east and west. The south boundary is a prominent pre-Karoo felsite contact called the Smithfield ridge. This basin was first exploited in the late 1800s in the Brakpan (Apex Mines) region and has been the focus of concerted exploration and exploitation ever since.

The basin is a multiple seam deposit type with the development of five major seam horizons which may in places be composite seams. The major controls for the development of the coal are proximity to undulations of the “basement” topography, through erosion channelling and sediment influx into swamp beds and finally erosion of the current erosion surface. The primary

economic coal seams have been the No. 2 Seam and No. 4 Lower Seam and, in places, the No. 5 Seam.

Structurally, the coal horizons are un-deformed with each displaying a very slight dip to the south east of less than a degree and minor discrete faulting events that have a south west to north east trend of graben features and other minor faulting events. The most distinctive post-depositional feature is the intrusion of dolerites related to the Lesotho Basalts that have resulted in a variety of sills and dykes of various ages. The most prominent of the dykes is the Ogies dyke, a 12 to 20m thick essentially vertical intrusion with an east-west strike. The No. 4 Dolerite sill, a 20 to 70m thick multiple flow event, has a preferential intrusion horizon above the No. 5 coal Seam, but in places it transgresses through the coal bearing strata to the pre-Karoo basement and forms in other places a barrier to erosion.

2. Highveld



The Highveld Coalfield is located in south eastern Mpumalanga Province, immediately south of the Witbank Coalfield. The width of the Coalfield is some 95km, stretching from Nigel in the west to Davel in the east, and is, in a N-S direction, about 90km long, from just north of Kriel to beyond Standerton in the south and covers an area of approximately 7 000km². After the Witbank Coalfield, the Highveld Coalfield is the next largest producing Coalfield in South Africa.

The Coalfield is host to up to five coal seams within the middle Ecca Group sediments of the Karoo Supergroup. The Karoo Supergroup comprises sediments ascribed to deposition in glacial to fluvio-glacial and from shallow marine to fluvio-deltaic environments. The Karoo Supergroup comprises the following Groups (in decreasing age), although not all Groups are completely represented in the Highveld Coalfield to the

present day erosion surface: Dwyka, Ecca, Beaufort, Stormberg and Drakensberg.

The five identified coal Seams contained in the Vryheid Formation (middle Ecca Group) are named, from the base up, as follows: No.1 Seam; No.2 Seam; No.3 Seam; No.4 Seam and No.5 Seam.

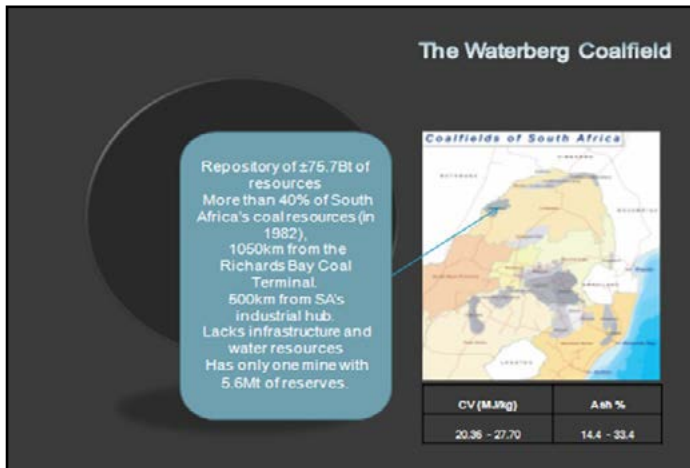
In certain areas of the Coalfield, both the No.4 and No.2 Seams are split by clastic partings into the No.4 upper and No.4 lower units. The Coalfield is characterized by the fact that in the northern regions, all the coal seams, with the exception of the No.3 Seam, attain mineable thicknesses with economic potential, while in the southern regions, only the No.4 Seam, and in very localised areas, the No.2 and No.5 Seams, attain mineable dimensions of economic importance.

The depth to the coal seams increases in a southerly direction, e.g. the No.4 Seam can be mined by opencast in the Kriel (northern) district, while it occurs at a depth of around 200m in the Standerton (southern) district. The coal seams are generally flat-lying to gently undulating with a slight regional dip to the south.

Structurally, the Coalfield is relatively un-deformed with no prominent folding having been identified. Small-scale faulting (less than 1m) is not uncommon although large-scale faulting is. The only large-scale displacements identified are almost always associated with transgressive dolerite sills, intruded during the waning stages of the Karoo times. These intrusive dolerite sills and dykes are related to the Drakensberg Formation flood basalts. The dolerite intrusions adversely affect the coal seams in the vicinity of the intrusions in terms of coal quality by devolatilising and burning the coal. Large areas of coal have been rendered uneconomical due to the effects of these dolerite intrusions.

The most important economic coal seams are the No.4 Seam and the No.2 Seam. The No.4 Seam accounts for approximately 80% of the economically recoverable coal within the Highveld Coalfield. The No. 2 and No. 4 Seams are mined in the northern parts of the Coalfield while only the No. 4 Seam is mined in the southern parts. The bulk of the coal produced is consumed in power stations and for the production of synthetic fuels. A very limited quantity is exported.

3. Waterberg



The Waterberg Coalfield is situated some 400km north west of Johannesburg.

This basin is a fault bounded basin with dimensions of approximately 90km E-W and 40km N-S. The faulting plays a distinct role in the preservation and depositional characteristics of the coal occurrences in the region.

The two major boundary faults are the Zoetfontein in the north and the Eenzaamheid fault in the south. The presence of post-Karoo faulting has resulted in various portions of the stratigraphy having been preserved. The current weathering surface has a major impact on the relative proportion of the stratigraphy preserved.

The major formations of the Karoo Sequence are present within the Waterberg basin but with significant differences in the lithologies and are, with the exception of the Lower

Ecca, all significantly thinner representing much slower rates of subsidence than those encountered in the main Karoo Basin with the progression from glacial through to aeolian and flood basalts being broadly represented.

The major coal bearing horizons of the Ecca Group are the Volksrust Formation (55m of intercalated mudstones and coal) and the Vryheid Formation (three major discrete Seams of approx 3m, 9m and 4m, respectively). The most significant difference to the main Karoo Basin is the fact that the Volksrust Formation is carbonaceous with this formation being represented by intercalated carbonaceous shale and coal. The vitrinite content of the coal plies to the top of the Volksrust Formation result in the upper Zones having a semi soft coking coal yield as well as coal for thermal use. While the remainder of the Volksrust Formation yields low grade thermal coal for power station consumption.

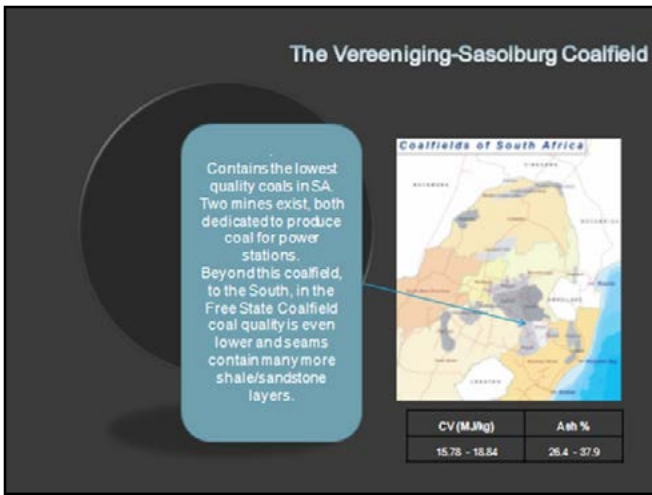
The Vryheid Formation coal Seams are composed of predominantly dull coal with minor carbonaceous mudstone intercalations again supplied as thermal coals. The Volksrust Formation coals are classified as a thick interbedded Seam deposit type and the Vryheid Formation as a multiple Seam deposit type.

4. Vereeniging-Sasolburg

The Vereeniging-Sasolburg Coalfield is, according to the 1:250 000 geological map, mainly characterized by mudstone and sandstones of the overlying Beaufort Group (Adelaide Subgroup). These are underlain by the Volksrust Formation of the Permian Ecca Group, a formation with a thickness of approximately 100m in the Heilbron area. It consists mostly of argillaceous rocks which are found on the surface.

The Volksrust Formation consists predominantly of grey to black silty shale, whereas thin siltstone and sandstone lenses/beds, that are frequently bioturbated, generally occur near the upper and lower boundaries of the succession.

The Vryheid Formation underlies the Volksrust Formation and is the main coal-bearing formation. Outcrops occur in the far north and east of Coalfield.



The coal zone in this Coalfield is approximately 40m thick and consists of three coal units:

- The lower coal unit can be separated into at most three benches by sandstone partings. The unit has an average thickness of 3m;
- The middle coal unit consists of the No. 2A and 2B Seams and their associate rock layers (resulting in successions that can each be up to 8m thick). This middle unit, however, is not always split by clastic partings; and
- The upper coal unit has a thickness of nearly 5m and includes the No. 3 Seam and the Coal Marker Seam.

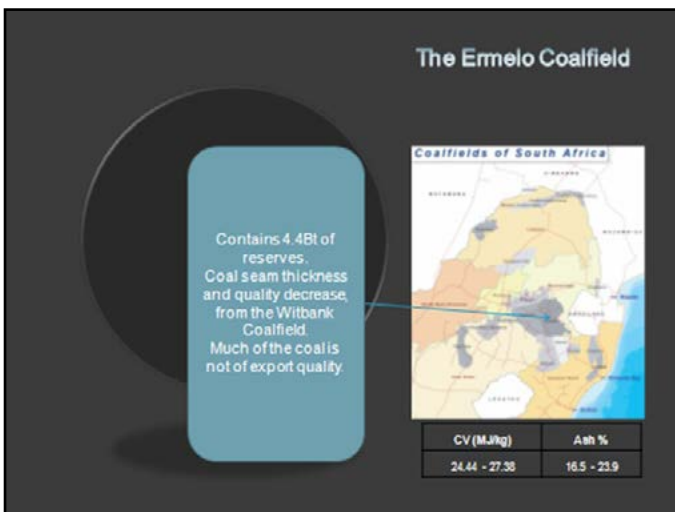
Later intrusions in the form of dolerite dykes and sills have disturbed the strata. Displacements of up to 85m by the sills are a common occurrence in this Coalfield. Minor faults with maximum displacements of 5m are also encountered in the

region. The general dip in the area is to the south-south-east following the basin morphology. The depth of the coal zone varies between 125m and 270m, with an average between 180m and 220m. General stratigraphic columns of the Sigma area suggest that the roof of the ±40m thick coal zone (Coal Marker Seam) occurs at a depth of roughly 180m.

The upper coal unit is situated approximately 20m above the middle unit. This unit is in close proximity to a prominent dolerite sill of 80m to 100m thickness situated above the coal zone. This has resulted in strata-displacement as well as the coal of the upper unit having a lower volatile content. The lower and middle coal units are separated by a clastic parting with a thickness of roughly 5m. The Vryheid Formation is underlain by basement rocks comprising diamictites of the Dwyka Group and unidentified volcanic rocks.

This Coalfield has been mined for many years and consists out of three economical mineable seams. Coal from the upper two seams is of lesser quality, but the lower seam is of excellent quality and can be used for the local market, after some beneficiation. However, as result of a dolomitic basement and its proximity to the Vaal River, environmental objections may delay any mining project.

5. Ermelo

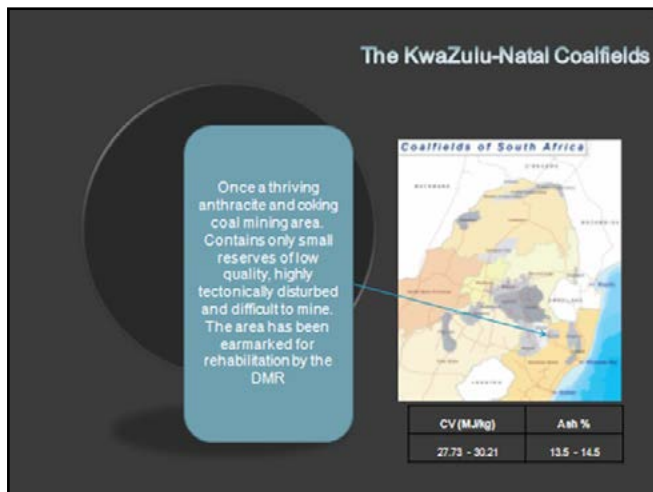


Ermelo Coalfield stretches from Carolina in the north to Wakkerstroom in the south, a distance of some 150km and the east-west extent of the field is some 80km, from about 25km east of Standerton, eastwards to Sheepmoor. It is bounded by the Witbank Coalfield in the north west, Highveld in the west and Utrecht Coalfield to the south.

Anthracite has been mined in the Piet Retief, Ermelo, Wakkerstroom areas, but essentially the Coalfield generates bituminous coal. It hosts up to eight coal seams within the middle Ecca Group sediments of the Karoo Supergroup, but not all are present in the various sectors.

There are four coal seams which are the most important: A Seam; B Seam, C upper and C lower or Eland, Alfred, Gus and Dundas, depending on which sector is being exploited.

6. Klipriver



The Klipriver Coalfield is the largest of the northern KwaZulu/Natal Coalfields and historically, the most important. It is roughly triangular in shape and the area is bounded on the west by the Drakensberg Mountain Range, the Utrecht Coalfield in the east and stretches N-S from just north of Newcastle to Ladysmith in the south.

The Coalfield contains sediments of the Dwyka Formation overlain by sediments of the Ecca and Beaufort groups of the Karoo Sequence. No Pre-Karoo rocks are exposed within the area. The Pietermaritzburg formation with a maximum thickness of 90m conformably overlies the Dwyka shales. In the absence of Dwyka, the Pietermaritzburg Formation lies unconformably on the basement rocks.

In the northern part of the Coalfield, the Top seam has been mined extensively but the Bottom seam has better quality coal, only mined when it is in close proximity to the Top. In the

southern portion of the Coalfield, the upper seam has also been mined and the bottom seam is not developed to a mineable thickness. The numerous dolerite sills and intrusions have affected the coal, resulting in a wide range of coal qualities from a bituminous coal to anthracite. The bottom seam has generally been mined for its coking properties.

There are three operating mines: Avimore and Springlake (both anthracite) and Magdalena (bituminous/lean coal), plus two new developing mines: Sesikhona (anthracite) and Uithoek/Burnside (coking coal). The following mines are still producing today: Avimore, Magdalena and Springlake. These mines are owned by Slater Coal (Forbes Manhattan) and Shanduka respectively.

7. Vryheid

The Vryheid Coalfield lies to the east of the Utrecht Coalfield and covers an area of approximately 2 500km². This Coalfield has produced some of the best coking coal, anthracite and thermal coal over a number of years. The Dwyka Formation covers most of the area lying unconformably on the Pre-Karoo sediments. It is composed of diamictites and associated fluvio-glacial sandstones and black shales. It averages 150m in thickness, but it is thicker in Pre-Karoo glacial valleys and thinner or absent over Pre-Karoo highs. Nine coal seams have been identified within the main coal zone of the Vryheid Coalfield and several of these have been mined over the last century.

The lowest seam, Targas, occurs sporadically and has not been exploited and is generally thin (0.3m). The Coking seam was the first of the seams in the sequence to have been mined. The seam is general thin and rarely exceeds 1.0m. This seam has produced a good quality coking coal, and in some case the raw coal ash content is 7- 8%. The roof of the seam is fairly competent with medium grained sandstone; however, the floor is mostly fine grained, micaceous sandstone with grey shale that tends to break up under the mining equipment. The Dundas seam is common in the Coalfield and is split into the Upper and Lower Dundas. The Lower Dundas varies in thickness from 0.2m to 2.5m and the Upper Dundas is generally thin but has reached thicknesses of between 1.0m and 1.2m in the northern part of the coal field. The parting thickness between the seams vary from 1.0m to 6.5m. The roof and floor conditions of these seams are generally poor. These seams have produced good coking and thermal coal.

The Gus seam has been mined by the majority of the mines and the seam thickness varies from 0.5m to 2.0m. Both a good quality coking coal and anthracite have been mined from the Gus Seam; it is all dependant on the position of the dolerite. If the coal has been de-volatilised by the dolerite, good quality anthracite is produced. The coal from the Gus is low in sulphur and has low phosphorus content, making it a premium produce. The roof is composed of well bedded competent sandstone, while the floor is a fine to medium grained sandstone with inter-bedded shale which causes problems for mining equipment because the floor breaks up. The Alfred seam is of lower coal quality than the other seams but the mining height is approximately 1.5m to 1.8m. The seam yields an average CV of 27MJ/kg, which meets the export qualities. The floor is competent but the roof conditions are poor with mudstone and shale.

The Fritz seam is the only seam of the minor ones that has any economic potential, because of its coal qualities: low ash, low sulphur, but this seam thickness is rarely above 0.5m, making it uneconomical to mine.

8. Utrecht

The Utrecht Coalfield lies between the Klipriver Coalfield to the west and the Vryheid Coalfield to the east. It is separated from the Klipriver Coalfield by a barren, dolerite intruded area and from the Vryheid Coalfield by an area where both the seams have been eroded. Dwyka formation sediments are absent or are thin over most of the Coalfield. Over much of the area, shales of the Ecca Group directly overlie granite and these shales vary in thickness from 17m to 64m.

The four main coal seams that occur in the Utrecht Coalfield are the Alfred, Gus, Dundas and the coking seam and all have been mined over the past century. The Coking Seam is the lowest of the mineable seams and is generally thin with a maximum thickness of 1.5m consisting of good quality mainly bright, thinly banded coal. Roof and floor are normally competent sandstones and the seam can produce a good quality coking coal with beneficiation.

The Dundas Seam occurs approximately 15m above the coking seam and is of variable quality and thickness. The seam contains an upper mixed dull and bright horizon, a central bright portion and a bottom mixed coal and shale zone. The seam's roof is generally competent sandstone and the floor is shale, which causes problems when being mined. Both anthracite and bituminous coal can be produced from this seam.

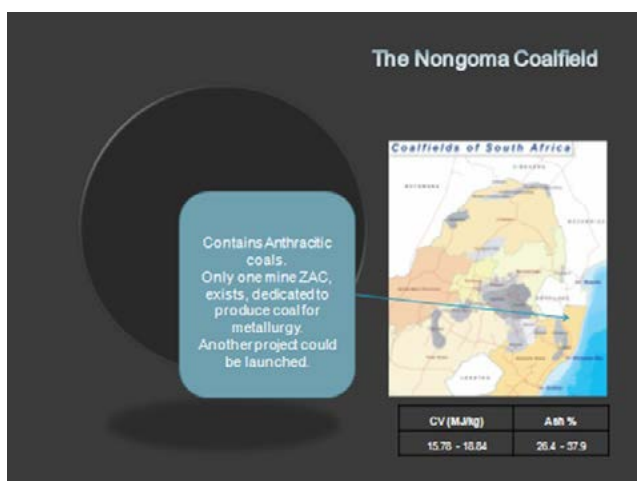
The Gus Seam has been mined extensively in the past and occurs approximately 17m above the Dundas and is generally thicker than 1.0m in the southern portion of the Coalfield. In the northern part of the Coalfield, the Dundas seam splits into the upper and lower portions which are separated by sandstone with a thickness ranging from 3m to 12m. The upper portion of the seam can reach thicknesses of up to 3m. The roof and floor of the Dundas seam are considered variable.

The Alfred Seam is present over the much of the Coalfield and occurs approximately 14m above the Gus seam. The coal is the thickest of the four main seams, but is generally of poor quality with high ash and high sulphur with a competent floor, but poor to moderately competent roof.

Five major dolerites are present in the Coalfield and the most persistent is the Zuinguin dolerite that has a thickness in excess of 150m. The effect of the dolerite intrusions on the coal varies and is related to the thickness, temperature and proximity of the dolerite intrusions. The dolerite sills that underlie the coal have a greater effect relative to the sills that occur above the coal seams. The Coalfield is fairly faulted and faulting associated with dolerite intrusions are common with throws ranging from a few metres up to 150m occurring.

Coal is been mined in the Utrecht Coalfields at Uitkoms by Brandewyn Vallei and over the years, the following mines: Zimbutu, Umgala, Utrecht, Klipspruit, Longridge, Zoetmelk, Brockwell and Kemplast produced large volumes of coal for both the export and local markets. The Umgala reserve and the other mines mentioned above still have reserve available. Kangra Holdings still hold the reserve to Zimbutu, Umgala, Utrecht, Klipspruit and Aasvoelkrans. Some BEE companies hold exploration permits on Bloemendal, Commissiekraal and Zoetmelk.

9. Nongoma

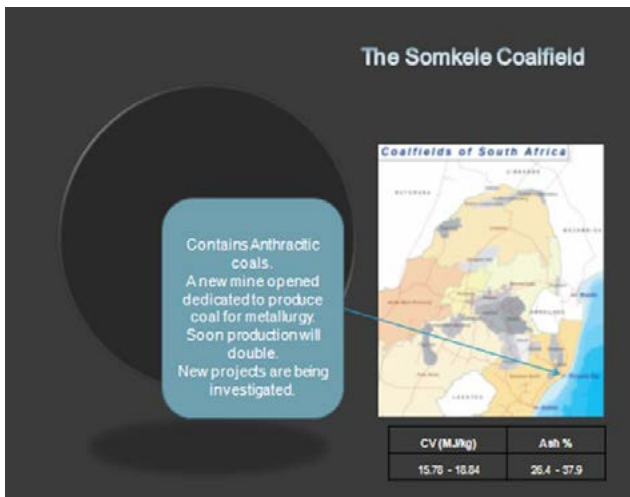


This Coalfield stretches from just south of Zululand Anthracite Colliery (ZAC), 27km NE of Ulundi and northwards to the southern Swaziland border. The Coalfield has two identified areas, the southern area which is currently being mined by ZAC and the Nongoma Reserve in the north.

The strata in the Nongoma region are effectively horizontal, but with gentle dips to the east and south of Nongoma. The coal seams of the Vryheid Formation (Middle Ecca) occur within this Coalfield, but the seams are generally thin. However, the Beaufort Formation has also been reported in this area. The coal seams in the ZAC area are severely faulted and have dips of up to 12 degrees. Dolerite sills and dykes are common in the Coalfield and numerous faults occur that break the coal reserve into smaller coal blocks and these increase the mining problems within the blocks.

Only one seam, the Main seam, has been developed by ZAC to a mineable thickness of between 1m and 3m.

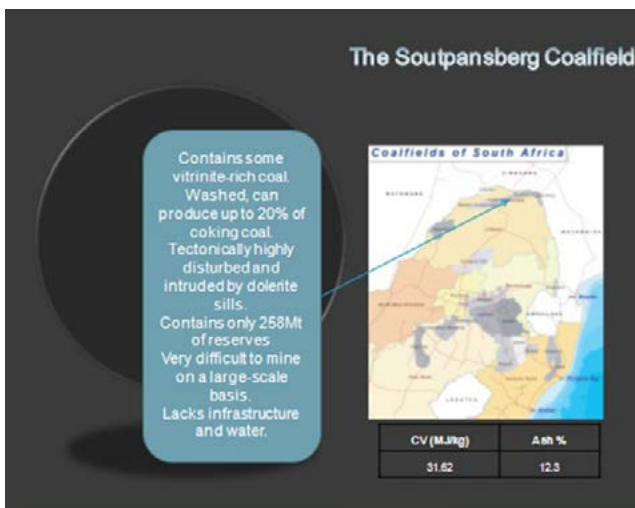
10. Somkele



It stretches from a few kilometres south of Empangeni to some 25km north of Mtubatuba, a total length of 60-70km. From west to east it runs from the Umfolozi-Hluhluwe Game Reserve for about 10km. The only operating colliery is Somkele mine. Previous mining operations were conducted in the early 1900s and in the 1940s. Somkele mines the main seam, about 16km north west of Mtubatuba, producing high quality anthracite.

The coal seam is generally steep, dipping at 10-25° to the east. Faulting is common and the coal measures have been intruded by dolerite dykes and sills. The dykes vary in thickness from 10m to 30m and sills overlay or underlie the coal seams. The seam, which is part of the Beaufort Formation, has a total width of 13 to 14m, made up of three units, the Top, Middle and Bottom with widths of 2, 3 and 3m, separated by carbonaceous shales.

11. Soutpansberg

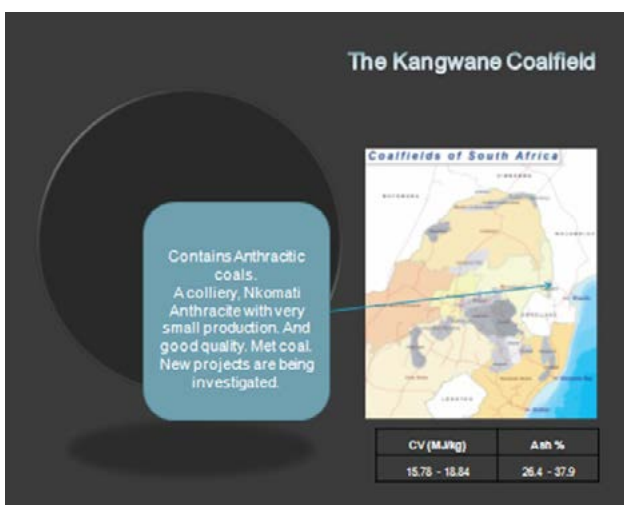


It is situated some 30km to the north of Makhado (Louis Trichardt) on the northern side of the Soutpansberg. It stretches from Tolwe in the west to the Mozambique border under the Kruger Park – a distance of 290km. The Coalfield is divided into three sub-basins: West, Central and East. The sub-basins are fault bounded remnants of the Karoo sequence.

The coal bearing area is the Madzaringwe Formation, which is a very thick sequence of carbonaceous siltstone, mudstone and coal. Predominantly, the coal in these areas is bright coal with high vitrinite content. The full Madzaringwe formation is in the order of 40m in thickness.

The total coal bearing horizon is on average 30m in width, with alternating coal and carbonaceous bands. There is only one operating mine, Tshikondeni which produces coking coal.

12. Kangwane

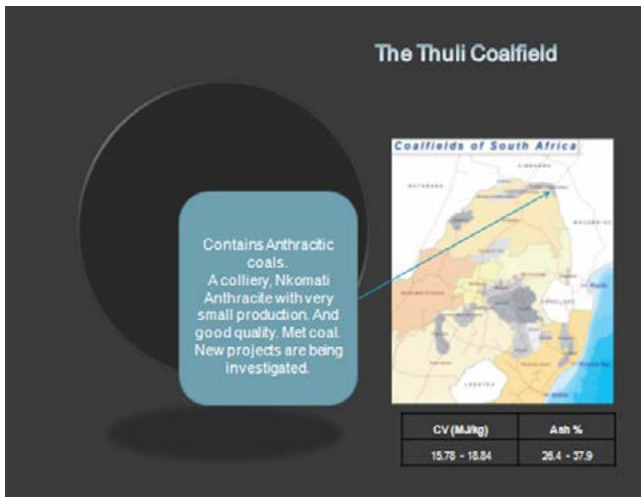


It lies to the north of Swaziland and forms part of the Coalfield which stretches from Nongoma in the south, through Swaziland to the southern boundary of the Kruger National Park. Faulting is common and the coal measures have been intruded by dolerite dykes and sills. The dykes vary in thickness from 10m to 30m and sills occur above and below the coal seams.

Three anthracite seams occur in the Coalfield, namely the Lower, Middle and Upper seams.

There is only one mine operating in the Kangwane Coalfield, which has been in operation since 1987: Nkomati Anthracite.

13. Thuli



This Coalfield stretches for some 75km, from about 15km west of Pontdrif to about 35km west of Musina, with the Limpopo River as its northern boundary. Its maximum N-S width is 20-25km at its western end, tapering north eastwards to almost a point at its eastern limit. Thuli continues across the Limpopo into Botswana and Zimbabwe.

The geology of the area is dominated by rocks of the Beit Bridge Complex that were subjected to granulite-grade metamorphism during the Limpopo Orogeny (2.7 GA), and comprises the Malala Drift Group into which the Alldays Gneiss and Messina Suite are intrusive. These basement rocks are covered by Karoo Supergroup sediments.

The Malala Drift Group is made up of leucogneiss, amphibolite and metapelite. The Karoo Supergroup consists of the Tshidzi, Madzaringwe, Mikamdeni, Fripp and Solitude Formations and is made up of sandstone, shale and coal.

Tertiary Deposits that overlay the above rocks are represented by calcretized sand and gravel, and consolidated silty sand. These sediments, which occur in proximity to major rivers and streams, are generally overlain by red sand. The area is further characterized by the Limpopo (Tuli) Coal Field, a synclinal folded basin containing a coal zone of up to 15m in width which consists of a Top, Middle and Bottom unit, plus sub-units.

At present, no mining is taken place, but a new mini, Vele, is currently being developed in the north eastern sector, which will produce mixed coking and power station coals.

THE SOUTH AFRICAN COAL MINES

WITBANK COALFIELD

NO	NAME OF MINE	ROM PRODUCTION (Mt)	OWNER
1	Douglas Middelburg Operations	16.7	Becca
2	Khutala Colliery	12.2	Becca
3	Matla Colliery	11.2	Exxaro
4	Optimum Colliery	9.5	Siyanda Coal
5	Graspan Leeuwfontein Lakeside Bankfontein	9.0	Shanduka Coal
6	Goedehoop Colliery	7.1	Anglo Coal
7	Zibulo Colliery	6.6	Anglo Inyosi Coal
8	Arnot Colliery	5.2	Exxaro
9	Arthur Taylor Opencast Mine - (ATCOM)	4.9	Xstrata Coal SA
10	Tweefontein Colliery	4.8	Xstrata Coal SA
11	Middelkraal Colliery	4.5	Umcebo Mining
12	Mafube Colliery	4.4	Anglo Coal & Exxaro
13	Kleinkopje Colliery	4.1	Anglo Coal
14	Goedgevonden Colliery	4.1	Xstrata Coal SA
15	Landau Colliery	3.9	Anglo Coal
16	Greenside Colliery	3.7	Anglo Coal
17	Klipspruit Colliery	3.6	Becca
18	Glisa Colliery	3.5	Exxaro
19	Vuna Colliery	3.5	Vuna Mining
20	Leeuwpan Colliery	2.5	Exxaro
21	Leandra Block	0.0	Becca

1. Douglas-Middelburg Operations

DMO is situated some 25km south east of Witbank and east of the Duhva Power Station. The DMO area stretches from the N4 highway south to the Oliphants River at Van Dyksdrift. The coordinates of the mine are Lat: 25.940689S; Long: 29.392327E.

The mine is on the Farms Hartbeestfontein 339 JS, Driefontein 338 JS, Wolkekrans 17 IS, Vlaklaagte 21 IS as well as other surrounding properties. DMO is wholly owned by BHP Billiton Plc.

The Douglas Middelburg Operations will produce about 10Mtpa to 12Mtpa for export and a further 10Mtpa for Eskom. It is to maintain exports at around the current level of 12Mtpa and fulfil ongoing domestic contractual commitments to Duhva Power Station.

The scope of the project is to include further development of existing coal reserves, development of new mining areas with low strip ratio, and investment in new infrastructure including a 14Mtpa coal processing plant and high-capacity overland conveyor system. The new coal processing plant will replace the existing, less efficient washing plant at Douglas.

The DMO project will allow BECSA to realise maximum value from its assets by utilising the existing reserves at Douglas and MMS, thus enabling it to maintain exports through to 2034. Export coal is transported to RBCT by rail, while the domestic coal is transported via conveyor belt to the nearby Duhva Power Station. Beneficiation facilities consist of the following: tips and crushing plants, two export wash plants, a middlings wash plant and a de-stone plant. The overall capacity is 30Mtpa.

DMO is a large opencast strip mine, producing over 22Mtpa ex-pit with six large draglines.

Typical DMO Export Coal qualities:

Calorific Value	MJ/kg	27.8	27.5
Calorific Value	kCal/kg	6050*	6030*
Ash	%	14.6	12.65
Volatile Matter	%	23.6	23.3
Sulphur	%	0.53	0.44
Inherent Moisture	%	2.52	2.27

2. Khutala Colliery

Khutala is situated some 36km south west of Witbank and lies to the south of the N12 highway to Johannesburg. The coordinates of the mine are Lat: 26.124238S; Long: 29.004242E. It is on the Farms Zondagsvlei 9IS, Schoongezicht 218IR, Leeuwfontein 219IR as well as other surrounding properties. Khutala is wholly owned by BHP Billiton Plc.

Khutala Colliery is an underground and opencast mine producing 15Mtpa for sale to Eskom on a cost plus basis. It is situated 100km east of Johannesburg, and is a combination of an opencast and underground mine. Domestic coal is transported via overland conveyor to the Kendal Power Station.

Beneficiation facilities consist of a crushing plant for the energy coal with a nominal capacity of 18Mtpa. A separate smaller crusher and wash plant with a nominal capacity of 0.6Mtpa is used to beneficiate the metallurgical coal supplied from the opencast operation.

3. Matla Coal

Matla Colliery is situated 42km south-south-west of Witbank and about 24km south-south-east of the town of Ogies. The coordinates for the mine are Lat: 26.259171S; Long: 29.121065E. It is on the Farms Haasfontein 85IS, Grootpan 86IS, Vierfontein 61IS as well as other surrounding properties. Matla is wholly owned by Exxaro.

This mining complex comprises three mines producing 14Mtpa for Eskom. It is a fully mechanised underground mine employing continuous mining and shortwalls. The thermal coal is supplied to Eskom's Matla power station in terms of a cost-plus agreement, reviewed annually, with a variable return payable by Eskom for any excess tonnage produced.

4. Optimum Colliery (Optimum Coal Holdings Pty Ltd)

The company is listed on the JSE. The colliery is situated ±30km south east of Middelburg on the road to Hendrina/Ermelo. The coordinates are Lat: 26.0060055S; Long: 29.630975E. The mine is on the Farms Optimus 480 JS, Pullenshope 155 IS, Optimum 554 IS as well as Kromdraai, Boschmanspoort, and Boschmanskop. Formed in 2007, Optimum Coal is South Africa's sixth-largest thermal coal producer and fourth-largest exporter after Anglo Thermal Coal, BHP Billiton Energy Coal South Africa and Xstrata Coal.

Optimum bought the Optimum Colliery in 2008 from BHP Billiton Energy Coal (BECSA). It took over the coal supply agreement as part of the deal and has an export sales arrangement with BECSA that runs until 2021.

The company's operations are located mainly in the Mpumalanga province and include Optimum Collieries and Koornfontein Mine, in which it currently has an effective 96% interest.

The estimated life of the Optimum Colliery mine is 22 years and that of Koornfontein is 18 years. Export sales are made through RBCT, in which Optimum Coal has control over 8.4Mt of entitlement.

Optimum Coal is contracted to supply 5.5Mtpa to Eskom's Hendrina power station and has in the past supplied as much as 6.5Mtpa. The potential exists that Koornfontein will supply coal to Eskom's nearby Komati power station and that Optimum Coal's Overvaal project could supply coal to Camden power station.

The company estimated a run of mine production from Optimum Collieries of between 15 and 16Mt for the current financial year to the end of June 2011, with up to 6Mt going for exports and 5.5Mt to Eskom. Koornfontein Mines is expected to produce up to 1.8Mt of exportable coal and 1.2Mt for Eskom and the inland market.

The production is achieved from opencast and underground operations. With the opencast mine contributing to the major part of the production and a mining contractor doing the underground mining currently. Beneficiation facilities include tips and crushing plants, an export washing plant and a de-stoning plant. The overall capacity is 17Mtpa.

Optimum Coal also received the right to export 6.5Mt of coal via RBCT, making the company the fourth-largest shareholder after Anglo American, BHP Billiton and Xstrata. BHP Billiton holds the rights to market all of Optimum's export coal until 2021.

The mine has a resource of over 700Mt and a viable coal reserve of 300Mt, giving a 25 year life-of-mine projection which equates to 191Mt saleable coal.

The company has two coal development projects. These are the Vlaktefontein project, near Ermelo, and the Overval project in the Camden area, adjacent to Coal of Africa's Mooiplaats operation. Warrior Coal, who is a partner in Optimum, also holds other coal rights in Mpumalanga and Limpopo.

5. Shanduka Resources

Graspan, Leeuwfontein, Lakeside, Bankfontein, Middelburg Townlands and Springlake Colliery are all part of the Shanduka group. In addition to these assets, Shanduka Resources has a 26% shareholding in Kangra Coal, which owns Balgarthan, Savmore, Taaiboschspruit and Welgedacht collieries in Mpumalanga. Kangra Coal also has a small stake in RBCT.

Shanduka Coal mines produce approximately 9Mtpa and have a reserve base of 92Mt of Bituminous coal and 35Mt of anthracite.

The Graspan colliery supplies some 3Mtpa of coal to the domestic and export market. Shanduka owns 30% in Graspan and Glencore 70%.

6. Goedehoop Colliery

The colliery is situated about 40km south east of Witbank, between the R554 road to Belfast and the R35 from Middelburg to Bethal and 6km west of the Komati Power Station. The coordinates of the mine are Lat: 26.102709S; Long: 29.40816E. It is on the Farms Goedehoop 46IS, Haasfontein 28IS and Enkeldebosch 20IS as well as other surrounding properties.

Goedehoop is wholly owned by Anglo Coal. The colliery was established in April 1983 and underwent a merger with Banks Collieries in 2005. It produces more than 11Mt from the No. 2 and No. 4 coal seams from four underground operations.

These include the Hope, Vlaktefontein, Simunye and South shafts. Coal is also mined from the Vlaktefontein and Haasfontein mini-pit operations. Two processing plants produce 7.5Mtpa of saleable coal, which is sold mainly to the export market.

Mining boundaries cover an area of some 28 000 hectares. Current life of mine runs until after 2035 and the resource is calculated at 310Mt.

7. Zibulo Colliery

Zibulo Colliery is situated immediately north west of Ogies, Mpumalanga opposite Klipspruit Colliery and is the first of several Anglo Inyosi coal mines to come on stream. The coordinates of the mine are Lat: 26.04418S; Long: 29.044609E. It is on the Farm Oogiesfontein 4 IS as well as other surrounding properties.

Zibulo Colliery is 73% owned by Anglo Coal. Anglo Inyosi Coal, a broad-based black economic empowerment (BBBEE) company is 73% held by Anglo American, with the remaining 27% own by Inyosi, a BEE consortium led by the Pamodzi and Lithemba consortia (66%), with the Women's Development Bank and a community trust holding the remaining equity.

The new Zibulo multi-product mine was previously known as the Zondagsfontein project and the greenfields projects of Elders, New Largo and Heidelberg. The colliery forms part of the Witbank Coalfield and comprises both an underground and opencast operation. Its underground mine will mine a 7Mtpa from No. 2, No. 4 and No. 5 coal seams and its opencast operation will produce 1Mtpa of coal.

Zibulo "Zondagsfontein" will be a multi-product mine for Eskom and the export market. It is situated close to BHP Billiton's Klipspruit and contains a resource of about 100Mt. Primary export product is railed to the Richards Bay Coal Terminal and secondary middlings will be sold to the local market.

Phola Coal Processing

The Phola coal processing plant is a 50:50 joint venture between Anglo Inyosi Coal (AIC) and BHP Billiton Energy Coal South Africa (BECSA) and is fed equally by AIC's Zibulo Colliery and BECSA's Klipspruit mine that will supply 3.3Mtpa to Eskom and export another 3.3Mtpa.

The project includes run-of-mine storage and materials-handling systems, domestic and export product storage, rail lines and two rapid rail load-out stations. Operation of the Phola plant has been outsourced to a company that will also take charge of coal loading for road and rail transport, as well as managing the discard and tailings storage. Zibulo will deliver 6Mtpa from underground and surface for 20 years, from reserves of more than 250Mt.

8. Arnot Colliery

Arnot Colliery is situated 40km south east of the town Middelburg and about 12km south of the N4 highway to Nelspruit. The coordinates for the mine are Lat: 25.946414S; Long: 29.809381E. It is on the Farms Rietkuil 491JS and Nooitgedacht 493JS, as well as other surrounding properties.

Arnot is wholly owned by Exxaro. The mine extracts coal using both underground and opencast operations and produces 5Mtpa of power station coal. Arnot uses mechanised mining methods and continuous mining processes. The mine is contracted to supply Eskom's Arnot power station until 2030 and the contract is a "cost-plus" agreement in which there is a return on investment and a management fee.

9. Arthur Taylor/ ATCOM

It is part of the Xstrata's Impunzi division. ATC/ATCOM Collieries are situated 14km south east of the town Ogies and 24km south-south-west of Witbank. The mine is north of the Ogies – Bethal road, the R545. The coordinates are Lat: 26.10281S; Long: 29.175896E. It is on the farms Blesbokfontein 31IS, Kromfontein 30IS and Klipplaat 14IS.

ATC and ATCOM are wholly owned by Xstrata. IMPunzi Division consists of both underground and opencast mines; Arthur Taylor Colliery (ATC), underground, ATCOM, opencast, Phoenix underground and Tavistock, underground, with a total reserve of over 160Mt.

These collieries are situated in the Witbank Coalfield between the national roads R545 and R547. They produce approximately 3.6Mtpa and have a total resource of 80Mt. Arthur Taylor colliery and ATCOM have a clean-coal stockyard system and rapid load out systems. Both these collieries use draglines in their opencast operations.

10. Tweefontein Collieries (Boschmans, Witcons and Waterpan)

Boschmans, Witcons and Waterpan are located 23km and 28km south west of Witbank respectively; they mine the Boschmansfontein 12IS, Tweefontein 13IS, Zaiwater 11IS and Blesboklaagte 31IS farms. The collieries are owned by Xstrata (79.8%) and African Rainbow Minerals (ARM), 20.2%.

The mines are in the Karoo Supergroup on the northern margin of the Witbank Coalfield. The Dwyka Tillite is overlain by sediments of Ecca, Beaufort and Stormberg Groups. Coal measures are associated with the Vryheid Formation of the Lower Ecca Group of Permian age. The No. 1, 2 and 4 Seams are present, but only the thick No. 4 seam is presently being mined. They form part of Xstrata's Tweefontein Division. Boschmans produced first in 1989, Witcons in 1981 and Waterpan in 1994. Boschmans produces around 2.8Mtpa of coal for exports and the domestic market, Witcons an estimated 1Mtpa of beneficiated coal for export with a calorific value of 6 640kcal/kg GAR and ash content of 13%.

A Bord and pillar mining is used at Boschmans, with continuous miners. Raw coal is produced from five continuous miner sections. Witcons has underground and surface operations, mining the No. 2 and No. 4 Seam of the Witbank Coalfield. The underground operations were converted to continuous miner sections to improve efficiencies and maintain costs. The underground mine is bord and pillar, utilising continuous miners and the surface mine is a truck and shovel operation. Waterpan was developed as an opencast and underground operation, but the underground section was closed in 2006. It is now a truck and shovel operation mining the No. 2 and No. 4 Seam.

Boschmans and Witcons ROM coals are transported to the plant by conveyor belts. The Boschmans 800tph capacity washing plant produces sized coal from the Wemco drums and duff from the cyclones and spirals. A lower grade product is

produced in a middlings plant for the domestic power industry. Witcons coal from the opencast operation is tipped onto the underground conveyor belt for the stockpile. Coal for exports is produced from dense medium cyclones and spirals. Waterpan ROM coal is transported to the plant by road. The 200tph coal plant has dense medium cyclones and spirals to produce export coal. Lower grade coal, mainly for Eskom, is beneficiated in a middlings plant.

Tweefontein Collieries produce a beneficiated coal for the exports and middlings for Eskom. An estimated 4.7Mtpa of the total 6Mtpa of the saleable production is sold into the export market with a calorific value of 6 640kcal/kg GAR and ash content of 13.5%. Tweefontein coal is loaded onto trains at the Saaiwater rail siding and railed 596km to the RBCT.

Xstrata has a shareholding capacity to export 15.5Mtpa via the RBCT, which equates to 20.9% of the terminal's original nominal capacity of 72Mtpa. Arm Coal has 3.2Mtpa of allocation as part of the RBCT Phase V. Boschmans, Witcons and Waterpan mining costs are R78.59/t, R105.93/t and R74.07/t respectively.

11. Middelkraal Colliery

Middelkraal Colliery is situated 30km north of the town Bethal along the R35 and 48km south of Middelburg. The coordinates for the mine are Lat: 26.194369S; Long: 29.477335E. It is on the Farm Middelkraal 50IS. Middelkraal is wholly owned by Umcebo Mining. Before mining could commence, 16 houses from an informal settlement on Middelkraal Umcebo's coal mine property had to be relocated.

Middelkraal produces over 4.1Mt of coal for the energy market utilising Truck and Shovel operations. This coal is crushed, screened and processed in an air jig plant and transported to the power utility sites. The total reserve is estimated to be in the order of 30Mt, giving the mine a life of 6 years.

12. Mafube Colliery

The colliery is situated about 30km east of Middelburg between the R104 road to Belfast and the N4 Highway and 14km north of the Arnot Power Station. The coordinates of the mine are Lat: 25.823463S; Long: 29.74347E. It is on the Farms Elandsfontein 433JS, Kleinfontein 432JS and Springboklaagte 416JS as well as other surrounding properties. Mafube is 50% owned by Anglo Coal.

Mafube coal mine

Mafube is a 50:50 joint venture partnership between Anglo Coal and Exxaro. The project has been completed and the ramp-up to full capacity was reached by end-2008. At full production, the mine will produce 3Mtpa of export steam coal and 2Mtpa of power station coal. The mine is situated on the Arnot North coal reserve, 30km east of Middelburg in the coal-rich Mpumalanga Province. The project will have a life of about 23 years.

Mafube covers three reserve blocks, the Springboklaagte, Veldfontein and Nooitgedacht blocks. The 367-ha Springboklaagte block is the current focus of Mafube's activities. The Springboklaagte block represents a reserve of 67Mt, while another 8Mt is in the Veldfontein block. The Nooitgedacht block contains a further 58Mt. Even with the mine's increased production of 4.5Mt of saleable coal, it will have a life of more than 22 years. The mine has a stripping ratio of about 3.5:1. However, this will increase over time. The overburden runs from some 8m to 30m at its deepest point.

The colliery started out as a mini-pit operation in June 2004, to supply coal to Eskom's Arnot Power Station. Since its final commissioning in January 2008, it has grown to produce 2.5Mtpa of low ash coal for export and 1.7Mtpa of steam coal for the domestic thermal market.

13. Kleinkopje Colliery

The colliery is situated approximately 15km due south of Witbank on the right hand side of the road to Vandyksdrift and forms part of the South African Coal Estates Complex. The coordinates of the mine are Lat: 26.012699S; Long: 29.225689E. It is on the Farms Kleinkopje 15IS, Klippan 332JS and Groenfontein 331JS as well as other surrounding properties. Kleinkopje Colliery is wholly owned by Anglo Coal.

It is currently mining the reserves contained in its No's 1, 2 and 4 seams, and has also gained more reserves from the nearby Greenside underground colliery, thus increasing its reserves from 216Mt to 279Mt.

Kleinkopje mines new reserves as well as large areas previously mined underground using bord and pillar techniques. Its principal product is steam coal for the export market and a fraction for the inland or local market.

The washed coal is transported by an 8.5 kilometre overland conveyor belt to the company's Rapid Loading Terminal. The mine produces between 4 and 4.5Mtpa but will be increasing its Run of Mine (ROM) production to 7.6-9.3Mtpa. Approximately 50% of the coal produced is sold to Eskom.

14. Goedgevoden Colliery

Goedgevoden Colliery is situated 6km due south of the town Ogies and 38km east of Delmas. The mine is adjacent to the Leslie - Ogies road just off the R545. The coordinates are Lat: 26.09183S; Long: 29.053069E. It is on the Farm Goedgevoden 10IS.

Goedgevoden is an opencast coal mine. It is a new large-scale, long-life, low-cost mine with new infrastructure and produces on average 12Mtpa of ROM coal per year. It exports 3.2Mtpa via Richards Bay and supplies 3.5 Mtpa to Eskom at an overall yield of 55%. The expected life of mine is 30 years, based on the 221Mt resource.

The shareholding in Goedgevoden is as follows: Arm Coal 51% and Xstrata SA 49 %. The coal reserves are 357Mt with a low average strip ratio of 2.2m³/t (bcm/t). The Richards Bay coal terminal allocation for Goedgevoden is 3.5Mtpa based on the current allocation of Phase V. Goedgevoden will supply approximately 60Mt of thermal coal (3.5Mtpa) to Eskom's Majuba coal-fired power station until 2026.

15. Landau Colliery

The colliery is situated about 17km north west of Witbank between the R544 road to Verena and the N4 Highway on the right hand side of the road to Bronkhorstspuit. The coordinates of the mine are Lat: 25.79143S; Long: 29.082672E. It is on the Farms Kromdraai 279JS, Merwede 272JS and Coronation 280JS as well as other surrounding properties. Located in Witbank, Mpumalanga, Landau colliery forms part of the South African Coal Estates Complex and comprises four sections – the Kromdraai opencast mine, Excelsior, the Schoongezicht mini-pit and the Umlalazi mini-pit. Landau Kromdraai Colliery is wholly owned by Anglo Coal.

Kromdraai mines the No. 1 and No. 2 seams and has a reserve of 132Mt, producing 6.1Mtpa using a Dragline and truck and shovels. The Kromdraai reserves will provide a life-of-mine to 2020, after which the operation will move to the second site at the former Navigation Colliery where there exists reserves for another 11 years. Both the Kleinkopje and Kromdraai operations are mining pillar areas that have spontaneous combustion problems. Opencast mining methods are used and the No. 1 and No. 2 seams are mined in a drill and blast operation with one dragline, two hydraulic shovels and four haul trucks. There is a sandstone rock parting between the two seams. The No. 1 seam was previously mined by underground mining methods and the pillars are now being extracted from the old underground workings. The No. 2 seam was not mined before. Landau consists of two sites: Navigation plant and Kromdraai opencast. The sites are 23km apart, with a rail link to transport mined coal to the plant. The Navigation plant uses dense medium separation methods.

Landau mines 6.5Mtpa and produces 4.2Mtpa sales. Most of the coal produced at Landau is exported through the Richards Bay Coal Terminal. A small portion is supplied to the inland market. A total of 3.1Mt of coal is produced for the export market annually and is conveyed to the company's Rapid Loading Terminal for transportation to the Richards Bay Coal Terminal. A further 900 000t are provided for the domestic market and dispatched by road and rail. Some 210 000t of coal a year are currently supplied to Eskom for power generation.

16. Greenside Colliery

Greenside Colliery is located approximately 15km south west of Witbank and is adjacent to the N12 highway to Johannesburg. The coordinates of the mine are Lat: 25.960292S; Long: 29.185751E. It is situated on the Farms Groenfontein 331JS and Klipfontein 332JS as well as other surrounding properties. Greenside colliery is wholly owned by Anglo.

It forms part of the South African Coal Estates Complex (SACE), which includes Landau and Kleinkopje Collieries. The mine was established to supply coal to overseas markets through the Richards Bay Coal Terminal, as well as a small quantity of coal for domestic use. Its total output is 4.4Mtpa run of mine which equates to 3.1Mt of saleable coal. It has four underground continuous miner sections.

17. Klipspruit Colliery

Klipspruit Colliery is situated some 27km south west of Witbank and lies to the south of the N12 highway to Johannesburg just outside of the town of Ogies. The coordinates of the mine are Lat: 26.050481S; Long: 29.038797E. It is on the Farms Klipfontein 3IS, Smaldeel 1IS as well as other surrounding properties. Klipspruit is wholly owned by BHP Billiton Plc.

It is the only BECSA mine not contracted to a power station; the mine produces approximately 4Mtpa of coal from its opencast operation utilizing a single dragline. The production is expected to double to 8Mt; then Klipspruit would export 4.5Mtpa and sell 2.9Mtpa to Eskom. It has a reserve of 160Mt giving it a life of mine of 20 years.

The No. 2 and No. 4 seams are mined and the coal is currently being processed at Rietspruit Colliery until the beneficiation plant and load out facilities for Klipspruit are completed at the new Phola Coal Processing Plant (a 50/50 JV between Anglo and BECSA). The increased coal production will supply both Eskom, as well as export customers. The coal will be processed by the Phola Coal Processing Plant, which will process 16Mtpa - 8Mtpa for each partner. The cost/sale per ton in July 2009 was R240/ton FOR. The Stripping Ratio on average is 2.3bcm/t.

18. Glisa (North Block Complex)

The North Block Complex consists of Glisa and Strathrae, and also the Eerstelingfontein and Belfast projects. The operations are situated in Mpumalanga province between the towns of Carolina, Arnot and Machadodorp. The North Block Complex is 100% owned by Exxaro. The mining rights for the North Block Complex are still waiting for the conversion to new order rights.

The coal reserve at Eerstelingfontein is contained in a single seam, the No.2. It occurs as an erosional remnant on high ground at shallow depths, suitable for opencast mining. The thickness of coal ranges from 0.5-3.1m, with an average thickness of 2.3m. The coal is at a relatively shallow average total depth of 10.69m. The maximum depth to top of coal in the area is 17.8m.

The North Block Mining Complex was established in 2001, mining Glisa's underground and surface reserves. Glisa South's underground operation was developed in 2006 after depletion of the underground reserves. Glisa's opencast mine in portion 24 of Paardeplaats 380JT, for Eskom, was depleted by mid-2006. Strathrae, which was acquired from Xstrata, was commissioned in October 2004. The colliery produces coal for Eskom and metallurgical coal for the domestic market. Eerstelingfontein will be mined by opencast methods using the strip mining method and the coal will be transported to the Strathrae plant. A feasibility study is being conducted for the Belfast underground and surface project.

Mining at Glisa's underground operation is bord and pillar using a Voest Alpine AM80 and Wirth continuous miner with six shuttle cars. Strathrae's surface operation mines the No.2 Seam using the truck and shovel mining method. ROM coal from the underground operations is transported to the plant by a conveyor belt. The thermal coal and high grade coal plants each have a capacity of 300tph. Strathrae's plant, with 130ktpm capacity, is a beneficiation plant producing export quality coal.

The North Block Complex produces coal for the domestic and export markets. Coal from Glisa's underground operation is predominantly crushed and screened and sold to Eskom. The prime product is sold into the export market. Coal is beneficiated at the Strathrae plant for exports and the middlings sold to Eskom.

Export coal is railed 576km to the RBCT. Exports from the North Block Complex are expected to increase when Exxaro Resources increases its RBCT entitlement. Exxaro Resources could become a major exporter via the RBCT with exports reaching 6.3Mtpa. The North Block Complex's FOB cash costs are R328.43/t, while Domestic FOT cash costs are R100.60/t, mainly due to low crushing and screening costs.

19. Vulna Colliery (Zonnebloem)

Zonnebloem is situated 2km east of Middelburg and just north east of Pan Siding on the mainline to Maputo. The coordinates for the mine are Lat: 25.746999S; Long: 29.702792E. It is located on the Farm Patattafontein 412JS. Vuna Coal, the Zonnebloem reserve has a resource of approximately 15Mt, all opencastable, and will be mined approximately at a rate of 360 000tpm. This tonnage will be road hauled to the Woestalleen plant for processing. Some of this coal will be sold on ROM basis to other companies.

NuCoal acquired 49% stake in Vuna coal from the BEE consortium in 2007, Vuna coal holds the mining rights to the farm Zonnebloem and has an exclusive off-take agreement for all ROM coal, which feeds the wash plant at Woestalleen. The plant yield is approximately 63% and the mining costs are R130/t.

20. Leeuwpan Colliery

Leeuwpan Colliery is situated 65km west of Johannesburg and about 8km south east of the town of Delmas. It is 80km south east of Pretoria, near the town of Delmas, Mpumalanga province. The coordinates for the mine are Lat: 26.178023S; Long: 28.733679E. It is located on the Farms Kenbar 257IR and Leeuwpan 246IR. Leeuwpan is wholly owned by Exxaro.

Exploration at Leeuwpan started in 1989 and the first box cut was developed in 1992. Opencast mining is currently being conducted on the Weltevreden property, with an underground mining section planned to start in 2011. Leeuwpan Colliery produces 2.5Mtpa of coal for the domestic metallurgical market and power stations.

Note: Although Leeuwpan produces less than 3Mtpa, since its coal is mostly metallurgical, it was deemed appropriate to include it.

HIGHVELD COALFIELD

NO	NAME OF MINE	ROM PRODUCTION (Mt)	OWNER
1	Sasol Secunda	37	Sasol Mining
2	Kriel Colliery	11	Anglo Coal
3	Isibonelo Colliery	5	Anglo Coal
4	New Denmark Colliery	4	Anglo Coal

1. Sasol Secunda

Sasol Mining currently mines about 37Mtpa of saleable coal in Secunda for their South African petrochemical plants as well supplying coal to the export market. It operates the following mines in Secunda:

- Twistdraai Mine 14.2Mt
- Brandspruit Mine 8.5Mt
- Middlebult Mine 8.5Mt
- Syferfontein Mine 8.2Mt

Secunda is situated at latitude 26° and longitude 29° and is 1620 meters above sea level. It is 180 kilometres from Pretoria and 169 kilometres from Johannesburg.

Sasol has allocated R3.1-billion for the new export coal mine to replace the depleting Twisdraai operation. Both Twisdraai and Brandspruit will be mined out shortly, and Thubelisha and Impumulelo are being established to replace them. Coal-to-liquids (CTL) producer Sasol has mines near Secunda and has to replace three of its large old coal mines with three new coal mines. The three large existing mines earmarked for replacement are the Twisdraai, Brandspruit and Middelbult operations. Twisdraai is to be replaced by the new Thubelisha; Impumulelo will replace Brandspruit; and a mine still to be named will replace Middelbult.

The two new names on the already long list of Sasol Mining collieries are Thubelisha, formerly referred to as Rooipoort, and Impumulelo, formerly Carmona. Sasol has coal reserves in the Secunda area that are sufficient to supply the needs of the growing Sasol Synfuels plant for the next 35 years-plus.

Twistdraai Colliery/Thubelisha Colliery

Twistdraai is situated 8 kilometres due south of Secunda. The coordinates of the mine are Lat: 26.571822S; Long: 29.2247E. It is located on the Farms Goedehoop 565IS, Grootvlei 293IS as well as other surrounding properties.

Ownership is by Igoda Coal (100%). Reserve base / grades are 45Mt run-of-mine. Annual production is 14.2Mtpa run-of-mine capacity but the annual production is in the order of 9.0Mt. The Twistdraai mine and washing plant is part of Sasol Mining's Secunda Collieries complex. Lying in the Highveld Coalfield, east of Johannesburg, the mine was opened in 1980 to produce coal for Sasol's Secunda synthesis plant.

In 2006, ownership of Twistdraai was transferred to a new Black Economic Empowerment (BEE) company, Igoda Resources, formed as a joint venture between Sasol Mining (65%) and Exxaro Resources (35%).

The new company has also inherited Sasol Mining's export allocation through the Richards Bay Coal Terminal, and plans to produce some 3.6Mt/y of export-quality coal, plus up to 4Mt/y of middlings for sale to Sasol. Sasol Mining will act as Igoda Coal's mining contractor and will handle the company's export marketing.

The Twistdraai reserve formed the feedstock for the beneficiation process to produce a low-ash (10%) export product (dry basis). The raw ash content of the No.4 lower seam, the major contributor to production, varies between 18 and 36%.

Thubelisha Colliery

Location: The mine is situated to the north east of the Secunda complex.

Thubelisha, in Secunda, in Mpumalanga province, will enable Sasol Mining to replace the export reserves of Igoda, which is necessary because the three existing Twistdraai export shafts are expected to be mined out by 2015 and the first relocation will be to Thubelisha's coal reserve.

Thubelisha's production is scheduled to start in 2012, at a capacity between 9Mtpa of run-of-mine coal and 10.6Mtpa, which will put it on a par with Sasol Mining's large long-standing Brandspruit, Bosjesspruit, Middelbult and Twistdraai operations. The Thubelisha shaft project is already well advanced in its physical construction and will be ready on schedule. The mine is due to come on stream in 2012 and will ramp up to full production over a three-year period. A 17km-long overland conveyor will transport coal to the beneficiation plant. Thubelisha export coal mine, already under construction, will also supply Sasol's synfuels factory in Secunda.

Geological disturbance on the eastern border of Twistdraai – a graben that prevents normal mining from Twistdraai into a reserve some distance away – has necessitated the establishment of a new mine rather than an extension of the existing operation. Because of the extent of the graben, it is more economical to build a new mine than to extend the Twistdraai infrastructure to the new area.

This mine will be mining the No 4 seam, 160m below surface. The 10.6Mtpa mine will, at peak production, have 12 CM production sections and three stone-works sections. Peak production is aimed for 2015 but by January 2012, two fully operational production sections have to be running so that the existing Twistdraai mine can begin ramping down.

2. Kriel Colliery

It is situated in the Highveld Coalfield, Mpumalanga Province, 45km south of Witbank and 30km north of Secunda and the R545 from Ogies to Bethal. The coordinates of the mine are Lat: 26.249091S; Long: 29.205038E. It is located on the farms Onverwacht 70IS, Vlaklaagte 83IS and Aangewys 81IS as well as other properties in the area.

Kriel colliery forms part of Anglo Inyosi Coal (AIC). Anglo Inyosi Coal (AIC), is a broad-based black economic empowerment company in which Anglo American has a 73% shareholding. AIC houses key future domestic and export-focused coal operations, including Kriel colliery and the newly commissioned Zibulo multi-product mine. It also holds the greenfield projects of Elders, New Largo and Heidelberg.

Established by Anglo Coal South Africa in 1975, Kriel Colliery is one of three Anglo Coal Power Station Collieries. The colliery has a contract to produce 8.5Mtpa. Coal is extracted underground and from opencast mining. Kriel has produced in excess of 10Mtpa. The opencast operation makes use of draglines, trucks and shovels to extract 5.5Mtpa.

Life of the mine: The current contract with Eskom is for forty years life of mine. However, this will be revised in 2019. Eskom has already indicated their need to extend this contract to approximately 2026. The calculated remaining resource is in the order of 80 million and the remaining life will be from Elders.

3. Isibonelo Colliery

Isibonelo Colliery is located approximately 120km due east of Johannesburg, 60km south of Witbank and 13km east of Secunda, in Mpumalanga. It is near the northern margin of the Highveld Coalfield of Mpumalanga. The coordinates are Lat: 26.349695S; Long: 29.262158E. The mine is situated on the Farms Rietfontein101IS and Witbank 80IS as well as other surrounding properties.

Anglo Coal and Sasol Mining entered into a contractual agreement in October 2003 to jointly develop the Kriel South Reserve Area. Under the agreement, Anglo Coal committed itself to establish Isibonelo Colliery, an opencast operation to supply Sasol's Synthetic Fuels (SSF) plant in Secunda. In November 2003, construction work began and the first coal was supplied

to SSF in July 2005. The infrastructure and employees of the operation were taken over from Sasol, and this was the first operation of its kind where a complete transfer of equipment, assets and labour force has been successfully achieved.

Isibonelo Colliery is designed to supply SSF approximately 5 Mtpa over a 20-year period. Reserves: As at mid-2005, total scheduled opencast reserves were 108Mt. Resources: As at mid-2005, total underground resources were 16.4Mt. Sasol Mining still has 15 years to go on its 20-year contract to buy 5.1Mtpa of coal from the Isibonelo mine.

4. New Denmark Colliery

New Denmark Colliery is located 30km north of Standerton, Mpumalanga and 150km from Johannesburg. It is in the Highveld Coalfield. The coordinates of the mine are Lat: 26.735848S; Long: 29.308396E. It is situated on the Farms Slagkraal 550IS, Slagkraal 353IS and Racesbult 352IS as well as other surrounding properties.

New Denmark Colliery is wholly owned by Anglo Coal. It is one of the deepest coal mines in South Africa and is one of few in the country to employ the long wall mining method. It uses continuous miners for main and secondary development and sources the bulk of production from one extraction unit using longwall methods, producing 5Mtpa to 6Mtpa.

The colliery is the designated supplier of coal to Eskom with a reserve in excess of 300Mt; the mine has an expected life span of over thirty-six years. Its closure is planned for 2040, although this will depend on demand rates. Commissioned in 1982, it extracts No.4 seam coal from its Central and Okhuzini shafts, producing 5Mtpa of coal for Eskom's Tutuka Power Station. The mine acquired a new R720 million longwall at the end of 2009.

WATERBERG COALFIELD

NAME OF MINE	ROM PRODUCTION (Mt)	OWNER
Grootegeeluk Mine	36.7	Exxaro

Grootegeeluk Colliery

The Waterberg Coalfield, the largest of South Africa's coalfields in resources, is located just north of Lephalale (Ellistas), some 300km NNW of Johannesburg. It stretches about 85km EW and 40km NS, extending into Botswana.

The Coalfield is contained by the E-W striking Zoetfontein fault its north side and the E-W striking Eenzaamheid fault on the south side. Another major fault, The Daarby (± 250 m throw), divides a "shallow", mostly opencastable western half from a deep underground eastern half. The only currently operating colliery, Grootegeeluk Coal Mine, is bounded on its east side by the Daarby fault.

The coal occurs within a stratigraphic horizon of about 110m in the form of coal seams or units, which range in width from barely a centimetre up to 8 metres. The upper zone (about half) occurs in the Volksrust Formation (Upper Ecca Group) and the lower zone in the Vryheid Formation (Middle Ecca). The Volksrust Formation consists of bright coal (containing a coking coal fraction) with interbedded shale/mudstone while the Vryheid Formation consists of dull coal with interbedded shale, carbonaceous shale and sandstone.

The coordinates for the mine are Lat: 23.671033S; Long: 27.552599E. It is situated on the Farms Grootgeeluk 459LQ and Enkelbult 462LQ. Grootegeeluk is wholly owned by Exxaro.

This opencast mine using a conventional truck and shovel operation, produces 36.7Mt of ROM coal that is converted by washing into 18.6Mtpa of saleable thermal and semi-soft coking coal. It has an estimated mineable coal reserve of 811Mt and a total measured coal resource of 426Mt, from which semi-soft coking coal, thermal coal and metallurgical coal can be produced. Grootegeeluk has the world's largest beneficiation complex where 7 600tph of run-of-mine coal are washed in six different plants.

Grootegeeluk mine concluded an additional off take agreement with Eskom for the supply of 14.6Mtpa of coal for 40 years for Medupi power station, currently under construction. The first coal is to be supplied in the last quarter of 2011 with full production from 2014. This tonnage is over and above the current tonnage being supplied to the Matimba Power Station.

Mafutha Project

The synfuels Mafutha project was originated by the Waterberg coal mining company Exxaro and Sasol, its preferred mining partner. The Bulk Sampling exercise of coal blasting and extraction of a 170 000t sample of coal for the Project was successfully done. It is a proposed greenfields CTL facility in Limpopo Province, the coal will now be tested at Secunda for its suitability for gasification.

The Mafutha CTL project in the Limpopo province is going ahead. The JSE-listed Exxaro is Sasol Mining's 51% BEE partner for the Mafutha CTL project. This will be an opencast operation. The life of Sasol's coal reserves is three times that of the average global oil major, which would need to replace its current reserves two-fold just to stand still in relation to Sasol.

VEREENIGING-SASOLBURG COALFIELD

NAME OF MINE	ROM PRODUCTION (Mt)	OWNER
New Vaal Colliery	17.6	Anglo Coal

New Vaal Colliery

New Vaal Colliery is located on the banks of the Vaal River, immediately south of Vereeniging. The coordinates of the mine are Lat: 26.706849S; Long: 27.950038E. It is situated on the Farm Maccaw Vlei 121 as well as other surrounding properties.

New Vaal Colliery is wholly owned by Anglo Coal. It was established in the 1980s to exploit the remaining reserves in the area for the supply of low grade coal to Eskom's Lethabo Power Station until 2030. The mine produces at a rate of almost 18Mtpa. The operation uses open-cut strip mining methods to extract remnant coal pillars left from underground mining that took place in the area during the 1960s. MacWest is an extension to Anglo Coal's existing New Vaal colliery which is contracted to supply around 15Mtpa to Eskom's Lethabo power station.

In recent years, New Vaal has been supplying Lethabo at a rate of 17Mtpa in terms of Eskom's strategic planning to get more power generation out of its existing plants. Adding MacWest to New Vaal would mean that New Vaal could continue supplying Lethabo at a rate of 17.8Mtpa for the remaining life of the power station, which is some 20 years.

ERMELO COALFIELD

NO	NAME OF MINE	ROM PRODUCTION (Mt)	OWNER
1	Savmore Colliery	3.1	Limeisa Int Coal SA
2	Kobra Mining - Ubutu West		Vunene Mining

Savmore Colliery

Savmore Colliery is situated 37km east of the town Piet Retief and 70km south-south-east of Ermelo. The mine is 22km south of the Ermelo–Piet Retief road (N2) and adjacent to the Heyshope Dam. The coordinates for the mine are Lat: 27.020297S; Long: 30.414115E. It is located on the Farms Roodekraal 21HT, Maquasa 19HT, Rooikop 18HT and Oogiesfontein 17HT.

Savmore is owned by Union Fenosa 64%, Shanduka 26% and Kangra 10%. The Kangra Group operates the Savmore Colliery and owns Welgedacht collieries which produced 3Mtpa. Kangra Group became a subsidiary of Unión Fenosa when they acquired it in 2007. UNION FENOSA (Limeisa) completed the acquisition of 64% of the company Kangra Coal as part of their plan to guarantee the supply of coal for their thermal power stations. The other shareholders are Shanduka (Black Economic Empowerment) with 26% and the Kangra Group which owns the remaining 10%.

Savmore Colliery is generally an underground mine although it does have some opencast reserves. In total, the estimated coal reserves are in excess of 100Mt. The saleable production for 2009/10 year was 3.1Mt, of which 2Mt were exported and tonnage went to the inland markets and a portion was sold to an Indian exporter.

The company has a 2.3% share in Richard Bay Coal Terminal (RBCT), the largest port in the world in terms of coal exports, which, together with contracted Shanduka quota, is allowing the export of 1.9Mtpa of coal.

Kangra Coal owns the Balgarthan, Savmore, Mpisi, Taaiboschspruit and Welgedacht collieries in Mpumalanga and operates Savmore at its Maquasa Section. Savmore has 15 years of life as an underground operation and also has some opencastable areas whilst Welgedacht Colliery has a life of mine of 16 years.

Because very little information is in the public domain, we have not included a resource table.

KLIPRIVIER COALFIELD

NO	NAME OF MINE	ROM PRODUCTION (Mt)	OWNER
1	Magdalena and Aviemore	0.6	Slater Coal
2	Springlake Colliery	0.3	Shanduka Coal

1. Slater Coal (Forbes Coal)

Earlier this year, Forbes & Manhattan (Coal) Inc. ("Forbes Coal"), a private Ontario coal mining company announced that it had acquired Slater Coal and its interests in its coal mines in South Africa. Slater Coal holds a 70% interest in Zinoju Coal (Pty) Ltd. ("Zinoju") which holds all the mineral rights and prospecting permits with respect to the Slater Coal Properties. The remaining 30% interest is held by the South African Black Economic Empowerment partners.

Slater Coal Aviemore is situated 10km north of the town Dundee along the route to Newcastle. The coordinates are Lat: 28.098991S; Long: 30.234336E. The mine is located on the Farm Morensod 3347 and surrounding farms.

Slater coal Aviemore is owned by Slater coal. Slater Coal operates two collieries, namely Aviemore and Magdalena, both situated in the Klipriver Coalfield between Dundee and Newcastle.

Aviemore produces approximately 20 000tpm of high sulphur anthracite for the local and export markets. Conventional bord and pillar mining is being carried out in a seam height varying from 1.3 to 1.5m. The raw coal is transported by road to the beneficiation plant at Talana, just north of Dundee which consists of cyclones and spiral. The reserve base is estimated at 2Mt. With a further reserve which was acquired from Anglo Coal, the total resources are approximately 20Mt in situ.

The coal quality is: CV 30MJ/kg, Ash 12%, VM 7%, S 2.0% and FC 78; this coal is used as blend feedstock for metallurgical purposes. The calcining plant treats about 6 000t to 10 000t of anthracite a month which improves the saleability. Mamatwan at Hotazel purchase all the calcined anthracite from Slater Coal.

Magdalena

Slater Coal Magdalena is situated 27km north of the town Dundee to Newcastle. The coordinates for the mine are Lat: 27.975359S; Long: 30.206139E. It is located on the Farms Magdalena, Alleen 1, Alleen, and Mount Johanna. Magdalena is wholly owned by Slater Coal.

Magdalena produces approximately 60 000tpm from an underground section and the reserve base is calculated at 34.5Mt. The Gus seam has an average mining height of 1.8m and the reserve is divided into a bituminous and lean coal area. The sulphur content is of the order of 1.5%, which makes it suitable for a blend in the metallurgical industry.

Slater has built a beneficiation plant at Magdalena and this has reduced the costs because only clean coal is now being transported to Dundee. They run their own truck fleet and manufacture and refurbish their own plant and equipment at a workshop in Dundee. Slater Coal has an export allocation of 200 000tpa and it sells its coal via Glencore into the world market. They have established clients in the local KZN market and have managed to keep these markets since 1984.

Zinoju Coal (Pty) Ltd., a subsidiary of Slater Coal, has 197 000t of export capacity at the Richards Bay Coal Terminal. Both the Magdalena underground mine and the Aviemore underground mine have expansion potential, and Forbes Coal intends to increase total production from existing levels of approximately 0.6Mt to 1.5Mtpa of saleable coal. Anthracite sales prices range from approximately \$80 per ton to \$160 per ton, based on product quality and application.

2. Springlake Colliery

Springlake Colliery is situated 17km north west of Dundee along the R621 route from Dundee to Newcastle. The coordinates for the mine are Lat: 28.050704S; Long: 30.117529E. It is located on the Farm Springlake 16315, Lentedaal 15474, and Lenteplaas 14432. Springlake is wholly owned by Shanduka Resources.

Springlake Colliery, which has been in operation for almost 30 years, is South Africa's largest producer of anthracite. The underground operation consists of one incline shaft and one vertical shaft with the deepest mining taking place 120m below surface. The opencast operation comprises two pits which are mined to an average depth of 30m. Production annually amounts to 1.1Mt.

Springlake exports sized anthracite to Brazil and Europe for domestic and selected metallurgical processes. In recent years, Springlake has increased its exports into India and the local market for anthracite is growing in South Africa. It is estimated that 900 000tpa of anthracite is consumed.

NONGOMA COALFIELD

NAME OF MINE	ROM PRODUCTION (Mt)	OWNER
Zululand Anthracite Colliery	0.6	Riversdale Holdings

Zululand Anthracite Colliery

ZAC is situated to the west of the Umfolozi Game Reserve and approximately 26km north east of Ulundi. It is within a KwaZulu tribal land. The coordinates are Lat: 28.225692S; Long: 31.675066 E. Zululand Anthracite Colliery is owned and managed by Riversdale Mining Limited, which holds 74% of the shares with the other 26% held by a BEE Consortium: ZAC Employee Trust, Community Trust, Ungoye Mining & Injobo Business Consortium, and Maweni Investments.

Riversdale Mining Limited is registered on the Australian Stock Exchange and acquired ZAC from Ingwe from the 1st January 2005. They have two other mining projects namely Riversdale Anthracite Colliery (6.5Mt resource situated about 28km SE of Vryheid) which they acquired from Richards Bay Minerals plus their Mozambican coal project.

ZAC has been in production since 1984 and has a life of mine of another 21 years at the current production rate of 6 000/tpm prime product. All the coal is beneficiated in a double drum two-stage washing plant which has cyclones and spirals as well as a filter press. The total mining costs amount to R480 /sales ton.

The fine 0- 10mm is used locally by RBM and Tigor and the 8-25mm product is railed inland to the metallurgical market for the production of Reductants and Electrode Paste. The middling product is being sold to Glencore for the export market. The ZAC Main Seam coal resource has been broken up into the Kwa-Sheleza, Ngwabe, Mgeni and Maye mining blocks. The Ngwabe block is being developed and should be in production by 2011.

SOMKELE COALFIELD

NAME OF MINE	ROM PRODUCTION (Mt)	OWNER
Tendele Coal Mining (Somkhele)	0.6	Petmin

Somkhele Colliery

Somkele Colliery is situated close to the east boundary of the Mufoloji Game Reserve near the town of Mtubatuba in the tribal land of the Zulu nation. Somkhele Colliery was brought into production and the beneficiation plant was completed at the end of January 2007 to supply anthracite to the metallurgical, ferrometal and titanium markets. The company is registered on the London Stock Exchange. The ownership is as follows: 13.66% public listing, 12.2% management, 8% PSG capital, 14% NAMF, the remainder is in a BEE consortium made up of Dark Capital Investment, Lebone Resources, Popcru Investments and Umsobomvu Coal (52.74%).

Petmin has announced its plans for a new plant, which should double its production capacity of 750 000tpa of saleable anthracite. It rails its anthracite from Somkhele colliery's Teza siding 12km south of Mtubatuba to the dry-bulk terminal at Richards Bay, some 45km. In normal market conditions, 60% of its production is exported and 40% sold domestically.

The reserve available to Somkele:

- Proved Opencast > 6.9Mt
- Indicated Underground > 27.5Mt
- Inferred Underground > 51.3Mt

Yield indications are 65% Ash 8%, VM 7%, FC 79%, S 0.7% with low phosphorus content. The estimated cost per ton is about R370/ ton on mine. The anthracite quality from this reserve will be a low ash, low sulphur and low phosphorous product that meet all the metallurgical specifications. The sized fraction will also be exported to Europe as a domestic product. The anticipated tonnage would be approximately 40kt per month and this reserve has an expected life of mine of 12 years.

VRYHEID COALFIELD

NAME OF MINE	ROM PRODUCTION (Mt)	OWNER
Vaalkrantz Colliery	0.2	Leeuw Mining

Leeuw Mining

Leeuw Mining was awarded the right to purchase KZN coal reserves of Anglo Coal in 2002 and to establish a mining operation in a JV with Anglo Zimele and mining commenced in 2004. These reserves consist of small blocks and thin seams and specialised products, suitable for a small mining company.

Reserve base

The company has about 102Mt sales of reserves of good-quality bituminous coal and high-grade anthracite at its disposal. Reserves and resources will be derived at the following properties: Koudelager, Ceza Mountain, Balgray, Impati, Indumeni, Ingagane, Elandslaagte, Glencalder and Braakfontein. All these properties have anthracite /coking and Bituminous coal. Leeuw Mining also has prospecting rights applications in for the following farms: Clipsham, Craigside, Forfar, Morganstond, Verdruk, Wild Duck Vlei a & B, Woodlands and Rustplaats.

Leeuw Vaalkrantz

Leeuw Vaalkrantz is the only current mining operation and has been producing successfully over the past five years, except for a short period when it was placed on care and maintenance because of market prices. It is situated 35km east of Vryheid on the Vryheid/Louwsberg R69 route in Northern Kwa-Zulu Natal, on the Farm Vaalkrans 306. The coordinates for the mine are Lat: 27.777525S; Long: 31.057649E. Leeuw Vaalkrantz is owned by JV between Leeuw Mining and Anglo Zimele.

The mining operations exploit the Alfred and Gus seams. The reserve base at Vaalkrantz Alfred full seam is 8.5Mt and the Gus seam 2.5Mt. The rate of production at average mining height 2.35m is 20 000tpm and for the lower Gus with a mining height of 1.0m is below 8 000t per month.

Conventional mechanised bord and pillar as well as hand lashing mining is being practiced at Vaalkrantz. The Vaalkrantz operation has a primary life-of-mine of some 11 years without any pillar extraction. The reserve consists of four separate blocks, though two of these have been displaced vertically by about 90m by the Nyati sill that cuts through the deposit. There is a further fault running through the last two blocks that displaces the seam by 12m.

Washed qualities:

Coal Seam	CV MJ/kg	VM %	Ash %	Sulphur %	Phos. %	FC %
Alfred	29.3	7.5	14.0	1.2	0.073	76-77
Gus	30.7	6.0	11.0	0.7	0.01	81-82

The process plant is a double stage HMS plant with a rate of 100 t/h, utilising cyclones. The advantage of the plant is that it is a cyclone-only plant, which is cheaper to construct and easier to maintain than a drum or bath plant. Design throughput is 45 000t/m.

Leeuw Mining holds a 160 000tpa export allocation at RBCT.

SOUTPANSBERG COALFIELD

NAME OF MINE	ROM PRODUCTION (Mt)	OWNER
Tshikondeni Coal Mine	0.3	Exxaro

Tshikondeni Coal Mine

Tshikondeni Colliery is situated 160km east of the Musina on the boundary western side of the Kruger National Park. The coordinates for the mine are Lat: 22.50784S; Long: 30.95092E. It is on the Farm Tshikondeni 281MT. Tshikondeni is wholly owned by Exxaro. It is located some 160km east of Musina in Limpopo province and this underground mine currently produces 314ktpa of premium hard coking coal.

Conventional board and pillar extraction methods are used and coal is beneficiated using cyclones, spirals and froth flotation. The beneficiated product is trucked to Musina and railed to Mittal SA's works at Vanderbijlpark under a long-term agreement at the cost of production plus a management fee of 3%. The mine has coal reserves of 6Mt and a resource of 36Mt.

KANGWANE COALFIELD

NAME OF MINE	ROM PRODUCTION (Mt)	OWNER
Nkomati Anthracite	0.1	Benicon Coal

Nkomati Anthracite

Nkomati Colliery is owned and managed by the Benicon, a subsidiary of Sentula. It produces approximately 10 000tpm from an underground mine that is exported via Matola. This product is sold to Spain as thermal coal.

The resources are reported at 27Mt mineable and the qualities are as follows: Yield 65%, Ash15%, VM7%, S0.8%. There are more resources adjacent to their reserves such as Nkomati South with a resource of >55Mt held by Borneo mining in a JV with Black Ginger and, to the north of Nkomati, Siyanda holds a resource of approximate 100Mt.

Nkomati Colliery is situated at coordinates Lat: 25.719485S; Long: 31.860218E. It comprises the following farms Murray 502JU, Fig Tree 503JU Excelsior 498JU and surrounding farms, about 45km SSW of Komatipoort.

Projects

Bankfontein is an 8Mt proven resource coal project near Witbank and, Schoongezicht also an 8Mt proven resource, located near Delmas.

THULI COALFIELD

Vele Coal

Vele Colliery is situated 15km east of the Mapungubwe National Park to the west of Musina. The coordinates are Lat: 29.606152E; Long: 22.190115S. It is located on the farms Newmark 121MS, Bergenop Zoom124MS, Overvalkte 125MS.

CoAL holds a 100% stake in the Limpopo Coal Company "Vele". It was granted an unconditional New Order Mining Right on the 2nd of February 2010. Vele is the largest of CoAL's resources with 720Mt. Around 45% of this resource is in the measured and indicated categories.

Phase 1 comprises a modular coal treatment plant capable of delivering in the order of 1Mtpa saleable (yield dependant) coking coal. Phase 2 will have the capacity to produce 5Mtpa of coking coal as per market demand. Arcelor Mittal, the world's largest steel producer, has a 16.6% stake in Vele and a 2.5Mtpa off-take agreement for coking coal. The coal will be trucked from the mine by road to the railhead at Musina until the necessary rail links have been completed. It will take 18 months to complete the rail spurs and loading facilities, which involves about 40km from Vele and 25km from Makhado (see below). Coal of Africa has signed an agreement to secure coal exports via the Matola Terminal in Maputo, Mozambique for Vele and Makhado, initially at a rate of 1Mtpa.

Projects

The Makhado coal project in which CoAL holds 100% shares is situated north of Soutpansberg, 60km from Musina in the Limpopo Province close to Rio Tinto's Chapudi Project.

Makhado has a resource of 700Mt, but CoAL believes there could be in excess of 1.4Bt. The Musina-Louis Railway passes through the property. Makhado is also anticipated to produce 5Mtpa of hard coking coal.

The latest resources statement indicate 305.7Mt reconnaissance, 250.7Mt inferred, 548.6Mt indicated and 230.1Mt measured for a total in situ resource of 1 336Mt.

Project	Production	Reserve	Indicated	Reconnaissance
Mooiplaats	3.2Mt	88Mt	113Mt	
Vele	2 – 5Mt	656Mt		64Mt
Makhado	2Mt		1.03Bt	306Mt

COAL QUALITIES BY MINE

COLLIERY	CV MJ/KG	VM%	ASH %	S %	P %	HARDGROVE	ASH FUSION DT
Arnot	22.8	22.1	22	0.56	0.025		
Arthur Taylor	27.9	26.8	13.0	0.70	0.130	50	1310
ATCOM	27.9	26.8	13.0	0.70	0.130	50	1310
DMO	27.6	24.6	15.3	0.60	0.013	50	1330
Goedehoop	28.0	26.6	13.5	0.70	0.005	53	1350
Goedgevonden	27.2	24.0	15.0	0.90	0.134		
Greenside	28.0	30.4	14.7	0.54			1350
Grootegeeluk	28.8	36.0	10.0	0.95	0.005	57	1330
Inyanda	25.3	23.0	15.0	0.80			
Khutala	21.6	22.8	25.6	0.63	0.106		
Kleinkopje	27.2	24.5	15.4	0.55	0.110	48	1500
Klipspruit	27.6	24.6	15.0	0.80		55	
Koornfontein	27.1	26.0	15.2	0.60	0.120	51	1350
Kriel	22.0	23.8	25.6	0.75	0.105		
Kromdraai	27.5	24.5	14.6	0.65		55	1500
Leandra	21.0	21.0	32.0				
Leeuwpan	28.0	13.0	16.0	0.85	0.005	70	1300
Mafube	21.5	23.7	26.1	0.74			
Matla	21.0	23.6	27.4	0.95	0.11		
Middelkraal	27.7	24.2	14.6	0.43			
New Denmark	20.9	22.0	29.8	1.20	0.031		
New Vaal	15.8	21.7	37.9	0.62	0.093		
Nkomati	29.0	4.5 -10	12.0	0.80			
North Block Complex	23.7	24.0	19.5	1.20		55	
Optimum	27.6	28.0	12.5	0.50	0.080	46	1400
Savmore	26.7	27.0	14.0	0.95		55	1250
Sigma	18.3	23.1	28.6	0.73			
Slater Coal	30.0	7.0	12.0	2.00	0.980		
Somkele	32.0	7.0-9.0	8.0-10	0.70	0.007	55	1250
Springlake	29.3	10.0	14.0	1.90	0.048		
Stuart Coal	25.1	26.4	19.0	0.80			
Tshikondeni	31.3	22.5	12.3	0.85			
Tweefontein	26.4	25.0	13.5	1.00	0.200	55	
Twistdraai	27.7	30.9	10.5	0.85	0.005	55	1250
Woestalleen	27.3	23.0	14.0	0.90		55	1400
ZAC	32.1	5.2	8.0-10	0.95	0.038	53	

COAL PROJECTS WITH A > 3MTPA POTENTIAL

The Waterberg Basin is considered extremely important because it contains more than 40% of remaining resources in South Africa and it is a potential replacement for the Central Basin Coalfields (Witbank, Highveld and Ermelo).

Sekoko Resources (Pty) Ltd is a South African-based black-owned energy and minerals company developing the coal projects in the in the Limpopo Province of South Africa. Sekoko has conducted an exploration program and feasibility studies on the Waterberg Coal Joint Venture project based on the Coal Zone and have an estimated to 5Bt resource.

Application for a mining licence has been granted to mine the following farms: Smitspan 306LQ, Massenbergs 305LQ, Hooikraal 315LQ, Minnasvlakte 258LQ, Olieboomsfontein 220LQ, Duikerfontein 263LQ and Swanepoelpan 262LQ.

The Project will involve opencast and underground mining on the farms mentioned above. Mining operations will be conducted at a rate of 60 000tpm ROM, which after washing would yield approximately 30 000 – 40 000tpm of saleable coal.

The small mining operation will provide a starter pit for a large scale 18Mtpa operation planned to commence ramp-up in 2011.

Nozala Coal

Nozala Coal is a joint venture between Nozala and the NAB Mining Group.

SHAREHOLDERS:

- Nozala 51%
- NAB 49%

Nozala Coal currently has two prospecting rights, the first at Zonnebloom in the eMalahleni (Witbank) area, Mpumalanga Province, where prospecting has been completed and a mining right application has been submitted. The other is Gruisfontein in the Waterberg area, Limpopo Province. This project prospecting is still work in progress and has a resource of 1.4Bt opencast.

MINING COSTS AND PRICING

The coal prices and costs reflected in this section have been collected from various sources such as annual reports, the media in Engineering and Mining weekly and coal mining companies, as well as from the statistical analyses of Wood McKenzie and other consultants.

Typical Opencast mining costs

The rule of thumb to determine the pit head costs for a Truck and shovel operation would be to multiple the Stripping ratios by between R27 and R30 /stripping ratio to give an indication of the Rand/t mining cost.

Example: Stripping Ratio 2.5:1, Mining cost would be $2.5 \times 30 = R75/ROM/t$. If the coal was to be transported to the plant, this would have to be added to the mining cost. The plant costs received from Fraser Alexander would range from R18.50 /ROM/t to upwards of R23.59 depending on the size of the plant and what product is being made.

Simple calculation for a mine with a stripping ratio of 2.5:1, yield of 60% and plant cost of R20.50 shows a saleable product cost of R145.50/saleable ton ex plants.

Opencast mining costs

DESCRIPTION	UNIT	Dry Rate 2010	DESCRIPTION	UNIT	Dry Rate 2010
Drill and Blast Initial Ram and Boxcut Volumes (Elec)	BCM	R 9.10	Drill and Blast 1 Seam Parting (Elec)	BCM	R27.46
Load and Haul - Initial Ramp and Boxcut Volumes, 0-1km	BCM	R 15.54			
Load and Haul - Initial Ramp and Boxcut Volumes, 1-2km	BCM	R 18.25	Load and Haul - 1 Seam Parting, 0-1km	BCM	R19.25
Load and Haul - Initial Ramp and Boxcut Volumes, 2-3km	BCM	R 20.41	Load and Haul - 1 Seam Parting, 1-2km	BCM	R21.76
Load and Haul - Initial Ramp and Boxcut Volumes, Extra Over 500m	BCM	R 0.65	Load and Haul - 1 Seam Parting, 2-3km	BCM	R24.17
Softs, Load and Haul to Stockpile, 0-1km	BCM	R 14.35			
Softs, Load and Haul to Stockpile, 1-2km	BCM	R 16.64	Load and Haul Coal to Stockpile, 4 and 5 Seam, 0-1km	Tonne	R11.82
Softs, Load and Haul to Stockpile, 2-3km	BCM	R 18.88	Load and Haul Coal to Stockpile, 4 and 5 Seam, 1-2km	Tonne	R12.85
Softs, Load and Haul to Stockpile, Extra Over 500m	BCM	R 0.65	Load and Haul Coal to Stockpile, 4 and 5 Seam, 2-3km	Tonne	R13.93
Drill and Blast Hard Overburden (Elec)	BCM	R 7.81	Load and Haul Coal to Stockpile, 4 and 5 Seam, 3-4km	Tonne	R15.30
Load and Haul - Hard Overburden, 0-1km	BCM	R 15.79	Drill and Blast Coal, 2 Seam (Elec)	Tonne	R6.93
Load and Haul - Hard Overburden, 1-2km	BCM	R 17.87			
Load and Haul - Hard Overburden, 2-3km	BCM	R 19.93	Load and Haul Coal to Stockpile, 2 Seam, 0-1km	Tonne	R10.93
Drill and Blast Hard Midburden (Elec)	BCM	R 9.03	Load and Haul Coal to Stockpile, 2 Seam, 1-2km	Tonne	R12.03
			Load and Haul Coal to Stockpile, 2 Seam, 2-3km	Tonne	R13.12
Load and Haul - Hard Midburden, 0-1km	BCM	R 16.39	Load and Haul Coal to Stockpile, 2 Seam, 3-4km	Tonne	R14.17
Load and Haul - Hard Midburden, 1-2km	BCM	R 18.28	Load and Haul Coal to Stockpile, 2 Seam, 4-5km	Tonne	R15.26
Load and Haul - Hard Midburden, 2-3km	BCM	R 20.26			

The costs reflected above are from various coal mining contractors: Diesel Power, Andru Mining and others.

Confirmation of mining costs shown

ARM annual report 2008

On-mine cash costs per saleable tonne increased by 1% year on year to R148.40 per tonne. Despite substantial increases in labour, maintenance, steel, diesel and contractor costs, business improvement initiatives resulted in significant cost savings.

Tweefontein and Impunzi, Substantial increases in costs associated with labour, maintenance, diesel, steel and power resulted in on-mine unit costs increasing by 19% over the period to R165 per saleable tonne.

Inland average price for 200 FOR (R/t) 117.0 and 2007 R70 (Eskom price taken from the annual report)

At Goedegevoden cash costs per sales ton reduced by 21% year-on-year to R80.95, reflecting the capitalisation of working costs in excess of the long-term cost per saleable tonne of the new operation until production reaches steady state levels

GGV Eskom FOR (R/t) R99.35 2009

Extract from the ARM Annual report 2008 and 2009

The average inland FOR cost per saleable tons Xstrata operations was R160.20/t

Costs during the year were well controlled, a particularly pleasing achievement in a high mining cost inflation environment. On-mine cash costs per saleable ton increased by 1% year on year to R148.40 per ton. Despite substantial increases in labour, maintenance, steel, diesel and contractor costs, business improvement initiatives resulted in significant cost savings.

Reference www.arm.co.za/im/files/annual/2008/coal.htm

Various Cost Extracts from the Media

Free on Rail (FOR) cost at Woestalleen Colliery of ~ ZAR343/t1 as at Oct 2009

Vuna Colliery mining cost is R130/t in Oct 2009

Mooiplaats operating expenditure is R213.00 / saleable ton

Kendal Colliery; Cash operating costs for washed coal are expected to be less than US\$30/ton, based on saleable tonnage the actual costs is \$23.50. Processing costs at US\$ 3.00 to 3.50

*Anglo American Annual report 2009 Average Inland price per saleable ton US\$ 18.48
angloamerican.solutions.investis.com*

PORT AND RAIL COSTS

RBCT

RBCT COSTS for railage from Broodsnyersplaats to RBCT Railage	R83.10
RBCT throughput charges	R33.58
NPA and other costs analysis and survey	R5.00
Total	R121.68

The RBCT costs were gained from a reliable source from one of the RBCT BEE small mines. The Rail distance from Broodsnyerplaats to Richards Bay is 520km, at an R 0.16/t/km (CoalLink rates). Rail tariff rates are between R0.35and R0.45/t/ km.

NAME OF MINE	COST ROM	PLANT	SALEABLE	RAIL /PORT	CAPEX	TOTAL COST
Arnot Colliery	R 150.00	R 5.00	R 163.15	R 0.00	R 9.50	R 172.65
Douglas Colliery	R 130.00	R 18.50	R 181.09	R 101.50	R 12.69	R 295.28
Goedehoop Colliery	R 150.00	R 24.00	R 219.00	R 112.50	R 15.00	R 346.50
Goedgevonden Colliery	R 141.00	R 3.00	R 146.00	R 30.00	R 10.00	R 186.00
Greenside Colliery	R 145.00	R 20.00	R 205.00	R 115.00	R 12.00	R 332.00
Grootegeluk Mine	R 100.00	R 25.00	R 180.00	R 206.00	R 15.00	R 401.00
Isibonelo Colliery	R 95.00	R 5.00	R 102.00	R 0.00	R 15.00	R 117.00
Khutala Colliery	R 110.00	R 3.00	R 118.00	R 0.00	R 14.70	R 132.70
Kleinkopje Colliery	R 145.00	R 18.00	R 195.00	R 113.00	R 10.00	R 318.00
Klipspruit Colliery	R 150.00	R 15.00	R 245.00	R 120.00	R 12.00	R 377.00
Stuart Coal Delmas	R 108.00	R 23.00	R 174.00	R 0.00	R 15.00	R 189.00
Kriel Colliery	R 84.00	R 3.00	R 92.50	R 0.00	R 16.00	R 108.50
Landau Colliery	R 144.00	R 18.00	R 190.00	R 102.00	R 10.00	R 302.00
Leeuwpan Colliery	R 106.00	R 25.90	R 183.00	R 115.00	R 10.96	R 308.96
Mafube Colliery	R 128.00	R 8.00	R 147.00	R 106.00	R 10.50	R 263.50
Slater Coal	R 135.00	R 18.00	R 235.00	R 80.00	R 15.00	R 330.00
Matla Colliery	R 78.00	R 5.00	R 87.00	R 0.00	R 13.00	R 100.00
Middelburg Mine Services	R 130.00	R 17.90	R 182.00	R 101.50	R 14.00	R 297.50
Middelkraal Colliery	R 95.00	R 3.00	R 103.00	R 20.00	R 10.00	R 133.00
New Denmark Colliery	R 183.00	R 7.00	R 200.00	R 0.00	R 12.00	R 212.00
New Vaal Colliery	R 70.00	R 3.00	R 86.00	R 0.00	R 12.00	R 98.00
Nkomati Anthracite	R 185.00	R 30.00	R 307.00	R 80.00	R 20.00	R 407.00
Optimum Colliery	R 107.00	R 25.00	R 167.00	R 102.00	R 15.00	R 284.00
Sasol Secunda	R 170.00	R 18.00	R 234.00	R 100.00	R 18.00	R 352.00
Savmore Colliery	R 112.00	R 18.00	R 162.50	R 85.00	R 12.00	R 259.50
Springlake Colliery	R 135.00	R 21.00	R 250.00	R 85.00	R 11.00	R 346.00
Sonkele Colliery	R 210.00	R 28.00	R 370.00	R 78.00	R 17.00	R 465.00
Tshikondeni Coal Mine	R 410.00	R 25.00	R 710.00	R 295.00	R 10.00	R 1 015.00
Twefontein Colliery	R 167.00	R 23.00	R 250.00	R 101.00	R 18.00	R 369.00
Vaalkrantz Colliery	R 180.00	R 23.00	R 312.00	R 105.00	R 14.00	R 431.00
Vuna Colliery	R 130.00	R 18.00	R 211.00	R 135.00	R 7.80	R 353.80
Zululand Anthracite Colliery	R 288.00	R 31.50	R 480.00	R 118.00	R 10.00	R 608.00
Halfgevoden Colliery	R 91.00	R 5.30	R 96.30	R 0.00	R 10.30	R 106.60

MARKETS

In 2009 South Africa produced 261Mtpa of thermal coal, the main consumer was Eskom with 133Mtpa, 62Mtpa being exported and 66Mtpa used by other domestic consumers.

During the next 8 to 10 years the coal production and consumption is estimated to change as follows:

Consumers	Production	Reserve
Eskom	121	141
Exports	62	91
Others	66	83
Total	261	315

Eskom prices

Eskom Coal prices FOT Ex Mine	
Year	R/ton
2000	54.37
2001	59.87
2002	71.15
2003	75.07
2004	72.25
2005	80.92
2006	86.45
2007	100.15
2008	147.28
2009	157.47
2010	~175

The prices Eskom pays are confidential but are believed to be in a range of R100/t to R180/t. Figures are being bandied about that Eskom might pay up to R250/t but even that looks on the low side. The average price paid by Eskom per ton during 2009 was R121.54/ton.

South Africa has an expanding thermal coal market, especially the export markets into India and Asia. The Richards Bay Coal Terminal has been upgraded to export upward of 91Mtpa. Generally the mines that produce in excess of 3Mtpa are either supplying Eskom or exporting their coal.

Local Coal markets

Other local demand sectors include the petrochemicals industry "Sasol", in which coal serves the primary feedstock for synthetic fuels; the steel industry, which requires feedstock for its blast furnaces and smelters; the mining industry; the cement industry; the metallurgical industry; municipal power stations; paper mills; sugar mills; hospitals; brick producers and merchants.

The local Kwa Zulu-Natal market burns approximately 1.44Mtpa. The markets consist of 6 paper mills, the sugar mills, cement factories, Karobochem, Cato Ridge" Ferro alloys", Sentrachem and the Local Hospitals, Prisons and other small industries where boilers are utilised.

The following companies use coal, coke, char, anthracite and metallurgical coal in their furnaces and smelters: ArcelorMittal "Pretoria, Vanderbijlpark and Vereeniging & Newcastle", Highveld Steel and Vanadium, International Ferro Metals, Scaw Metals, Cato Ridge Assametal, African Fine Carbons, Chartech, Rand Carbide, Assmang, Metalloys and Ferrous metals smelters, RBM, Ticor, Hernic, Karobochem and Mogale City smelters. There are numerous traders that buy coal from the mines and in turn sell it into the local market: paper mills, cement factories and others. Wescoal, MacPhail and Metmar are such traders. Stuart Coal sells its coal directly to the local consumers that collect it at the plant.

RAILAGE AND PORTS

The South African coal exporters have 3 existing export terminals available that can be utilised for the exporting of coal.

Existing Coal terminals are:

- Port of Richards Bay: The Richards Bay Coal Terminal (RBCT);
- Port of Durban: Bulk Connections (BC); and
- Port of Maputo: Matola Coal Terminal (MCT), Maputo, Mozambique.

The South African coal export industry has three railage routes to the sea that are used to export coal, these are:

- The Richards Bay Coal Line (operated by CoalLink), from Ogies in Mpumalanga to Richards Bay in KwaZulu Natal. This line accounts for about 96% of all South African coal exports;
- The Maputo rail line, which has 2 branch lines; and
- The Durban rail line, which has several branch lines.

Railage Distance from the Mine to RBCT		
Mine	Siding	Kilometers
Grootegeluk	Grootegeluk	1050
Leeuwpán	Delmas	635
Kleinkopje	Blackhill	590
Greenside	Blackhill	590
Arthur Taylor	Minnaar	570
Twistdraai	Trichardt	535
Klipspruit	Kromklip	560
Optimum	Pullenshope	540
Middelburg	Broodsnyersplaats	515
Woestalleen	Pullenshope	540
Savmore	Panbult	350
Slater Coal	Talana	280
DMO	Van Dyksdrift	540
Koornfontein	Blinkpan	530
Goedehoop	Blinkpan	530
Khutala	Kendal	617
Vaalkrans	Hlobane	225
ZAC	Enqolothi	85
Springlake	Ballengeich	310
Somkele	Eteza	38

Railage distance from the Mine to the Ports			
Mine	Siding	Durban	Maputo
Grootegeluk	Grootegeluk	1130	910
Leeuwpán	Delmas	760	540
Khutala	Kendal	760	480
Savmore	Panbult	550	
Vaalkrans	Hlobane	425	
Somkele	Eteza	220	
Springlake	Ballengeich	365	
Slater Coal	Talana	325	
ZAC	Enqolothi	270	
Stuart Coal	Delmas		540
Woestalleen	Pullenshope		470
Nkomati	Komatipoort		130

Richards Bay Coal Terminal (RBCT)



Richards Bay Coal Terminal (RBCT) is one of the largest export coal terminals in the world. Opened in 1976 with an original capacity of 12Mtpa, it has grown into an advanced 24-hour operation with a design capacity of 91Mtpa. South African coal exports, the bulk of which are exported via RBCT, are expected to reach 116Mtpa by 2020.

The 260 hectare site currently boasts a quay 2.2kilometres long with 6 berths and four ship loaders. Two of these coal loaders have the capacity to load at a rate of between 10 and 11000 ton/hour. Currently, the terminal has a storage capacity of 8.2Mt of coal and is serviced by six stacker reclaimers, two stackers and reclaimers.

RBCT Ownership		
Category	Mtpa	Remarks
Current shareholders	72	10 Shareholders: Anglo (19.8Mtpa), BHP (17.95Mtpa), Xstrata (15.05Mtpa), Optimum (6.5Mtpa), Total (4.09Mtpa), Sasol (3.6Mtpa), Kangra (1.65Mtpa), Koorfontein (1.5Mtpa), Exxaro (1.0Mtpa) & Eyesizwe (0.86Mtpa)
CITT (BEEs under Mhlathuze Coal)	4	Specifically available for emerging BEE miners with export volumes of 250 000tpa or more
SDCT South Dunes Coal Terminal)	6	Exxaro (2Mtpa), Eskom Enterprises (1Mtpa) & Golang Coal (3Mtpa)
Subscription tonnage	9	Yombla (0.5Mtpa), Mbokodo (0.5Mtpa), Umcebo (1Mtpa), ARM (3.2Mtpa), Tumelo (0.6Mtpa), Mmakau (0.35Mtpa), Exxaro (2.5Mtpa) & Worldwide Coal (0.35Mtpa)
Total	91	

The port is situated at longitude 32° 02' E and latitude 28° 48' S. Richards Bay is South Africa's most northern and easterly port, some 87 nautical miles (160km) north east of Durban and 252 nautical miles (465km) south west of Maputo. The entrance channel is dredged to a permissible draught of 17.5m with a -19.5m depth in the entrance channel.

The Richards Bay Dry Bulk, Multi-Purpose terminal and Break Bulk terminals are all being used to export and import coal. These facilities are an expensive alternative to RBCT.

RBCT Capacity

Richards Bay Coal Terminal	
Cargo	Coal
Storage Capacity	8.2 million tons
Terminal equipment	4 ship loaders, 7 stackers 2 reclaimers and numerous conveyors
Annual Capacity	91.0 million

The port of Richards Bay contains a dry bulk terminal, a multi-purpose terminal and the privately operated coal terminal. Other private operators within the port include wood chip export terminals, a bulk liquid terminal and Grindrod.

Port of Durban



The port of Durban is situated on the east coast of South Africa, some 680 nautical miles north west of Cape Agulhas, and 625 nautical miles south-south-west of the port of Maputo. The GPS location is S 29.8689 and E 31.0617.

The port occupies the natural expanse of Durban Bay - an area of 1850ha, with the water area being 892ha in extent at high tide and 679ha at low.

To the left is an image of the bluff terminal where the coal handling facility is situated.

Bulk Connection

This terminal has been upgraded and has three independent loading routes available, storage space has been dramatically increased and the terminal is now the most effective grab discharge facility in the Port.

The terminal operates 24 hours a day, seven days per week and will operate on public holidays if cargo is available.

Bulk Connection Terminal Durban:

Berth	Length	Draft	Cargo	Loading Method
BC2	185m	10m	Coal	4x ship loaders
BC3	185m	8.8m	Met Coke	4x ship loaders
BC4	225m	10.3m	Copper	4x ship loaders

Bulk Connection is a multi-product bulk terminal. It specializes in handling degradation-sensitive cargoes on Handymax vessels and has a terminal capacity of around 3.5Mtpa. Container equipment has been uniquely adapted to be able to export and import bulk materials. Special storage areas have been created for different commodities. The Terminal currently handles exports of sized and unsized coal, anthracite, manganese ore and copper concentrate. Metallurgical Coke is currently the main import cargo being handled. The Terminal currently achieves an average load rate of close to 10 000t and an average discharge rate of around 5000 – 6000t per day.

Indicative pricing through the BC terminal for sized coal is around R60/t, exclusive of rail/road transport, VAT, Cargo dues and agency fees.

Port of Maputo (Matola)



The port services consists of a variety of operators, each specialising in a certain products (sugar, citrus, coal, manganese, oil and Aluminium) and adapted to the containerised and break-bulk cargo of Port Maputo and the bulk cargo of Matola.

Matola Coal Terminals handles the bulk of South Africa's cargo exports via the port to date. It is operated by TCM - Terminal de Carvão da Matola Lda, who is one of MCLI's founder member and Grindrod holds a 12.5% stake in the port; they manage the coal and manganese facility at Matola.

Grindrod has already increased coal terminal capacity at Maputo from two-million tons a year to six-million tons, and is planning a further expansion project to reach a capacity of 16Mtpa. The current capacity has all been contracted and CoAL is the biggest client.