New Clydesdale Colliery
Contents of Presentation

- Locality map
- Historical overview
- Overview of operations
- Closure of underground
- Impact and remedial actions
- Future planning
Locality map of the mine

New Clydesdale Colliery
History and development of the mine:

- 1942, June 17 the first exploration borehole was drilled
- 1956, first coal was mined under The Clydesdale (Transvaal) Collieries Ltd
- 1982, Gold Fields
- 1996, Anglo American
- 2000, NCC was bought by Eyesizwe Coal
- 2006, Eyesizwe Coal and Kumba merged to form Exxaro Coal
- March 2007, Closure of underground due to pillar instability safety concern

General

- Estimated Life of Mine is to 2018
INLAND PRODUCTS:

- CALORIFIC VALUE: 27,50 MJ/kg
- % VOLATILES: 27,50 %
- % ASH: 15,50%
- % SULPHUR: 0,60 %
- ASH FUSION TEMPERATURE: + 1300 Degrees
- TOTAL MOISTURE: 9,0% (inherent 2,4% )
## PRODUCTS

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>VALUE</th>
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</thead>
<tbody>
<tr>
<td>CALORIFIC VALUE</td>
<td>27,50 MJ/kg</td>
</tr>
<tr>
<td></td>
<td>6 000 kilocal / kg NAR</td>
</tr>
<tr>
<td>% VOLATILES</td>
<td>27,50 %</td>
</tr>
<tr>
<td>% SULPHUR</td>
<td>0,60 %</td>
</tr>
<tr>
<td>ASH FUSION TEMPERATURE</td>
<td>+ 1 300 Degrees</td>
</tr>
<tr>
<td>TOTAL MOISTURE</td>
<td>8,0% (inherent 2,5%)</td>
</tr>
<tr>
<td>HARDGROVE</td>
<td>48 TO 52</td>
</tr>
<tr>
<td>% PHOSPHOROUS</td>
<td>0,180 %</td>
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<tr>
<td>ABRASIVE INDEX</td>
<td>97 to 102</td>
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<tr>
<td>FIXED CARBON</td>
<td>57 %</td>
</tr>
<tr>
<td>% ASH</td>
<td>14,5 %</td>
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VKS – Underground Operation

Background
- Previously mined conventional D & B
- No systematic support was required
- Selective mining was done / Coal left in roof
- Limited stooping operations
- Closed down 1998/1999 (Anglo)
- Re-evaluation of reserves (Eyesizwe)
- Decision to re-open 2003
VKS – Underground Operation
VKS – Underground Operation

- Production commenced in 2004
- Two sections in operation
  - Sweeping
  - Support and re-supporting
  - Stooping operations
- Objective - Access to Diepspruit reserves
- Third section introduced 2006 (Low seam section)
VKS – Underground Operation
Alluvium & Laterite

Sandstone medium to coarse grained, micaceous

Mudstone, laminated, bioturbated, poor as roof unit

Erosive Basal contact

6.00m

30.00m

38.50m

2 seam

2A seam (variable thickness 0.0m – 1.80m)

1 seam Select (average thickness 1.50m)

Average 3.50m

Average 2.00m

S2S (2 seam Select)

S2T (2 seam tops)

Dwyka

Average 3.50m

Average 2.00m

Erosive Basal contact
Challenges on the way to Diepspruit

- Slurry *
- Major water accumulations
- Ventilation
- Stooping (Goaf overruns) *
- Small pillars
  - Change in underground configuration
  - Resulted in lower safety factors
Small pillars – Underground closure

- Small pillar extraction / Coaltec 2020 project
- Coalbrook experience resulted in major concern
- Fear of a major collapse
- Section 1 stopped February 2007 (2 shift to 3 shift system)
- Modelling exercises by Prof N van der Merwe
- Alternatives investigated
- Operation ceased end of February 2007
- Final decision to close underground – March 2007
Impact of closure

• Run of mine coal shortage
  – Coal swap / buy in from Mafube
  – Inyanda buy in
  – Increased production from VKN openpit

• Labour redeployment
  – 170 underground employees affected
  – Redeployment to Arnot, Matla and Tshikondeni
  – Redeployment was successful through continuous briefing, consultation, information sharing sessions and progress reports

• Surface and plant continued with normal operation
  – Services in process of restructuring
Underground reclamation

- Risk assessment with Rock engineering department completed
- Installation of closure monitors and policemen
- Daily inspection and reporting of monitors
- Priority – Section equipment
- Utilised underground employees
- Limited contractor / casual labour
- Total reclamation 95% completed *
Future planning

• Access to Diepspruit reserves
  – Feasibility study for boxcut and new shaft complex
  – Underground mining methods
  – March 2008

• VKN North of RBCT railway line
  – Mini pit
  – October 2008

• Middeldrift
  – Medium to longer term
  – Opencast / underground mining methods
Plant facelift

- Automation and upgrading of electrical reticulation
- Establishment of control room
- Concreting of the plant area
- Plant projects
  - Bypassing of 3mm product
  - Wash to zero
  - Filtration of ultra fines
  - Magnetite bay
  - Removal of redundant structure
Thank You

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