DRAFT MINUTES

PUBLIC MEETING:

14 July 2009

ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED IMPUMELELO MINE
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1. OPENING AND WELCOME

Dr de Waal opened the meeting and welcomed all present. He introduced himself and the project team as follows:

- Mr J. Lock   Sasol Mining
- Mr J. Steyn   Sasol Mining
- Dr G. Nussey  Sasol Mining
- Mr W. van den Heever  Sasol Mining
- Mr PN. de Vos  Sasol Mining
- Mr H. Schoeman  Sasol Mining
- Mr P. Cronje  Sasol Mining
- Mr J. de Klerk  Clean Stream Environmental Consultants (CSEC)
- Mrs N. Lubbe  Clean Stream Environmental Consultants (CSEC)
- Mr G. Steenekamp  Clean Stream Groundwater Services (CSGS)
- Mr D. Kassier  Wetland Consulting Services
- Mr T. de Castro  De Castro & Brits
- Mr C. Waygood  Jones& Wagner
- Mr E. Mashau  BKS
- Dr D. de Waal  BKS – Chairperson
2. AGENDA

Dr David de Waal proposed the following agenda. The participants accepted the agenda.

1) Opening of the meeting  Chairperson
2) Welcome and introduction  Chairperson
3) Purpose of the meeting  Chairperson
4) Rules and procedures to be followed  Chairperson
5) Project overview
   4.1 Underground coal mining  Mr J. Steyn
   4.1 Environmental authorisation  Mrs N. Lubbe
6) General Discussion  All
6) Closure  Chairperson

3. ATTENDANCE AND APOLOGIES

ATTENDANCE

The meeting was attended by 48 people, of which 36 were members of the public. Please refer to Appendix 1 on page 16 for the attendance register.

APOLOGIES

Apologies were received from:

Mr Z. Maroga  Transnet
Mr L. Van Wyk  Telkom
Mr A. Kotze  Eskom
Ms F. Mamobolo  DWAF
Mr B. Van Den Heuvel  Sasol Mining
Mr E. Blaauw  Sasol Mining
Mrs S. Strydom  Private
4. PURPOSE OF THE MEETING

The purpose of the meeting was to:

- Provide feedback on the status quo of the proposed project;
- Present the core findings of the environmental impact assessment (EIA) specialist studies;
- Get public input on issues and concerns to be addressed; and
- Indicate the way forward.

5. PRESENTATIONS

Mr J. Steyn gave a presentation on underground coal mining illustrating how the proposed mine will be operated and managed. He also showed mining technology that will be applied to minimize environmental impacts as well as mechanisms that will be applied to avoid groundwater contamination. He indicated the depths at which mining will take place.

Mrs N. Lubbe gave a presentation on the environmental aspects, emphasising the findings of the specialist studies.

In addition, Mr G. Steenekamp explained the matters related to groundwater.

Please refer to Appendix 2 on page 18 for a copy of the presentations.

6. DISCUSSION

The following section provides a summary of the key issues relating to the proposed Impumelelo Mine that was raised during the discussion.

<table>
<thead>
<tr>
<th>RESPONDENT</th>
<th>QUESTION/COMMENT</th>
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<tr>
<td>Mr J. Scholly</td>
<td>Asked what will happen to the dirty or used water (domestic and otherwise) that will be generated on the mine and how it will be processed, as French drains, for example, are no longer an environmentally sound option.</td>
</tr>
<tr>
<td>Mrs N. Lubbe</td>
<td>Indicated that dirty water will be contained in a pollution control dam or treated and that no dirty water will be released into the environment.</td>
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</table>
**EIA: PROPOSED IMPUMELELO MINE**

**RESPONDENT**  
**QUESTION/COMMENT**

<table>
<thead>
<tr>
<th>Dr G. Nussey</th>
<th>Added that there will be a small sewerage treatment plant on site, for which Sasol Mining will have to apply for an authorisation from DWAF. In addition, dirty water will also be stored in the pollution control dams. This water is used underground for dust control purposes.</th>
</tr>
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<tbody>
<tr>
<td>Mr E. Maseko</td>
<td>Asked whether there are plans for maintaining road infrastructure between the mine and the plant to minimise further degradation of the roads.</td>
</tr>
<tr>
<td>Mr J. Steyn</td>
<td>Responded that the tarring of the Boschmansfontein gravel road is under consideration. Maintenance on the other roads (public roads) would still be the responsibility of the respective authorities.</td>
</tr>
<tr>
<td>Mr D. Khanye</td>
<td>Commented that the Provincial Department of Roads and Transport should also be involved in the planning of the road infrastructure.</td>
</tr>
<tr>
<td>Mr D. Khanye</td>
<td>Asked when the mine will start its operation and what the expected lifespan of the mine is expected to be.</td>
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<tr>
<td>Mr J. Steyn</td>
<td>Responded that the, according to the plan, the construction of the overland conveyor system is scheduled to start in 2010. Initial production is planned to start in 2012 with coal transported by truck. Full production status will be reached by 2014. Mr Steyn added that the life of mine is expected to be 30 years.</td>
</tr>
<tr>
<td>Mr D. Khanye</td>
<td>Enquired whether job opportunities will be created for inhabitants from the Dipaleseng and Govan Mbeki municipalities and whether most of these new jobs will be for the Dipaleseng community.</td>
</tr>
<tr>
<td>Mr J. Steyn</td>
<td>Responded that the Brandspruit Mine will close and those workers will then transfer to the Impumelelo Mine. There may be opportunities for new jobs during the construction phase, but this would depend on the various contractors. Where new</td>
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**EIA: PROPOSED IMPUMELELO MINE**

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<tr>
<td><em>Mr D. Sambo.</em></td>
<td>Added that the Sasol Mining Social and Labour Plan (SLP) has to be developed in consultation with Dipaleseng Local municipality. Issues such as job opportunities and related matters will be addressed in the Social and Labour Plan. Mr Sambo requested a copy of the latest IDP (Integrated Development Plan) document so that those matters relating to the Social and Labour Plan can be extracted from it.</td>
</tr>
<tr>
<td><em>Mr D. Khanye</em></td>
<td>Enquired which boreholes will be affected during the construction and operational phases of the project. Mr Khanye mentioned that the Gert Sibande district municipality are currently sinking boreholes in the area. In addition, Mr Khanye asked why no water quality tests were done for the boreholes used for livestock purposes, as potential future contamination impacts could not be identified without a comparative framework. He requested that those boreholes be tested.</td>
</tr>
<tr>
<td><em>Mr G. Steenekamp</em></td>
<td>Explained that boreholes outside a 2km radius of the proposed mine boundary area were not tested as the impact of dewatering of a mine very seldom extends that far. For this reason, the hydro census only considers a 2km radius, as the transitivity and permeability of the rock does not allow for any such impact. Mr Steenekamp explained that in terms of the water quality impact, the impacts could be on water levels or water quality. During the life of mine, the extraction of water creates a void and water flows into the mine, hence water quality of surrounding boreholes cannot be affected. He added that it is only after mine closure, when the mine fills up with water that the water decanting process starts at the point of lowest topography. Sasol Mining will have to manage the outflow as they would not be allowed to release that water. Boreholes close to the anticipated decant point should be assessed.</td>
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<tr>
<td>Respondent</td>
<td>Question/Comment</td>
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<tr>
<td>Mr D. Khanye</td>
<td>Asked what plans were in place to avoid graves or heritage buildings in the path of the construction process.</td>
</tr>
<tr>
<td>Mrs N. Lubbe</td>
<td>Explained that no graves or heritage buildings are in the direct path of this construction process. If there were any, they would be avoided. The conveyor route has been realigned slightly to avoid the graveyard. There are some buildings and graves adjacent to the construction areas. Precautionary measures will be taken to manage the impact that the construction activities may have on any nearby heritage resources. Such sites will then be clearly marked or fenced, so that the construction activities will not influence such sites.</td>
</tr>
<tr>
<td>Dr G. Nussey</td>
<td>Added that, if additional graves were found, the prescribed process would be followed.</td>
</tr>
<tr>
<td>Mr S. Marebane</td>
<td>Commented that a large number of mining and related activities may cause contamination of surface and groundwater. Regarding the comment earlier that the livestock boreholes were not tested, Mr Marebane stated that it is imperative that the status of the water be determined before the mining activities commence. This would enable the relevant authorities to have a comparative framework to assess contamination levels in future and trace the contamination to the source.</td>
</tr>
<tr>
<td>Mrs N. Lubbe</td>
<td>Responded that surface and groundwater samples had been taken and tested and appropriate management approaches developed. This information is included in the specialist studies that form part of the report that is now available for public review.</td>
</tr>
<tr>
<td>Mr C. Waygood</td>
<td>Indicated that the process to determine which mine has contributed to the deterioration of water quality is relatively simple, as each mine has its own signature in terms of sulphate and sometimes sodium content. Mr Waygood added that the real issue is to know where to sample before the water quality deteriorates so that the water quality process can be managed effectively.</td>
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<td>QUESTION/COMMENT</td>
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<tr>
<td>Mr S. Marebane</td>
<td>Mr Marebane enquired how Sasol Mining is going to manage water, in particular the acid or contaminated water during the rehabilitation process or once the mining activities have stopped.</td>
</tr>
<tr>
<td>Mr C. Waygood</td>
<td>Added that the decanting starts in the order of 30 to 35 years after mining stops. The proposed management approach assumes that Sasol Mining will have to start pumping and treating water from the mine. This process is budgeted for, based on the costing and operational costs of current water treatment plants in the area. This information is included in the report.</td>
</tr>
<tr>
<td>Dr G. Nussey</td>
<td>Stated that Sasol Mining does not at the moment have a definite project plan based on current available technology, but would ensure that the appropriate technology is in place when/if a decant occurs, based on the best technology options available then.</td>
</tr>
<tr>
<td></td>
<td>Dr Nussey stressed that Sasol Mining’s policy is rather one of avoiding the poor water quality level that results in acid water drainage, than having to treat acid mine water. This is achieved by not allowing excess oxygen into the underground mining compartments.</td>
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<td></td>
<td>Dr Nussey referred to the long term Sasol Mining operations in Secunda (35 years) and Sasolburg (60 years) where this aspect has been successfully managed for some 60 years.</td>
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<tr>
<td>Mr S. Marebane</td>
<td>Mr Marebane also asked how Sasol Mining would ensure access to sufficient clean water to groundwater users if the water table subsides due to the mining activities.</td>
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<tr>
<td>Mr H. Schoeman</td>
<td>Stated when the mining operations starts, the mine will implement a second round of hydro census on the farms that may be affected by the mining operations.</td>
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<td></td>
<td>Mr Schoeman confirmed that if a borehole is impacted due to mining operations to the level where sufficient water is no longer available, or the quality is not acceptable, Sasol Mining will provide the farmer with water to a quality and quantity equivalent to that lost and in line with the original use. Inhabitants on the farm will also be supplied with water.</td>
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<td>Mr A. Jankowitz</td>
<td>Mentioned that everybody is talking about the road from Boschmansfontein further on. What about the road from Boschmansfontein to Sasol. Mr Jankowitz mentioned that there has been a significant increase in traffic on the Boschmansfontein- Roodebank road, which is already impacting people in terms of safety and security. Mr Jankowitz wanted to what route the mine vehicles would use beyond Boschmansfontein.</td>
</tr>
<tr>
<td>Mr J. Steyn</td>
<td>Explained that the current plan is to upgrade the road from Boschmansfontein to the shaft area. Another option under consideration is to tar the 4km between the Val road and the Standerton road for use by the mine to transport the mineworkers. Also under consideration is the tarring of 4km from the Standerton road to the eMbalenhle turnoff along the Branddrift road. The upgrading of the Swaaltjie bridge is also under consideration. Sasol Mining is however not committing to anything with regards to the upgrading of roads at this stage, it is dependant on the feasibility investigations, and approval process currently underway. Mr Steyn reiterated that the conveyor belt will carry the coal on the longer term, and that road transport will only be used during the initial phases of the project, until the construction of the conveyor belt is completed.</td>
</tr>
<tr>
<td>Mrs N. Lubbe</td>
<td>Informed the participants that the upgrade of the roads is not part of the scope for this project, and that information on the road upgrades is not included in this report.</td>
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<tr>
<td>Mr A. Jankowitz</td>
<td>Asked which boreholes were tested and whether they had been plotted on a database. Mr Jankowitz also asked if feedback was provided to the people whose boreholes were tested. In his case, he had not received any feedback, even though his boreholes were tested 18 months ago. Mr Jankowitz also asked who can be contacted in this regard?</td>
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<tr>
<td>Mrs N. Lubbe</td>
<td>Responded that in order obtain further information with regards to the studies conducted and the results thereof, the correct person to contact is herself (contact details were made...</td>
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<td>Mr A. Jankowitz</td>
<td>Mr Jankowitz also asked how to get hold of the specialist studies and whether this information is available on the CSEC website. He also enquired whether Professor Verdoorn's environmental study was utilised in the assessment and over what period the environmental specialist studies were done. The wetland study is of particular importance.</td>
</tr>
<tr>
<td>Mrs N. Lubbe</td>
<td>Indicated that all the specialist studies, inclusive of the methodologies and findings, are included as attachments to the report currently available for public comment (hard copies have been placed at the Val Silos and Greylingstad Post office, the report is also available on CSEC’s website <a href="http://www.cleanstream.co.za">www.cleanstream.co.za</a>). Professor Verdoorn’s work has not been considered in this study, however, relevant specialist studies were conducted.</td>
</tr>
<tr>
<td>Mr R. Gordon</td>
<td>Indicated that they operated a big dairy farm and that none of their boreholes have been tested. Mr Gordon stated that they use between 30000 and 40000 litres of water each day, from a single borehole which is 287.5 m deep. If that borehole is in any way negatively impacted upon, they are stuck. Mr Gordon added that water quality was paramount to them, as their milk production is subject to stringent ISO health requirements. Mr Gordon asked what Sasol Mining would do if the farm lost the use of the water from that borehole.</td>
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<tr>
<td>Mrs N. Lubbe</td>
<td>Indicated that a hydro census had been undertaken and asked Mr Gordon to check if his borehole details are recorded. If not Mr Gordon must contact Mrs Lubbe in this regard.</td>
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<td>Mr H. Schoeman</td>
<td>Reiterated that when the mining operations starts, the mine will implement a second round of hydro census on the farms that may be affected by the mining operations. The mining process will then plan to accommodate the borehole or the landowner.</td>
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<td>Mr Schoeman confirmed that if a borehole is impacted on due to mining operations to the level where sufficient water is no longer available, or the quality is not acceptable, Sasol Mining will provide the farmer with water to a quota equivalent to that lost and in line with the original use. Inhabitants on the farm will also be supplied with water.</td>
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<tr>
<td>Mr L. Klopper</td>
<td>Asked whether the surface coal bunker could cause air pollution.</td>
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<tr>
<td>Mr J. Steyn</td>
<td>Added that only some 15 000 tons of coal will be stored in the enclosed bunker as short term storage of more or less one half of daily production to ensure a continuous coal supply to the conveyor belt.</td>
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<td></td>
<td>Mr Steyn also indicated that if more coal needs to be stored, if for example the conveyor belt is down, an emergency stockpile will be created. This will be well managed and watered to avoid dust pollution.</td>
</tr>
<tr>
<td>Mrs N. Lubbe.</td>
<td>Indicated that the results of the air quality study indicate that it is unlikely that the inhabitants will be affected by dust, as the closest residence is more than 1.3km away with only three residences within a radius of 2km of the mine.</td>
</tr>
<tr>
<td>Mr L. Klopper</td>
<td>Asked Sasol Mining to implement measures not to encourage farm labourers to become mine employees.</td>
</tr>
<tr>
<td>Mr J. Steyn</td>
<td>Confirmed that if Sasol Mining needed people the farmers would be notified. Sasol Mining will, in any case, follow formal employment processes, which process will also be part and parcel of the Social and Labour Plan. Mr Steyn emphasised that Sasol Mining cannot prohibit people from applying for jobs.</td>
</tr>
<tr>
<td>Mr D. Sambo.</td>
<td>Stressed that farm labourers should be advised not to forego their permanent employment for temporary mine employment. If they do this, they may soon find themselves jobless and...</td>
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<tr>
<td>Mr L. Klopper</td>
<td>Mentioned that the provincial government spent R 59 million upgrading the road, and it's already in a poor condition. Mr Klopper believes that this road will not be suitable for the transportation of coal.</td>
</tr>
<tr>
<td>Mr J Steyn</td>
<td>The route and the use of this road will be part of the investigations. If it is necessary to upgrade the road this will be taken into consideration.</td>
</tr>
<tr>
<td>Mr L. Klopper</td>
<td>Mentioned that the presentation indicated the pollution control dams being able to accommodate a 1:100 year flood. He wanted to know what rainfall levels would constitute a 1:100 year flood.</td>
</tr>
<tr>
<td>Mr C. Waygood</td>
<td>Responded that the answer is more complex. For example, a 2% chance of spilling in a year equates to a one in 50 year flood. This is a short term measurement that relates to the volume rainfall per day. It may well happen that the high rainfall levels continue for more than a day. To generalise, a 1:100 year flood would require rainfall levels of in the order of 140mm per day. A two day event may then equate to 200 or 300mm of rain. The exact figures are included in the report. Mr Waygood added that the pollution control dams are designed to accommodate dirty water that runs off by gravity (i.e. water of stockpiles, etc) as well as water that comes from underground. He added that the modelling is calibrated to accommodate extremely high rainfall periods over long periods of time. The pollution control dams are huge, in the order of 600 000m³.</td>
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<tr>
<td>Mrs N. Lubbe</td>
<td>Indicated that a noise specialist study was conducted and the conclusions are available in the draft EIA report. She added</td>
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<td>QUESTION/COMMENT</td>
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<td>that due to the advanced design of the conveyor belts (use of silencing idlers as well as covering the conveyor belt), noise generated from the conveyor belt is not anticipated to be a significant factor. It’s likely that more noise will be generated as a result of the additional road use than as a result of the operation of the conveyor belt.</td>
</tr>
<tr>
<td>Mr L. Klopper</td>
<td>Asked for an explanation of the term “depression cone”.</td>
</tr>
<tr>
<td>Mr G. Steenekamp</td>
<td>Responded that a water table is relatively static under normal conditions. When a delivering borehole is pumped, water is often extracted at a faster rate at that locality than it is replenished through the geological structures. Hence the water table forms a depression around the location of the borehole. This is called a depression cone. Mr Steenekamp added that the same scenario will hold if the mine extracts water from the mine. Surrounding water will then flow into the mine, causing a depression cone. The more permeable the surrounding geological structures, the flatter the cone will be.</td>
</tr>
<tr>
<td>Dr A. Berruti</td>
<td>Asked if the EIA lists the sampling techniques, dates, methods, lists in sufficient detail that the result could be independently verified in terms of comprehensiveness and completeness. Dr Berruti also enquired if Kniphofia typhoides or Orbea Cf. cooperi species were found during the assessment.</td>
</tr>
<tr>
<td>Mrs N. Lubbe</td>
<td>Indicated that the specialist reports indicate the methodologies, time frames etc, are attached to the EIA report.</td>
</tr>
<tr>
<td>Mr T. de Castro</td>
<td>Responded that the report is a typical baseline ecological report as one would compile for an area this size. The report includes the detailed methodology, time survey, the sampling efforts as well as a complete list of all plant species and fauna recorded. Mr de Castro emphasized that the time of sampling is determined by the project schedule. In this case the first survey took place in October and the second in January, to accommodate seasonal variances. Mr de Castro indicated that no near threatened species were found on site, but that the habitat is suitable for two threatened</td>
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</table>
species, namely *Gladiolus robertsoniae* and *Trachyandra erythrorrhiza*. Further follow surveys were recommended for November, when these species flower.

*Orbea Cf. cooperi* (Aasblom) was found on the farm Platkop, on a rocky outcrop next to the river. Although not a threatened species, the distribution is disjunct or having a unique genotype (eco type) due to the location. It therefore does have conservation value. Although no mine related impact is expected in this area, the area (40 ha) has been highlighted as having high conservation value.

*Kniphofia typhoides* was not found on site, during October of January. It is likely that it may be found during follow up surveys during February or March.

Mrs S. Berruti  
Indicated that they had observed the *Kniphofia typhoides* on site, near where the *Orbea Cf. cooperi* was found.

Mrs. Y. Scholly  
Commented that the issue of floods should not be overlooked, as large floods do happen at short notice.

Mrs Y. Scholly  
Emphasized that mining will take place for thirty years, and thereafter the community will return to a farming community. The mining process and rehabilitation must be managed in such a way that future generations will still find a pleasant and productive environment within which their normal social and agricultural activities can take place. She also requested that if Sasol Mining does anything, that they do it well, and build things such as roads to last in the long term.

Mr J. Steyn  
Responded that this was also the desire of Sasol Mining, as the Sasol Mining employees also wanted to continue living in the area.

Mrs Y. Scholly  
Wanted to know where the acid rain comes from, and whether the planting of trees could decrease the impact of acid rain. Trees could also screen dust and noise impacts.

Mrs N. Lubbe  
Indicated that the acid rain issue falls outside the scope of this specific study, as this project per se would not cause acid rain.
| RESPONDENT       | QUESTION/COMMENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
EIA: PROPOSED IMPUMELELO MINE

RESPONDENT QUESTION/COMMENT

Mr G. Steenekamp  Added that the boreholes were named according to the farm or the farm owner’s name. As an example, boreholes on the farm Koppieslaagte will be named KL 1 to 6. The coordinates of the various tested boreholes are also indicated in the specialist report. Mr Steenekamp asked that, if by accident, a borehole was not indicated, the consultants should be contacted to rectify the matter.

Mr H. Smith  Stated that incidents of crime increased significantly during the process to construct the VRESAP pipeline. He enquired whether Sasol Mining will implement extra precautionary measures to combat crime during the construction phase of the project.

Mr J. Steyn  Indicated that construction workers will not live on site, but be transported from elsewhere. Mr Steyn committed to take up this matter with Sasol Mining security to see what measures are possible.

7. WAY FORWARD AND CLOSURE

Mrs N. Lubbe mapped out the way forward as follows:

- Public review of the report by members of the public is currently underway (until 14 August 2009),
- Incorporation of inputs from the public into the final report will be done after the public review period,
- The final report will be made available on the website for notification purposes and will be submitted to the authorities,
- The final report will be considered by the authorities for their decision, and
- Announcement of the environmental decision by the authorities will be communicated to registered interested and affected parties.

Mr J. Steyn expressed his appreciation to the participant on Sasol Mining’s behalf.

The chairperson thanked the attendants for their participation and adjourned the meeting.
## APPENDIX 1: ATTENDANCE REGISTER

<table>
<thead>
<tr>
<th>Surname</th>
<th>Initial</th>
<th>Title</th>
<th>Affiliation</th>
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<tbody>
<tr>
<td>Beierle</td>
<td>A.</td>
<td>Mrs</td>
<td>Private</td>
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<tr>
<td>Berruti</td>
<td>A.</td>
<td>Dr</td>
<td>AGRED</td>
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<td>S.</td>
<td>Mrs</td>
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<td>H.</td>
<td>Mr</td>
<td>Roepersfontein Bonsmaras</td>
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<td>Chetty</td>
<td>K.</td>
<td>Ms</td>
<td>Rand Water</td>
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<td>BKS</td>
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APPENDIX 2: PRESENTATIONS

Presentation on the underground mining of coal by Mr. J. Steyn:

1. Introduction
   - Sasol Mining is in process of completing the feasibility study to replace Brandspruit mine and retain its people.
   - The replacement mine will be called Impumelelo Mine.
   - The objective of the project is to ensure uninterrupted coal supply to the current Secunda CTL plant:
     - 8 – 10 Mtpa of coal
     - Retain jobs for at least 1150 people over a period of 30 years (2046)

2. Infrastructure
   - People and material shaft
   - Ventilation shafts
   - Surface bunker
   - Overland conveyor system
   - Water pipelines
   - Substations
   - Offices and other buildings
   - Water tower with tanks
   - Roads
   - Pollution control dams

3. Locality Map

4. Overland conveyor route

5. Impumelelo Mine

6. Proposed shaft area

7. Proposed conveyor route

8. R547

9. Boschmansfontein

10. Overland conveyor route

11. People and material shaft

12. Ventilation shaft
EIA: PROPOSED IMPUMELELO MINE

3. Mining Process

- All mining will be underground
- Two seams will be mined (C4 and C2)
- Mining method is bord-and-pillar mining and high (pillar) extraction
- No high extraction under wetlands, rivers and existing infrastructure without DME approval
- Coal transport by means of overland conveyor. There is a possibility of initial road transport during startup

Basic Principles – Section through workings

Basic Principles – Plan of workings

Typical coal mine cross section

Continuous Miner

Shuttle car
4. Rehabilitation

5. Timeline for Impumelelo Mine

Key dates

- Go into Engineering phase: Apply for capital - May 2009
- Complete survey and geotechnical - August 2009
- Overland conveyor procurement - September 2009
- Overland conveyor earthworks - May 2010
- Completion of service shaft - May 2010
- Completion of Vent shaft - July 2011
- Completion of downcast shaft - August 2012
- Completion of decline shaft - October 2012
- Completion of material handling - August 2012
- Opening up between shafts - April 2012
- 4 Seam development complete - February 2014
- 2 Seam development - June 2014
- First production - March 2014
Presentation on the Environmental Aspects by Mrs. N. Lubbe and Mr. G. Steenkamp:

**Impumelelo Mine**
(Previously referred to as Brandberg Mine, Impumelelo Shaft)

**Environmental Authorisation Processes, Specialist Studies, and Impacts**

**Public Meeting**
14 July 2009

Nathalie Lubbe
Chief Seasons Environmental Consultants
P.O. Box 9202, Secunda 2500
Phone: 026 433 1700
Email: nathalie@seasons.co.za

**Contents**
- Process followed
- Results of specialist studies
  - Soils, land capability and land use
  - Ecology (fauna & flora)
  - Surface water
  - Groundwater
  - Wetlands
  - Air and noise
  - Heritage
- Visual impact assessment (conveyer route)

**Process followed thus far**
- Scoping Phase public meeting
- Scoping report – public comment
- Scoping report submitted: 27 March 2009
- Authorities requested the inclusion of a geo-technical study in the EIA document
- EIA: compiled and available for public comment until Friday 14 August 2009

**Role of I&AP’s**
- I&AP: Interested and Affected Party
- Individuals who may be **interested** in the project, or who may be **influenced** positively or negatively by the proposed Impumelelo Mine project
- Registration forms are available
- Participate constructively

**Issues raised**
- Groundwater quantity and quality
- Dust gathering
- Effects of mining on farming
- Additional traffic on roads
- Maintenance of roads
- Subsidence of ground
- Disturbance of wetlands
- Decreased value of properties
- Location of the mine

**Soil Survey**

**Land Capability**
- Arable
- Grazing
- National Trust
- Harvested

**Land Use**

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**Flora**

- 15 conservation important species (threatened, endemic and/or protected)
- Three have Orange List status (declining)
- Two near threatened species potentially occur

**Threatened fauna**

- **Mammals**
  - 5 conservation important species
  - 1 confirmed (Sanavi)
- **Birds**
  - 10 conservation important species
  - 5 confirmed (Blue Crane; Lesser Kestrel; Blue Koel; Lanner Falcon & Black-Winged Pratincole)
- **Reptiles & Frogs**
  - 1 potential conservation important species

**Catchment description**

- In the Waterval catchment upstream of Vaal Dam

**Aspects to be managed**

- Potential impacts on water quantity
  - Subsidence = loss of yield (runoff, seepage), area is equal to 0.3% of MAR at Vaal Dam.
  - Loss of catchment infrastructure, nominal
- Potential impacts on water quality
  - Managing of water balance for average rainfall
  - Managing of water balance for extreme rainfall

**Nature of impact on surface water**

Mechanism of impact from borehole evolution

**Geohydrological investigation for the proposed Impumelelo Mine**

- Garth Steenkamp

**Impact assessment: Water levels**

- High extraction mining result in:
  - Roof collapse, surface subsidence, seepage into underground workings
  - Decreasing of both aquifers
- Significant increase in recharge
- Total volume of groundwater in 16 years = 275 million cubic meters.
- Declining at the lowest surface elevation = 1,940 meters
- ±15 meters higher than highest 4 years elevation.
- Entire underground void to fill with water before deceleration could occur.
- Surface impact from shaft area limited – seepage into mine workings

**Depression cones**

- Groundwater direction expected by developing during the operational phase in the first weathered aquifer, up to 65 m.
- Groundwater direction caused by developing during the operational phase; second, fractured aquifer in the lowest point of 2 years flow (± 235 m).
- Recharge seepage to mine, around 0.5 Mln/year at end of LCW

**Impumelelo Mine**

- Mine would 100% bore hole after closure.
- Decline estimated to occur after ± 100 years.
- Decline rate 5,445,500 m³ per annum
- Expected decline quality poor (TDS 1,500 - 2,550 mg/l)
- Present decline from entering existing surface water environment.
- Treatment or use in other operations.
- Contamination plume movement only after mine has filled up – mainly in deeper aquifer.
- Movement rate not significant – few meters per year.
- Deep pollution plume simulated – 450 meters movement after 100 years past closure.
- Migration must pronounced in topographically lowering areas in the south of the proposed mining area.

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**EIA: PROPOSED IMPUMELELO MINE**

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**Management Options**
- Minimize surface infiltration through:
  - Ploughing over of surface crevices (not applicable in outcrop areas)
  - Minimizing pond formation on surface subsidence areas
  - Free-draining surface area (not possible in flat-lying areas)
- Sasol to compensate users for loss of groundwater
- Possibilities for permanent or temporary use or disposal of mine water are:
  - Storage in underground compartments where mining has been completed.
  - Treatment of water and use for potable water, irrigation or other.
  - Water used in nearby mining operations of Sasol such as Thabang coal Mine.

**Environmental Noise**
- Road traffic dominates residual character
- Exceed SANS rating levels near roads
- Site establishment and construction will cause annoyance
  - Intense
  - Short duration
  - Localized
- Average ambient noise level could increase
- Underground mining contributes little to ambient noise levels

**Air Quality**
- Suspended particulate matter account for most emissions
- Dust deposition is expected to be a visible nuisance during the period of construction and rehabilitation - <90m from activity
- Operations will increase the perception of dust at close by residences
- Daily and annual particulate matter levels not expected to be excessive at nearest sensitive receivers

**Heritage resources**
- Farmstead complexes (60+ years)
- Informal graveyards and graves

**Conclusion**
- 20 new monitoring boreholes have been drilled
- Monitoring on a quarterly basis for inorganic content and water levels at these boreholes
- Monitoring schedule to be re-assessed regularly in terms of water levels and quality trends
- Additional boreholes to be drilled during operational phase if required
- Groundwater constituents for routine analysis

**Wetlands**
- Wetland Type
  - Waterway
  - Vegetation
  - Open Water
  - Pond
- Wetland Type
  - Wetland Type
  - Vegetation
  - Open Water
  - Pond

**Proposed shaft area**
- Graveyard – 5 graves

**Conveyor route**
- Historical House: Dilapidated sandstone house
- Graveyard: 9 vandalized graves

**Visual impact assessment**
- Visual impact assessment
Regional and national impacts

- Construction Phase
  - Increased job opportunities
- Operational Phase
  - Maintain existing workforce (Brentspunt mine)
  - Continue to supply coal to the Synfuels factory (production of fuels and plastics)
  - Protect regional established economy
- Decommission Phase
  - Job losses, or
  - Relocation of employees to new projects

IAAPs

- Communication forum
  - Identify role players (I&AP database)
  - Establish communication lines
  - Meet on a regular basis
- Impacts as described before

Please remember the EMP (incl EIA) is out for public comment

THANK YOU!

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