



PROPOSED POWER STATION AND ASSOCIATED INFRASTRUCTURE IN THE WITBANK AREA

Focus Group Meeting: Air Quality and Security

Date	Time	Venue
12 January 2007	11:00 – 15:00	Fairacres Kendal Poultry Farm

1. Welcome and introduction	Action																								
<p>Brett Lawson welcomed everyone present and asked the attendees to introduce themselves. Those attending the meeting were:</p> <p>Eskom</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 40%;">Tobile Bokwe (TB)</td> <td>Gx Environmental Management</td> </tr> <tr> <td>Atella Els (AE)</td> <td>Gx Environmental Management</td> </tr> <tr> <td>Deidre Herbst (DH)</td> <td>Gx Environmental Manager</td> </tr> <tr> <td>Suren Rajaruthnam (SR)</td> <td>Gx Divisional Cleint Office</td> </tr> <tr> <td>Harry Salzwedel (HS)</td> <td>Project Development Department</td> </tr> </table> <p>Ninham Shand</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 40%;">Brett Lawson (BL)</td> <td>Ninham Shand Consulting Services (chair)</td> </tr> <tr> <td>Yvonne Scorgie (YS)</td> <td>Airshed Planning Professional</td> </tr> </table> <p>Fairacres</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 40%;">Geoff Byrne (GB)</td> <td>Fairacres</td> </tr> <tr> <td>John Byrne (JB)</td> <td>Fairacres</td> </tr> <tr> <td>Andre Cherry (AC)</td> <td>Adjacent landowner</td> </tr> <tr> <td>Lourens de Villiers (LdV)</td> <td>Fairacres' environmental advisor</td> </tr> <tr> <td>Scott Elliot (SE)</td> <td>Fairacres' veterinarian</td> </tr> </table> <p>BL described the purpose of the meeting, with reference to specific concerns regarding air quality and security expressed by JB, GB and AC at the public meeting of 28 November 2006, and proposed an agenda, to which SE added items on water quality and use, and dust. These minutes follow the sequence of the agenda.</p>	Tobile Bokwe (TB)	Gx Environmental Management	Atella Els (AE)	Gx Environmental Management	Deidre Herbst (DH)	Gx Environmental Manager	Suren Rajaruthnam (SR)	Gx Divisional Cleint Office	Harry Salzwedel (HS)	Project Development Department	Brett Lawson (BL)	Ninham Shand Consulting Services (chair)	Yvonne Scorgie (YS)	Airshed Planning Professional	Geoff Byrne (GB)	Fairacres	John Byrne (JB)	Fairacres	Andre Cherry (AC)	Adjacent landowner	Lourens de Villiers (LdV)	Fairacres' environmental advisor	Scott Elliot (SE)	Fairacres' veterinarian	
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2. Air quality study presentation	Action
<p>YS gave a presentation that summarised the air quality study undertaken during the assessment phase of the EIA for the proposed power station. In particular, she described the findings of specific dose-response studies related to the effect of SO₂ on chickens and highlighted the fact that, while harmful effects have been shown experimentally, these are at concentrations of parts per million. This differed by many orders of magnitude from the milligrams per cubic metre unit of measurement applied during the present study and YS offered the opinion that the dose-response studies were not of direct relevance in the present study.</p>	
3. Discussion on air quality	Action
<p>Referring to a study in Alberta, SE indicated that SO₂ as the only stressor would not be problematic but that other stressors such as temperature fluctuation and winter cold in particular, as well as dust and vaccination, could all contribute, i.e. a combination of several stressors could indeed be problematic. YS acknowledged this but again referred to the different order of magnitude in units of SO₂ measurement and asked about the mortality rate of chickens from other causes at Fairacres. SE indicated that Fairacres is well run and has a low mortality rate, although a bacterial disease is prevalent in the cold winter months.</p> <p>AC enquired about the effect of fluctuating wind direction and YS described how it is only the high concentration incidents that are problematic. AC asked how these worst-case, “upset” situations are dealt with and DH described the licensing conditions that Eskom operates under and that power generating plant can in fact be taken off-line if the operating standards are not being met. AC wished to know how these standards are monitored and DH described Eskom’s present system of reporting exceedences and that government environmental authorities are likely to become more directly involved in such monitoring in the future. BL also made reference to the Record of Decision (RoD) in all likelihood requiring that an Environmental Management Plan (EMP) be put in place for the operational phase of the project and that this would provide a means of monitoring, reporting and corrective action.</p> <p>SE queried the technology referred to for reducing the SO₂ emissions and HS described the flue gas desulphurisation (FGD) process, with wet FGD able to achieve slightly higher removal rates. It was confirmed that FGD is more recent technology that has not been applied by Eskom to date.</p> <p>JB asked whether air quality monitoring will continue and where the monitoring stations are. YS replied in the affirmative, with reference to the department within Eskom that</p>	



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undertakes this and other scientific monitoring, and described the appearance and location of the monitoring stations in question (New Largo vicinity and south-east of Kendal).

SE raised the issue of chronic as opposed to acute effects resulting from poor air quality and YS confirmed that acute effects related to prescribed standards are typically the focus of such studies. Information on long-term chronic effects on human health is generally less reliable. SE offered the opinion that low-level respiratory problems are a feature of human health in coal burning areas where air pollution is visible. In response, YS pointed out that particulates and not SO₂ are responsible for visible pollution and that particulates in the study area are not related to power generation.

SE and JB raised the question of adopting the precautionary principle, with reference to the North American experience. YS reiterated that she could see no cause for concern but that she would review whatever information SE could make available and offer an opinion. It was agreed that SE would provide the information at his disposal to YS and that she would respond to it. [Post-meeting note: SE provided the information to YS and her response is attached to these minutes. Essentially, her opinion remains unchanged, i.e. that significant risks to poultry are unlikely to occur as a result of the proposed power station.]

SE queried the FGD technology insofar as combustion efficiency and heavy metals are concerned and HS described how wet FGD would result in visible vapour which might be perceived as a pollution plume, how supercritical boilers are desirable and how the small quantity of heavy metals would not pose any risk.

LdV requested a more detailed description of ash handling and how dust and heavy metals would be managed. Similar concerns were expressed by SE and AC. The issue of heavy metals had been indicated to not pose any risks and YS, HS and DH described the monitoring undertaken, Eskom's zero liquid effluent discharge (ZLED) policy, that tighter controls are pending and that increasing reuse of ash is occurring. SE indicated concern about the proximity of Site X to Fairacres and in response HS provided a detailed description of the ash management system and the low incidence of dust events.

AC had queried the effect of increased air temperature resulting from emissions and HS indicated that this does not pose any risk, a fact that had been shown with Eskom's experience at Lephalale. SR referred to a simulation model developed for the Lephalale project that could be used to demonstrate this.

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4. Discussion on water issues	Action
<p>BL described the situation regarding bulk water supply, with reference to the Vaal River Eastern Subsystem Augmentation Project (VRESAP) providing additional water to the existing Kendal power station, from where the proposed power station would be supplied. A pipeline from Kendal to the proposed site is thus an element of the present EIA and had been addressed by the specialists and reflected in the Draft Environmental Impact Report (DEIR).</p> <p>AC expressed frustration with the fact that several development proposals were occurring in the area simultaneously and that he was not being provided with adequate information to base an opinion on. He queried how worst-case scenarios would be dealt with and YS indicated that proving cause from a particular upset condition would be difficult. AC asked to be provided with a copy of the map showing the various transportation corridors and BL undertook to do this. [Post-meeting note: the map was delivered to AC by BL on 15 January 2007] A CD containing the complete DEIR, i.e. including the transportation corridor map, was given to SE at the meeting.</p> <p>JB queried the availability of bulk water and SR indicated that this possibility could be pursued, although it would be raw, untreated water. This matter could be followed-up by JB and SR if deemed advisable, as a separate exercise to the present EIA process.</p> <p>SE described his experience with production decreasing when water derived from a coal mining area was made available to poultry, although he acknowledged it as a coal mining issue. HS indicated that no runoff from the proposed power station would be expected and that even in episodic circumstances, runoff would not be polluted. This was due to episodic runoff being derived from the last of the settlement/ treatment dams on the power station precinct and its quality would thus be the same as a farm dam.</p>	BL
5. Discussion on security issues	Action
<p>AC had previously raised concern about the security implications of numerous construction staff and work seekers being present in the area, and the likely increase in criminal activity. He described the presently challenging situation and called for the improvement of the Ogies SAPS station efficiency and functionality. SR indicated that Eskom would approach the local authorities and SAPS in this regard and DH suggested that a dedicated committee be established to drive such initiatives, as soon as the RoD is received. SR referred to Eskom investigating expanding their security contract during the construction phase of the project to provide for an additional patrol vehicle.</p>	SR



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7. Discussion on agricultural potential	Action
<p>AC expressed dissatisfaction with the results of investigations into the impacts on agriculture in the area, stating that they were reflected as low in the DEIR. It was pointed out that the potential impacts of the power station on agriculture have been investigated through various studies such as air quality, the socio-economic conditions, the impacts on agricultural potential of the region, impacts of land use and impacts on livelihood security. These studies revealed a medium impact on agricultural potential and social/vulnerability impacts; and a high positive socio-economic impact.</p>	
8. General discussion and closing	Action
<p>In response to queries regarding the likely programme, it was indicated that the final EIR would be submitted to DEAT by early February 2007 and that the Eskom Board would consider giving their go-ahead in April 2007. The acquisition of land had been initiated by means of options that would lead to purchase, as a separate process to the EIA.</p> <p>AC queried the likely route of the transmission lines required to feed the generated electricity into the national grid and was satisfied that his property would not be affected by such lines.</p> <p>With no further issues being raised, BL thanked the attendees, in particular the Fairacres management for making the meeting venue available, and indicated that the minutes of the meeting would be distributed in due course. The meeting was then closed.</p>	BL

Attachment: Email from Yvonne Scorgie of 31 January 2007, titled *Kendal North PS – response to literature received.*

From: "Yvonne Scorgie" <yvonne@airshed.co.za>
To: <Brett.Lawson@shands.co.za>
Date: Wed, Jan 31, 2007 3:47 PM
Subject: Kendal North PS - response to literature received

Dear Brett,

I would appreciate it if you could circulate my response to those concerned.

I have looked indepth at the literature given to me by Dr Scott Elliott after our meeting on 12 January 2007. This literature is currently with Renee Thomas should anyone require access to it. The purpose in studying the literature was to determine whether or not such literature contained reliable information which indicated that risks to animals was likely to occur at the cumulatively simulated to occur during the study.

The literature addressed a wide range of topics related to air pollution in general and to air quality impacts associated with power generation in particular. Such topics included:

- (a) health risks due to inhalation exposures
- (b) acid rain impacts
- (c) greenhouse gas emissions
- (d) energy policy (SA) and alternative energy carriers
- (e) impacts on animals and materials (Alberta Environment, March 2003)

Given the purpose of the review, attention was paid to literature dealing with impact on animals of which the most substantial publication was Alberta Environment (March 2003). The other literature refering to such impacts was relatively vague/general and did not as a rule contain dose-response thresholds. The Alberta Environment (March 2003) publication is attached to this email for further reference. The main points of note from this publication of relevance to the review are as follows:

(1) The Alberta Environment (March 2003) publication covers impacts on various types of animals, including experimental animals, livestock and wildlife. In the case of experimental animals all lowest observed effect levels (LOAELs) were above 420 $\mu\text{g}/\text{m}^3$ for acute exposures (Table 4, page 13). At this concentration level, a 10% increased flow resistance had been noted for Guinea Pigs who are comparatively sensitive to SO₂ compared to other experimental animals (including poultry). The lowest no observed adverse effect level (NOEL) for chronic exposure by experimental animals was given as 100 $\mu\text{g}/\text{m}^3$ (i.e. double the current SA annual standard for SO₂). Most chronic effects for experimental animals were reported at concentrations which are significantly above typical ambient concentrations (i.e. at concentrations in the range of 26000 to 1053000 $\mu\text{g}/\text{m}^3$)(page 14). It was noted that chronic exposures of dogs to "low" concentrations of 2600 $\mu\text{g}/\text{m}^3$ was found in a study to result in reduced particle clearance in dogs. The later concentration is similarly considerably higher than ambient sulphur dioxide levels and below the SA standard for annual averages given as 50 $\mu\text{g}/\text{m}^3$.

(2) With reference to acute adverse health effects in livestock reference is made to increased airway resistance being reported in sensitized (allergic) sheep after four hours exposure to 13 250 $\mu\text{g}/\text{m}^3$. Although reference is made to livestock (cattle) deaths after 'major incidents of air pollution (page 14), no indication is provided of the ambient SO₂ concentrations which were likely to have occurred during such incidents. No thresholds are given for chronic exposures of livestock.

(3) Infection susceptibility - Decreased resistance ot bacterial infection in mice after exposure to high SO₂ concentrations (26 500 $\mu\text{g}/\text{m}^3$) was noted in one of the studies referenced (page 20).

On the basis of the literature collated to date by Airshed, and the additional literature obtained from Dr Elliott, it does not appear that significant risks to poultry are likely to occur at the cumulative sulphur dioxide concentrations simulated to occur as a result of the proposed power station. It is however noted that many

of the primary research papers which are referenced in macro studies such as the Alberta Environment (March 2003) paper provided by Dr Elliott and the Alberta Environment (2006) study acquired by ourselves, are not readily accessible (i.e. requires access to certain medical journals not available remotely or without subscription). It is therefore not possible to successfully explore the compounding factors (such as temperature fluctuations) of which Dr Elliott spoke at the meeting. Should the project team deem it necessary that such a comprehensive analysis be undertaken I would recommend that a suitably qualified toxicologist be asked to fulfill the function. Airshed would be pleased to provide any input necessary for such a study.

The potential for impacts due to particulates and gaseous emissions from the proposed, associated mining operation will be assessed in the New Largo air quality impact assessment which is currently underway. Renee Thomas is also working on this study and will ensure that cumulative impacts given the baseline and proposed power station are taken into account.

I trust that my response will shed light on the discussion and will assist in determining the way forward. Should there be any further queries in this regard, please address them to Renee Thomas and/or Lucian Burger.

Best regards,
Yvonne

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<<SulphurDioxideEnvEffectsFateandBehaviour.pdf>>

CC: "Renee Thomas" <renee@airshed.co.za>, "Lucian Burger" <lucian@airshed.co.za>