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**Attention: Mr Bernard Oberholzer**

**ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED ESKOM NUCLEAR POWER STATION AND ASSOCIATED INFRASTRUCTURE: COMMENTS REGARDING THE ESKOM NUCLEAR-1 ENVIRONMENTAL IMPACT ASSESSMENT**

Dear Mr Oberholzer

Your correspondence to Acer (Africa) entitled "*ENVIRONMENTAL IMPACT ASSESSMENT: PROPOSED ESTABLISHMENT OF SITES FOR NUCLEAR GENERATION AND ASSOCIATED INFRASTRUCTURE*" refers.

Arcus GIBB acknowledges receipt of the above-mentioned letter. We thank you for your valuable comments and your participation in the Eskom Nuclear Power Station (NPS) Environmental Impact Assessment (EIA) process to date. Your questions concerning the Nuclear-1 EIA process have been noted.

Responses to your comments / questions are as follows:

Your comment (1):

It is a requirement of the EIA Process that **cumulative impacts** relating to a project be addressed, including all associated infrastructure. The proposed nuclear power station sites cannot therefore be disassociated from the transmission lines despite these being two entities within Eskom. There is absolutely no logic in separating the 2 studies – there would not be any transmission lines if there was no power station and vice versa. The failure to consider the cumulative impacts constitutes a fatal flaw in the EIA process. All comments listed here are therefore directed at the project as a whole.

Response (1):



*The studies are carried out separately due to timing and information requirements of each of the EIAs. The Transmission EIAs require a longer lead time with respect to information requirements and various Transmission studies that need to be conducted. Conversely, Eskom Generation is in a position to initiate the EIA earlier than Eskom Transmission, a reality which is important in light of the construction lead time of the power station, which is longer than that of the transmission lines. Further the complexity of a Nuclear power station EIA is such that the quality of the process could be compromised if there was an attempt to combine an extensive linear project with it.*

*With specific reference to cumulative impacts, each of the EIAs will consider cumulative impacts on all issues specific to the respective EIA. Every attempt has been made to run the two processes as close to parallel as possible, within the constraints identified above, in order to facilitate the flow of information across the two processes. Although each EIA will focus on assessing the specific issues related to the respective EIA, issues pertinent to the corresponding EIA will be discussed in the nuclear site's EIA as well as the Transmission line EIA.*

Your comment (2):

It is a requirement of the EIA process that **alternative sites** be assessed. It was only learned at recent public meetings in the area that in fact all 3 sites are being considered for nuclear power stations and therefore no alternative sites appear to be under consideration. This information was not made clear in the original documentation, and the IAPs have therefore been misled. Lack of clarity on this issue constitutes the second fatal flaw in the process.

Response (2):

*Originally five (5) alternative sites were considered namely, Schulpfontein, Brazil, Thyspunt, Bantamsklip and Duynefontein. The Schulpfontein and Brazil sites were excluded during the Scoping Phase. The Final Scoping Report was approved by DEAT on the 19<sup>th</sup> of November 2008. Section 2.17.1 of this letter states that "The Department accepts the exclusion of the Brazil and Schulpfontein sites for further investigation in this EIA process, as they are not technically feasible at this stage. The Department has also however noted that these sites will be considered for future Nuclear projects."*

*In terms of Section 29 (b) of Government Notice No. R 385 of 2006 under the National Environmental Management Act, 1998 (Act No. 107 of 1998), scoping reports should include "a description of the proposed activity and of any feasible and reasonable alternatives that have been identified". Based on the information contained in Eskom's 20 GW Nuclear Transmission Grid Draft Impact Report (2007), it is evident that Brazil and Schulpfontein are neither reasonable nor feasible to meet the desired objectives of the Nuclear-1 NPS and are therefore not considered as valid site alternatives. Thus it was not practical to further assess the Brazil and Schulpfontein sites in the detailed impact assessment phase of the EIA process for Nuclear-1.*

*Furthermore, Section 8.8.2 of the Final Scoping Report (FSR) states the following as rationale for the exclusion of the Brazil and Schulpfontein sites:*

*"Thus, the Brazil and Schulpfontein sites require the construction of new power corridors and the exportation of the majority of the power to areas of demand given the limited local demand (**Figure***



**78).** Thus, the Brazil and Schulpfontein sites are deemed unfeasible for the proposed NPS based on the following reasoning:

- Optimal, strategic and cost effective utilisation of existing infrastructure associated with the Duynfontein, Bantamsklip and Thyspunt sites, with respect to local integration and exportation of power via existing power corridors;
- Prevention of lengthy time delays associated with the authorisation and construction of the new power corridors applicable to the Brazil and Schulpfontein sites, which will prevent Eskom from providing the power within the required timeframes;
- Unnecessary environmental impacts associated with the construction of new power corridors given that there is existing infrastructure; and
- Cost implications associated with the development of new power corridors”.

Alternatives have been considered during the Scoping Phase of the EIA. As a result of technical issues two alternatives (Brazil and Schulpfontein) were excluded from further consideration. The remaining three sites have been taken forward for detailed specialist assessments into the Impact Assessment Phase of the EIA as they were deemed feasible for the potential construction of a nuclear power station.

During public participation and in related documentation it was communicated that the longer term plan was to develop a nuclear programme of 20 000MW and that all three sites, if feasible, would be used. The Nuclear 1 EIA forms part of such investigations. Eskom has notified the public of its intention to apply to DEAT to have all three sites approved during this process.

#### Comment (3):

It is normally a requirement of the EIA process that the motivation for the **selection of sites**, or routes in the case of the transmission lines, be made clear. The purpose of the public meetings is to have displays and make information available for IAPs to make meaningful, informed input. However, no land use suitability mapping or criteria for site selection were available at the meetings. The process is therefore either not transparent, or decisions on the selection of sites and routes are being made using selective information.

#### Response (3):

The initial site identification was the result of Eskom’s Nuclear Site Investigation Programme (NSIP) which was undertaken in early in 1982 with a view to identifying and ranking sites for the location of Nuclear Power Stations in South Africa. Various criteria were identified and studied, including: water availability, geology and mineral deposits, seismicity, urban populations, rural populations, political boundaries and Security Zones, Areas of National Conservation Importance, Security Areas and National Physical Development and Decentralization Areas. These criteria were used to identify and rank candidate regions. A summary of the phased process and the key findings is described in Appendix D of the Final Scoping Report.

Generally, the purpose of public meetings is to solicit public input as part of the public participation process. Detailed information regarding the findings of the Scoping Phase of the EIA was provided to all I&APs prior to the public meetings in the form of the Draft Scoping Report, which was made available at public venues specifically for public review and input into the process.



Comment (4):

During public meetings it was revealed that Eskom prefers to have **dispersed nuclear power stations** across the country, rather than these being concentrated in one location such as Koeberg, for strategic reasons. This will result in the need for a greater number of transmission lines, which contradicts the reasons given for dropping the 2 West Coast sites as part of the study. The logic of dropping these sites is therefore questioned.

Response (4):

*The statement above was most likely made in the context of the concentration of coal fired power stations in Mpumalanga Province. See Response 2 above, which details the reasoning for the exclusion of the Brazil and Schulpfontein sites.*

*The exclusion of Brazil and Schulpfontein was based on a culmination of factors such as timing, the limited local demand, the infrastructure required to export the power generated by the proposed NPS to centres of demand as well as the environmental impacts associated with the creation of new power corridors in comparison to strengthening and reinforcing existing corridors. The remaining three sites i.e. Thyspunt, Bantamsklip and Duynefontein are associated with existing power corridors that require enforcement and strengthening i.e. the Cape Corridor, the Cape Peninsula Corridor and the Southern Grid Corridor.*

*The electricity supply to the Western Cape is currently limited to the power transferred to this province via the Transmission Network, the power generated by the two Koeberg Units, as well as the power generated at various peaking power stations. The establishment of a fleet of nuclear power stations on the Cape coast will significantly improve the security of the network and delay the need for new transmission lines between the Cape and the northern part of the country for a substantial period of time. There will also be a major savings in losses, as the power will be generated closer to the load instead of in the north of the country and then transported down to the Cape. This in turn reduces the amount of new generation required to meet the overall system loads. Eskom Transmission is therefore investigating possible transmission power line routes from each of the three NPS sites.*

*Furthermore, the exclusion of the Brazil and Schulpfontein sites was motivated in terms of the length and cost implications of the power corridors that would have to be constructed. These sites require the exportation of the majority of the power to areas of demand given the limited local demand. The transmission of the power from Brazil and/or Schulpfontein would entail the construction of a power corridor ranging between 1400 and 1600 kilometers in length. Transportation over long distances would result in higher power losses and would also require a significant financial investment.*

*The distances for the Bantamsklip Transmission Line are as follows: Bantamsklip-Kappa: 227-258 km; Bantamsklip-Bachus: 113-180 km; Bachus-Muldersvlei: 89-102 km. This is a total of 429 – 540 km, which is considerably less than would be required for Brazil and Schulpfontein.*

Comment (5):



The current 3 proposed nuclear station sites, and related transmission lines, are largely located in natural or wilderness areas, which have floristic, scenic, recreational and tourism value, and which in addition have economic importance for the region. There appears to be little **planning logic** in locating power stations in areas which have minimal power requirements only to then require hundreds of kilometres of **transmission lines** to get the power to major urban and industrial centres. Eskom is at pains to assure us that nuclear power is safe, so the power stations could be located closer to where they are needed, (with the normal safety circles), and thereby obviate the need to desecrate the countryside with transmission lines.

Response (5):

*All issues relating to the economic, social, biophysical and natural sciences will be assessed as part of the EIA this will include a discussion of the 'planning logic' and environmental feasibility of siting the nuclear power station at any of the respective sites.*

*Please refer to Response (3) above.*

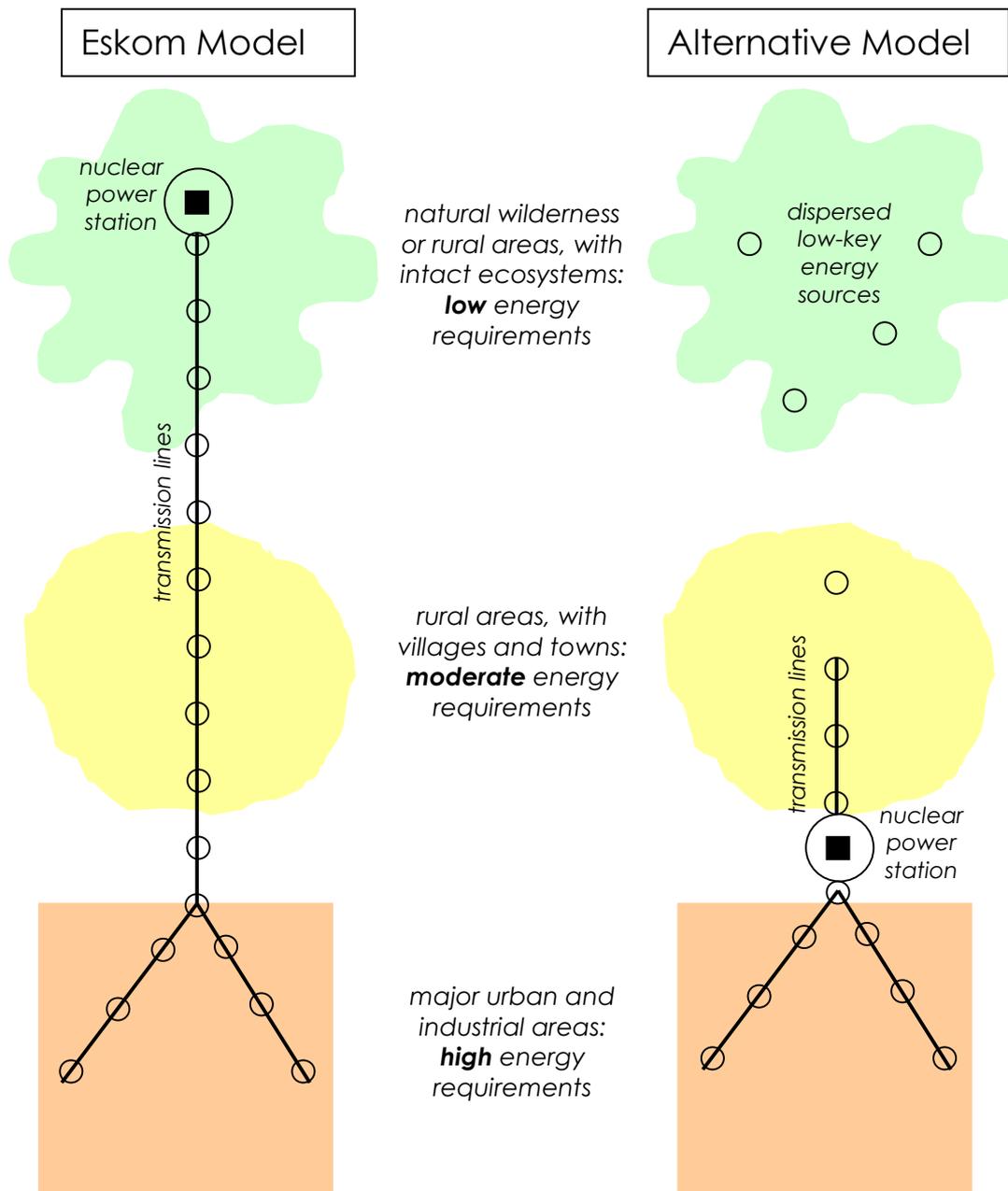
Comment (6):

A major problem appears to be the **separation of planning** for power stations on the one hand and the transmission lines on the other. Diagram 1, attached below, compares the Eskom model to an alternative model with social, ecological, economic and strategic benefits.

The diagram is based on the principle that industrial-related infrastructure should be located in areas that are already industrialized, where it is needed and where it will have the least impact, rather than in pristine areas with intact or sensitive ecosystems or scenic landscapes. In addition, natural or rural areas, with low energy requirements would ideally make use of more localised, low-key forms of energy generation, such as solar energy. Besides saving on transmission lines, the strategic and environmental benefits should be clearly evident.

In conclusion, the comments here allude to the EIA process being flawed, flaws which should be corrected before the process moves forward. Secondly, the planning logic regarding the siting of power stations and transmission lines is questionable and deserves further consideration by not only engineers, but by those who understand holistic ecological planning.

Diagram 1



**Characteristics of Eskom Model:**

- Power stations located in pristine areas, where not needed;
- Greater social, ecological and visual impacts of transmission lines;
- Lengthy, economically costly transmission lines;
- Lower efficiency due to energy loss;
- Longer transmission lines strategically more vulnerable;
- Less incentive for alternative energy sources.

**Characteristics of Alternative Model:**

- Power stations located in degraded areas, close to areas where needed;
- Reduced social, ecological and visual impacts;
- Shorter, less costly, lower maintenance transmission lines;
- Greater energy distribution efficiency;
- Less transmission lines have lower security risk;
- Dispersed alternative energy sources in rural/wilderness areas.



Response (6):

Whilst the model you have proposed has merit, it is critical to firstly consider locations that are **technically** suitable for the construction of an NPS, and then to consider other factors. Thus, once the Corridors (the Cape Corridor, the Cape Peninsula Corridor and the Southern Grid Corridor) where strengthening is required were identified, the NSIP investigated strategic criteria that influence the technical suitability of the sites for a Nuclear Power Station. This was one of the main functions of the NSIP and is the reason for the initial identification of five sites.

The choice of sites for the proposed NPS is firstly based on proximity to the centres where power is required. Thus all sites are situated in the Western and Eastern Cape provinces, which enables shorter transmission lines than would be required if power were to be transmitted from a coal-fired power station in the northern parts of the country.

The location of a Nuclear Power Station is based on a number of criteria, based on technical, safety, security and other considerations. The factors that were considered for the location of the initial five sites in the Nuclear Site Investigation Programme (NSIP), (included as Appendix D of the Final Scoping Report), include the following:

- Availability of water for cooling;
- Geological suitability and the occurrence of mineral deposits;
- Seismicity / seismic hazard;
- Distance from urban populations;
- Rural population;
- Political boundaries and security zones;
- Areas of national conservation importance;
- Security areas; and
- National physical development and decentralisation policies.

In conclusion, the project team would like to assure you that Interested and Affected Parties comments are important to us and that your continued involvement in this process as an I&AP is valued. Your comments/ questions will be captured in the draft EIR that will be submitted to the decision-making authority in due course.

Please do not hesitate to contact us at any stage should you require any additional information regarding this proposed project.



We thank you for providing us the opportunity to respond to these questions and look forward to your ongoing involvement in the project.

Yours sincerely  
For and on behalf of Arcus GIBB (Pty) Ltd

Jaana-Maria Ball  
EIA Project Manager