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Department of Water and Sanitation  
Bellville Regional Office  
Spectrum Building  
52 Voortrekker Street  
Bellville

**Attention:** Mr Warren Dreyer

**Re: Elandsfontein Section 21(g) WULA**

Dear Mr Dreyer

Thank you for the opportunity to comment on Elandsfontein Exploration and Mining's (EEM) application for an Integrated Water Use Licence (IWUL).

#### Introduction

SANParks comments are based on various EEM specialists' reports, site visits, consultation meetings with the independent reviewer, Dr Jaco Nel, including his report entitled '*Review of the hydrogeological impact of the proposed Elandsfontein Phosphate Mine adjacent to the West Coast National Park*', dated October 2016, (attached hereto as Appendix A) Comments, for purposes of this report, were received from various SANParks researchers in the Cape, Kruger and Garden Route Research Centres, who specialise in ground and surface water, botany, soil and ecology. Furthermore, various consultation meetings were held with key stake holders, including CapeNature, DEA, DWS, specialists responsible for the State of Bay Report (Langebaan Lagoon Report) and WCNP staff. This process of engagement was conducted over a period extending more than 12 months.

#### Discussion:

While SANParks acknowledge the positive socio-economic contributions Elandsfontein mine could bring to alleviate poverty and stimulate rural development in the Saldanha Bay area – SANParks' main mandate remains the custodianship of the environment, and especially national parks as provided for in sections 55, 17 and 20 of NEMPAA.

SANParks is a statutory body, established in terms of section 5 of the National Parks Act 1076 (Act No.5 of 1976, and continue to exist in terms of section 54 of NEMPAA (Act 57 of 2003). Section 55 of NEMPAA mandates SANParks to manage

addo elephant  
agulhas  
augrabies falls  
bontebok  
golden gate highlands  
karoo  
kgalagadi transfrontier  
knysna lake area  
kruger  
mapungubwe  
marakele  
mountain zebra  
namaqua  
table mountain  
tankwa-karoo  
tsitsikamma  
|ai-|ais/richtersveld  
vaalbos  
west coast  
wilderness

all existing national parks and any kind of protected area assigned to it by the Minister of the Department of Environmental Affairs.

The proposed Elandsfontein mining site directly abuts West Coast National Park (WCNP). The mine is situated directly within the parks expansion and Buffer Zone footprint, as per the approved management plan by the National Minister of Environmental Affairs.

The Buffer Zone Policy for South Africa: Buffer Zone Strategy for National Parks (Government Gazette No. 35020, dated 08 Feb 2012) states as follows, that buffer zones function:

- to reduce or mitigate the negative influences of activities taking place outside the parks;
- to better integrate parks into their surrounding landscapes;
- to protect the purpose and values of the national park, which is explicitly defined in the management plan of the park and;
- GOAL 3 of the Buffer Zone strategy identify, amongst other, mining activities in buffers of national parks as activities which are inconsistent with the protection of the ecological integrity of protected areas, thus having negative influence on the integrity of the park – the buffer strategy further states that such activities, including mining, must be discourage by all spheres of government;

Listing notice 3 R546 of 2010, in terms of NEMA (Act No. 107 of 1998, Government Gazette No. 33306, 18 June 2010) defines the “Buffer area” as an area extending 10 kilometres from the declared boundary of a world heritage site or national park and 5 kilometres from the proclaimed boundary of a nature reserve, respectively, or that defined as such for a biosphere.

### **Mining and Biodiversity Guidelines (MBG)**

In terms of the criteria of the Mining and Biodiversity guidelines, and information provided in the Elandsfontein specialist’s reports, the proposed Elandsfontein mining area is rated as Category B – meaning the highest risk for mining. Thus, extreme caution should be exercised in all proposed mining activities, due to the very sensitive nature of the area, which:

- According to best available scientific information, falls within a critical biodiversity area (CBA), although not yet listed as such by NEMBA. In a circular, (circular: EADP 0016/2014), dated 2014/07/10, DEA&DP, says best available scientific information must be taken in account during EIA processes. (Circular attached, as Appendix X);
- The proposed mining site area is adjacent to a national park - in fact in the buffer zone of WCNP;
- Is located on top of an aquifer – in fact over the Elandsfontein aquifer. According to Dr Jaco Nel, the Elandsfontein Aquifer was recommended as a “Special Aquifer System” in accordance with “A South African Aquifer System Management Classification, (Parsons, 1995).” and should require a “high” to

“strictly non-degradation” level of groundwater protection under this classification.

“High” to “very high” vulnerability classification (DWAF, 2005) has also been assigned to the Elandsfontein Aquifer, suggesting that the susceptibility of the aquifer to contamination from anthropogenic activities, is high.

- is located in a key climate change adaptation and ecological corridor;
- Furthermore, the whole of WCNP, including its expansion areas and buffer zone forms the core of the Cape West Coast Biosphere Reserve.

### **Lack of an Environmental Authorisation (EA) as required by NEMA**

SANParks would like to bring to the attention of the Regulator that EEM failed to obtain an Environmental Authorisation in terms of the National Environmental Management Act 1998 ( Act No. 107 of 1998).

In a letter dated 2016/03/04, the MEC of Local Government, Environmental Affairs and Development Planning (DEA&DP) brought it to the attention of the National Ministers of Mineral Resources (DMR), Environmental Affairs (DEA) and Water and Sanitation (DWS) that EEM illegally commenced in mining activities by failing to obtain an Environmental Authorisation for listed activities associated with mining. Furthermore, EEM has not yet obtained a Water Use License Authorisation (WULA) and no atmospheric emission licence in terms of NEMA: Air Quality Act (Act 39, of 2004).

This is a big concern to SANParks as it appears from the MEC’s letter that EEM failed to follow due legal process for its proposed mining operations.

### **Specific comments with regard to EEM’s IWULA**

SANParks have identified the following serious concerns in EEM’s WULA submission:

**Dewatering of the mining pit:** SANParks is very concerned whether dewatering of the mining pit could be done to an acceptable level and how the mine will deal with the excess (and contaminated) water if the dewatering is not to an acceptable level. It is not clear whether the excess contaminated water will be stored in slime dams? If stored in slime dams, what are the possibilities of the contaminants leaking into the aquifer as the case in Phalaborwa?

A concern for SANParks is that five of DWS monitoring boreholes in the area, do penetrate the clay layer into the lower confined aquifer, which could result in more water from the lower Aquifer reaching the mining pit – how would this additional and continuous inflow of water into the mining put affect “acceptable water levels and how will it be managed?

**Artificial recharge (AR):** The mine did not provide the results from the AR tests done. There are major concerns about the possible creation of artificial wetlands in the park and the water not being returned to the aquifer as planned, thus potentially endangering the Langebaan Lagoon.

**Clay stability:** SANParks share Dr Jaco Nel's concerns regarding the stability of the clay layer, which could catastrophically fail under the correct conditions. The confined Lower Aquifer Unit pressures could exceed the unit weight downward force of the clay layer when the mine is opened to extract the phosphate deposit.

**Research & monitoring:** The lack of pre-mining research and monitoring of the water balance, water quality and heavy metal concentrations at the wetlands at Geelbek and within Langebaan Lagoon is a major concern. We agree that baseline studies should be done, including studies on the geochemistry as outlined by Dr Nel.

**Stopping mining:** SANParks is also concerned on the possible effectiveness of stopping mining operations in the event of failed mitigation measures. How will this process be handled if continued monitoring shows negative impacts to Langebaan Lagoon?

**Geohydrology models:** SANParks note Dr Nel's concerns on the various models produced by the mine's geohydrology consultants, which were not addressed.

**Other information:** SANParks shares Dr Nel's concern when he highlighted the fact that a considerable amount of required information remains outstanding - SANParks maintain that these outstanding information must be captured before DWS can even consider the WULA.

#### **Biodiversity offsets**

In a letter dated 23 April 2015, the Regional Manager: Mineral Regulation, Western Cape, informs EEM as follow:

"This office accepts the Biodiversity Offset study by the specialist as required by the approved EMP letter of approval. From the study it is clear that significant uncertainties regarding the mines impact on groundwater and potential downstream biodiversity impact in the WCNP and Langebaan Lagoon remain. This office accept that these matter can be addressed better once the water use licence process, with better baseline information, (Letter attached as Appendix A).

SANParks would like to request the Regulator to determine whether potential groundwater related impacts, justify additional biodiversity offsets. Should this be the case, this information should be brought to the attention of DMR's Regional Manager, for purposes of updating EEM's EMPr and its Biodiversity offset plan.

#### **RECOMMENDATIONS**

The following recommendations are made:

##### **1. Ground water uncertainties:**

Given the considerable number of uncertainties around the potential impact of the mining operation on the subterranean aquifer and flow into the Langebaan Lagoon, it's recommended that **an IWUL should not be issued** until the potential impacts of contamination are understood and strict warning/action threshold levels are established.

In this regard SANParks would like to inform the Regulator about a Decision recently taken by DWS - Northern Cape, in a case where Zirco Resources applied for an IWUL, after obtaining an NEMA Environmental Authorisation and Mining Right to exploit heavy minerals adjacent to Namaqua National Park. Based on information provided by SANParks and an independent Groundwater Reviewer, DWS rejected Zirco's IWULA and returned it to the Applicant, as "incomplete". (Draft minutes attached as Appendix Y).

## **2. Commission a study:**

The complete hydro-chemical characteristics of the aquifer and the palaeo-valley need to be fully accounted for and disclosed. A numerical mixing model needs to be developed and applied continuously as part of the early warning system. This is especially relevant as it relates to remobilisation of chemical constituents in the sediments that could emerge in the event of pollution of the mines back-fill. This will require regular tracer monitoring for continued model calibration. At the meeting on 25 July 2016, the DWS representative agreed to this concern and stated that they would not consider a WUL without this.

Whilst the conceptual basis of the mining site appears sound, SANParks is still concerned that we do not have a full understanding of the subterranean system down to the lagoon. EEM should commission an independent scientific study of the entire palaeo-valley down to the lagoon. This should include a tracer-based analysis of the flow paths that maintain the freshwater inputs to the lagoon. The use of tracers would allow one to track the retention time of the entire system and thereby state whether the life of the mine will have an impact on the subterranean system and lagoon. This needs to be run with wet-dry cycle hydrological scenarios. Without this SANParks would not be providing due diligence to DEA as the Ramsar signatory. Neither SANParks nor South Africa wants to run the risk of the country having one of its important Ramsar sites removed from the **Montreux Record**.

## **3. Groundwater monitoring is recommended:**

The applicant should provide more information regarding the proposed monitoring and mitigation process. For example who will audit these results and if contamination is detected, what mitigation can be implemented to cut off the source of pollution and what remedial actions will be taken? It is all very well to say "monitor and mitigate" but what will this really entail?

### **If an IWUL was issued**

In this regard SANParks recommends the following:

#### **1. Dewatering:**

The water from the pit sump should not be made available to external users. The impacts of the dewatering process on the Langebaan Road aquifer system is unknown at this stage, therefore the correct monitoring and early warning/actions levels need to be set. There is a concern that we do not know what the correct early warning levels are. Therefore correct early warning levels should be determined by DWS and the mine this information should be made available to SANParks.

#### **2. Artificial Recharge:**

Monitoring of water levels and management of the injection rate into the boreholes must be done on a continuous basis. Warning levels and critical levels must be set to limit seepage zones into the West Coast National Park. Warning levels and critical warning levels must be determined by DWS and the mine and this information must be made available to SANParks.

### **3. Water Quality changes:**

Water quality impacts related to the mining and backfilling are still largely unknown. Geochemical testing (including kinetic leach testing), adsorption testing, geochemical modelling and numerical transport modelling are recommended to confirm the concentrations and impacts of Phosphorous, Fluoride, Arsenic, Uranium and Thorium on the lagoon.

### **4. Monitoring:**

- All monitoring must be conducted by an independent party;
- The monitoring data must be made available to SANParks and DWS to evaluate changes to the system in response to mining and to improve the overall scientific knowledge of the system.
- Data loggers with live data on a website must be used for the most important boreholes. SANParks and DWS must have access to this data.
- Monthly hand readings must be collected at the remainder of the boreholes. Data loggers with manual download must also be downloaded during this monitoring round.
- Water quality samples must be collected on a monthly basis. Field readings of Eh, pH and EC must be included. Parameters to specifically include in the analyses are PO<sub>4</sub>, As, F, U and Th.
- Borehole profiling must be done once a year.
- Quarterly monitoring reports must be produced. SANParks and DWS must receive a copy timeously.

### **5. Adaptive Management**

The mine must adopt a strategic adaptive management protocol to monitor the changes occurring in the aquifer, to address:

- uncertainties and knowledge gaps;
- purposefully collect data to improve understanding, and
- make adaptations to operations where necessary.

However, while we are in favour of a strategic adaptive management protocol, this rarely happens in practice. A possible solution is to have a fulltime post-graduate student on the project, to be co-supervised by one or two of SANParks staff that could play a facilitator role for such adaptive management. The learning that comes from such a study might be the one positive element for SANParks. Water level responses must be compared to historic water level trends and to agreed management response levels. These response levels should be established in collaboration with DWS and the mine as soon as practical possible.

The IWUL must be reevaluated every 3-5yrs. As data is produced and new knowledge of the system is generated, the IWUL needs to be modified to mitigate any potential

negative impacts. EEM should provide figures which will determine the critical, warning and action levels.

Should the mine transgress any of these conditions in the IWUL legal action must followed immediately.

### **Conclusion**

SANParks would like to point out that less than 3% of Earth's total stock of water is in the form of freshwater, and only about 0.01% of all water occurs in freshwater lakes, wetlands and rivers. Yet all life, endless ecological processes and most non-marine biodiversity patterns depend on this tiny fraction of freshwater. Given its finite nature and scarcity (especially in South Africa – the Western Cape already operates on a deficit in terms of surface water availability and demand), freshwater should be regarded as our most precious resource.

SANParks, as a statutory body and responsible steward of our biophysical support base, cannot allow any actions that could deteriorate the quality of freshwater resources.

The law places a burden of responsibility on SANParks to act wisely in its custodianship to the protection of the environment. Also, society has relegated its responsibility for wise-use of our natural capital largely to protected areas authorities, of which national parks are flagship versions. Protected areas are the places that are increasingly relied on to keep their surrounding social-ecological landscapes (and the planet) healthy, and buffer zones are mechanisms to help make that possible and to reduce threats.

Lastly, while we agree with Dr Nel's assessment that scientifically it may be possible to mitigate the potential negative environmental impacts, by developing adaptive management measures, purposefully collect data to improve our understanding, and fill knowledge gaps to make adaptations to operations where necessary. However, SANParks remains unconvinced that mining operations could be relied on to ensure successful mitigation of negative impacts. It is our opinion that in practice this rarely happens.

Thus, based on all the mentioned concerns, uncertainties, knowledge gaps with regard to possible long-term negative impacts on the subterranean water system, surrounding ecosystem and the Langebaan lagoon, including EEM's failure to obtain an Environmental Authorisation, SANParks is unable to support the granting of a WUL to Elandsfontein Exploration and Mining. It is cordially requested that the Regulator reject granting a water-use licence to EEM.

**Report compiled by:**



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**Report approved by:**



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