



the federation for a sustainable environment

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Postnet Suite #113, Private Bag X153, Bryanston, 2021

THE RECLAMATION AND REPROCESSING OF THE CITY DEEP DUMPS IN  
JOHANNESBURG, GAUTENG PROVINCE  
DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT  
April 2019  
DMR Reference: GP 185 MR

The following comments are submitted on behalf of the Federation for Sustainable Environment (FSE). The FSE is a federation of community based civil society organisations committed to the realisation of the constitutional right to an environment that is not harmful to health or well-being, and to having the environment sustainably managed and protected for future generations. Their mission is specifically focussed on addressing the adverse impacts of mining and industrial activities on the lives and livelihoods of vulnerable and disadvantaged communities who live and work near South Africa's mines and industries.

REHABILITATION AND FUTURE LAND USE

The EIA Report informs us that *“once reclamation is completed, the area will then be assessed for contamination (particularly in terms of radiation). Contaminated soils will be removed, infrastructure will be removed, and the land will be levelled. Following reclamation and rehabilitation, it is anticipated that the land will be made available for development according to the zoning of the site – which is **industrial**.”*

On page 38 of the EIA Report, however, we are informed that *“the mining of the City Deep dumps will remove a source of air, surface and groundwater pollution, and **will liberate the land to be used for agricultural purposes.**”*

The description of rehabilitation and future land use is either vague and lacks detail or is contradictory.

The EIA Report furthermore informs us that Transnet, Industrial Zone (Pty) Ltd, Mediterranean Shipping Co Prop (Pty) Ltd, Eskom and Johannesburg Municipality are the surface right holders, however, on page 37 of the EMPR we are informed that: *“The dumps are in existence and **Ergo currently holds the surface rights**”*. Kindly clarify.

Notwithstanding who the surface rights holders are it is necessary for the Applicant in collaboration with the above-mentioned landowners to determine the future land use prior to the environmental authorisations.

Regulation 56 of the MPRD Regulations prescribed that the closure of a prospecting or mining operation must incorporate a process which must start at the commencement of the operation and continue throughout the life of the operation and that the land is rehabilitated as far as is practicable to its natural state, or to a predetermined and agreed standard of land use which **conforms with the concept of sustainable development.**

Concurrent (progressive) rehabilitation is not possible unless the future land use has been determined (not merely anticipated) and the objectives for remediation have been agreed upon.

In terms of Appendix 5 (1)(d) of the 2014 EIA Regulations:

A closure plan must include measures to rehabilitate the environment affected by the undertaking of any listed activity or specified activity and associated closure to its **natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development.**

The FSE, in the light of the above, therefore requests that the Applicant, in consultation with the landowners:

1. Clearly identify and motivate the rehabilitation and closure objectives and the future land use, and not merely anticipate that the future land use will be industrial.
2. Ensure that the footprints are not merely levelled but reshaped to create a gently-sloping free draining topography. The post-mining land form should be developed at the planning stage.
3. If the future land use is to be agriculture, the Applicant ought to be required to not only remove contaminated soils but also to ameliorate and fertilise the soil, re-establish the vegetation and biodiversity, add topsoil and address soil acidity and metal toxicities in the soils of the footprint.
4. It is anticipated that the footprint soils will be affected by acids either by long term leaching with highly acid waters or by capillary action which raises the acidity from underlying sulphide containing materials upwards through the overlying soil profile. It is necessary to ensure that the source of the acidity is removed so that recontamination will not occur. Section 9.4.1 of the EMPR confirms that “*these soils are typically poor and acid*” and confirms that “*A gold TSF can potentially add SO<sub>4</sub>, chloride (Cl), Ca, Mg, Mn and aluminium (Al) to the local groundwater system if the management of contaminated water on site is not effective, but also through seepage from the TSF. Metals like cobalt (Co), copper (Cu), nickel (Ni) and zinc (Zn) can also be elevated. In general, SO<sub>4</sub> concentrations around a tailings complex vary between 20 and 2 500 mg/L*” (page 97).

Please refer to the CoM’s “*Guidelines for the Rehabilitation of Mined Land*” (2007). The Guidelines apply to all forms of mining, both surface and underground and all mineral extraction industries (CoM 2007:4).

Of relevance in this regard is the recent findings of the South African Human Rights Commission (SAHRC) pursuant to its National Hearing on the Underlying Socio-Economic Challenges on Mining-Affected Communities in South Africa, namely:

The SAHRC found that the DMR has not taken adequate steps to secure financial provision for rehabilitating damage to the environment and water resources and that **there is an immediate need for all EIAs and EMPRs to clearly detail land quality and potential post closure land uses.**

**The Commission directed the DMR that licenses should not be granted where long-term sustainable land use cannot be guaranteed (SAHRC 2016).**

#### COMMENTS AND RESPONSE REPORT

While the FSE acknowledges the inclusion of the FSE's comments and responses in the Comments and Response Reports, we wish to advise that there are a few minor errors. David Harman's study should read David Hamman' study.

Sulphide levels should be recorded as sulphate levels.

Mg should be recorded as mg/l.

A comment, which is ascribed to me, is enigmatical. I am recorded as enquiring if "*it is a high rise dump*". Please elucidate.

#### DUST

The EIA Report (section 9.9, pages 98 – 100) informs us that:

1. There are severe health effects associated with short term and long term exposure to particulates (PM 10 and PM 2.5);
2. There is no evidence of a safe level of exposure or a threshold below which no adverse health effects occur;
3. Long-term exposure to low concentrations ( $\sim 10\mu\text{g}/\text{m}^3$ ) of particulates is associated with mortality and other chronic effects such as increased rates of bronchitis and reduced lung function (WHO, 2000).
4. The dumps which will be remined are located immediately adjacent to the Highveld Priority Area (HPA) for air quality.

The EIA Report informs us that the reclamation of the dumps is expected to cause exceedances of the PM10 NAAQS and that "*stripping of vegetation from the surface of TSFs causes the emission of particulate matter into the air, thus increasing existing ambient air concentrations of criteria pollutants (both PM10 and PM2.5) at receptors*".

It should be noted that it is not only the removal of the vegetation, which will result in increased dust fallout but also the removal of the crust. Furthermore, if the Applicant fails to remove all the tailings material and if any of the fine tailings material is left, it will result in long term dust fallout. In substantiation, we refer to the footprints of TSFs 4 and 5 of the Blyvooruitzicht Gold Mining Company in the Far West Rand gold fields.

The proposed amendments to the National Dust Control Regulations (NDCR) will require that:

*“Notwithstanding regulation 14, any person conducting a mining operation; and any person conducting any activity in such a way as to give rise to dust that may exceed acceptable dustfall rates set out in regulation 4 must, **prior to undertaking** such activity, develop and implement a **dust management plan**”.*

## RADIATION ASSESSMENT

While we take cognisance of the fact that a study by MINTEK in 2016, on several TSF dumps in the Witwatersrand gold mining zone found that the tailings samples from the East Rand and Central Gauteng regions contained the lowest uranium concentrations (generally not requiring uranium removal prior to relocation) and the City Deep site is not considered as a radiation risk, the EIA Report, however, informs us that the total dose, excluding the water pathway is 1.6mSv/a. This is above the regulatory limit of 1mSv/a or 250µSv/a per pathway.

Page 148 of the EIA Report informs us that the radon measurements from 2008 to 2010 were 1.54 mSv/a. This is above the regulatory limit of 250µSv/a (per pathway/source) or 1mSv/a.

Although the EIA Report (page 148) stated that *“the pathways identified that might contribute to public exposure were (i) radon, (ii) dust, and (iii) surface water (potential)”*, *“the water pathway was not considered”* and *“a fugitive dust source term for the dumps was not assessed”* (page 149).

There is evidence of remobilization of uranium during disturbance of old tailings deposits, which should have been considered (Mphefu, 2004; Tutu et al., 2004).

The EIA Reports informs us that the radiation study will be undertaken internally by the Applicant. This does not inspire confidence since the study will not be independent. The FSE recommends that the assessment be conducted by an external radiation expert and not an employee of the Applicant.

## PRECAUTIONARY PRINCIPLE

The EIA Report informs us that:

- The preferred reclamation method for the Proposed Project is hydraulic mining. Hydraulic mining creates slurries from the combination of solids and water, pumps the slurries to the surface of lagoons, ponds, lakes, waterways, and canals, and then pumps the slurries through floating and land-based pipe to disposal sites. The pipeline route falls within an important critically endangered area (page 61).
- The project area overlaps with ecosystems that are listed as Critically Endangered (page 62).
- A section of the City Deep Project as well as a portion of the pipeline fall directly on a Class 4 Ridge (page 64).
- The projects overlap with certain wetlands areas and a stream, and non-perennial watercourses (pages 66 and 67).
- The projects fall within the endangered Soweto Highland Grassveld and red listed plant species are suspected (page 68).
- The dumps which are to be reclaimed may be located within the floodlines or 100 m buffer of watercourses (page 93).
- The land uses include residential areas.

- The Project drains into the Natalspruit.
- The water is dominated by sulphate.
- The Mine will operate 24 hours and 7 days a week.

Because of the above-mentioned factors, we recommend that the Applicant exercise the necessary duty of care and take every possible precaution to avoid:

1. additional pollution of water courses,
2. the degradation of the wetlands and critically endangered areas,
3. contributing to the pollution of the Natalspruit and downstream of the Spruit,
4. loss or reduction in the biodiversity, and
5. harm to residents.

## GROUNDWATER

Page 180 of the EIA Report informs us that *“groundwater quality will be negatively affected with the formation of AMD during the reclamation activities. The old tailings material contains pyrite minerals and when exposed to oxygen and water during City Deep Dumps Reclamation and Reprocessing Project reclamation it results in the formation of acidic condition”* (page 181), and that the impact of *“groundwater pollution during reclamation as result of AMD water seeping into the aquifers”* is high, however we are informed that *“groundwater level and quality data are not available for the project site – dumps 4L3, 4L4 or 4L6”* (page 96).

It begs the question whether:

- The extent of contaminant plumes is known;
- The status of the geohydrological regime was identified;
- The preferential pathways and predictions regarding long – term migration were identified.

This will result in very limited mitigation or management options to specifically deal with the containment / rehabilitation of contaminated groundwater if the abovementioned impacts are not known or identified.

## SURFACE WATER

The EIA Report cautions that *“the implementation of a sound SWMP is crucial to contain contaminated runoff on the operational area of the site. The monitoring and maintenance of the implemented SWMP is of utmost importance, to ensure spillages into the downslope watercourses do not occur. Should this not be done, then the proposed project has the potential to cumulatively impact on the already deteriorated water quality of the catchment.”*

The management of surface water calls not only for the implementation of a sound Surface Water Management Plan (SWMP) **but also for the diligent enforcement by the DWS and the DMR of non-compliances.**

The findings of the SAHRC have reference in this regard:

Grounded upon the findings of the SAHRC that there is there is limited oversight of environmental management by the DMR, the DEA and the DWS, the SAHRC directed:

1. The DMR together with the DEA and the DWS to respectively include in their annual reports the number of compliance notices or other sanctions imposed, including the proportion of successful interventions and / or criminal prosecutions undertaken against non-compliance.
2. Steps taken to monitor compliance with WULs and its impacts, particularly in mining areas.

Mitigation and management measures exist in vain if they are not implemented and enforced. Unless the mitigation and management measures are implemented, the risks of the project remain high.

#### GAPS IN INFORMATION

We noted that:

The biodiversity assessment comprised of one assessment only, which was conducted during the early wet season. This study has not assessed any temporal trends for the respective seasons. **We reiterate that the if an assessment is not conducted in appropriate seasons and for biologically relevant time periods, the EIA could under represent biodiversity by almost 95%.**

SUBMITTED BY:

Mariette Liefferink

CEO: Federation for a Sustainable Environment

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#### REFERENCES:

CoM 2007, Guidelines for the Rehabilitation of Mined Land, Chamber of Mines of SouthAfrica/Coal Tech.

Mphefu, NF, Viljoen, M, Tutu, E, Cukrowska, E & Govender, K 2004, 'Mineralogy and geochemistry of mine tailings in relation to water pollution on the Central Rand, South Africa', in AG Pasamehmetoglu, A Ozgenoglu & AY Yesilay (eds), Proceedings of the 8th International Symposium on Environmental issues and Management of Waste in Energy and Mineral Production, Atilim University, Ankara, pp. 445–450.

SAHRC 2016, National Hearing on the Underlying Socio-economic Challenges of Mining-affected Communities in South Africa, South African Human Rights Commission, <https://www.sahrc.org.za/home/21/files/SAHRC%20Mining%20communities%20report%20FINAL.pdf>

Tutu, H, Cukrowska, EM, Govender, K, McCarthy, TS, Viljoen, M & Mphephu, NF 2004, 'Determination and modelling of geochemical speciation of uranium in the Central rand goldfield, South Africa', in AG Pasamethmetoglu, A Ozgenoglu & AY Yesilay (eds),

Proceedings of the 8th International Symposium on Environmental issues and Management of Waste in Energy and Mineral Production, Atilim University, Ankara, pp. 439–444.