



LOMEZA STOCKPILE AREA – ZWARTKOP 356 JR GEOLOGIST MOTIVATION – DOLOMITE STABILITY STUDY

To whom it may concern:

RE: NOTICE OF APPLICATION FOR AN ENVIRONMENTAL AUTHORISATION IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT 107 OF 1998 NEMA) AS WELL AS THE ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS, 2014 (AS AMENDED).

Minrom Consulting (Pty) Ltd. (“Minrom”) was approached by Greenmined Environmental (Pty) Ltd. (“Greenmined”) to request a professional opinion on the need for a dolomite stability investigation on the farm Zwartkop 356 JR, located in the City of Tshwane, Gauteng Province.

It is within Minrom’s understanding that Lomeza Mining Services (Pty) Ltd (the “applicant”) has applied for an environmental authorization to stockpile and sell dolomite material as a commercial product on the farm. The material is sourced from a previously existing quarry located on the same property, which was mined during the 1960’s, and is now no longer operational, or intending to be operational. Minrom therefore understands that the applicant’s intention is to stockpile and sell the existing material, and that no mining operations will be taking place. The machinery for the activities on the proposed site will include such machines as Front End Loaders (FEL’s), haulage trucks, water bowsers, generator units and container storage units.

Minrom notes the following in respect to the project and locality:

- The site is located adjacent to the Zwartkops Raceway, as well as the S.W.A.T National Firearms Centre and Department of Transport’s offices and housing infrastructure.
- The site is located adjacent to the R55 and M24 roadways.
- There is a pre-existing quarry pit of ~ 3.7 ha located 70 – 80 m from the stockpile areas.
- The site is located on dolomites of the Malmani Subgroup (Chuniespoort Group).
- There are evidence of structural geological faults with 3 – 4 km of the site, to the north, south-east and south-west (as per 1:250k RSA Series Geological Maps).



Based on the above information available to Minrom, the following discussion points are raised:

- The site is located on dolomite, which in the Tshwane area, is associated with either cavities, or groundwater and karstic aquifer structures. The ground above these structures may be prone to collapse under load – especially, but not limited to, cases of groundwater aquifer pumping and dewatering. However, Greenmined has indicated that no groundwater abstraction is planned.
- The flow of groundwater may wash supporting sand, soil and rock material into dolomite cavities, initiating collapse.
- The site's close proximity to the Zwartkops Raceway, as well as the R55 and M24 and Department of Transport infrastructure, present a greater consequence to any risk associated with ground collapse.
- Runoff contamination from stockpile material may infiltrate into karst groundwater systems. Given the dissolution sensitivity of dolomite material to low pH solutions, this may present a risk for increased dissolution rate of the sub-surface material. The material to be stockpiled is dolomite, which poses a lesser risk.

While Minrom raises the points above, the normal probability in the occurrence of these scenarios is low. However, given the additional consideration of surrounding infrastructure, and the heightened consequences of any ground failure, along with ground vibrations from heavy mobile equipment on the nearby public roads and racetrack, it is recommended for the applicant to take appropriate steps to ensure the mitigation of this risk.

Minrom recommends the applicant follows the below course of action once the environmental authorisation has been issued:

- Undertake a short, close spaced ground geophysical survey (gravity analysis) to identify the presence of any major dolomite cavities in the subsurface which may pose a risk.
- Establish and monitor the structural integrity of any cavities during the operations going forward.
 - It will be required to drill three 50-metre-deep holes to verify the integrity of the material where gravity lows are detected to ensure ground stability.
- Implement a stockpile runoff water quality testing programme to monitor the changes in water quality and pH. Sampling and testing schedule should be bi-annually. Any water boreholes in the near vicinity of the stockpile footprint can also be sampled and tested.

The above will be sufficient to identify, monitor and mitigate risk associated with unstable ground collapse.

We appreciate your consideration of the above.

Kind regards,

Minrom Consulting (Pty) Ltd.

