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PROJECT No. 1541973_Mem_002

TO Nthabeleng Paneng
Tshipi é Ntle Manganese Mine

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MOTIVATION FOR CLASS D BARRIER DESIGN

1.0 INTRODUCTION

In our report (Report Number: 1541973-301423-1) it was determined that the waste rock materials in the three overburden dumps generated during extraction of manganese ore from open pits were assessed as Type 1 waste. This was on the basis of the exceedance of TCT1 levels with respect to total Manganese concentrations exceeding. It should be noted that all leachable parameters, including manganese were below LCT0.

2.0 MOTIVATION FOR CLASS D BARRIER

Whilst the waste rock material is Type 1 waste,

- a) A Class A barrier system with liners is impractical for a waste rock dump on the basis of geotechnical properties: likely liner failure,
- b) The waste material is non-hazardous,
- c) The waste material is non-acid-generating,
- d) The concentration of all constituents of concern in leachate is below LCT0, indicating a low risk from seepage,
- e) The dumps do not contain waste water, so the only seepage through the dumps will be from recharge by the (low) rainfall in this area, and therefore
- f) The dumps do not pose a significant risk to the water resource.

3.0 CONCLUSION

On the basis of the above, the waste rock material, although assessed as type 1 waste, is likely to behave in the environment in a similar fashion as Type 4 waste; there is low risk from leachate as all leachate parameters are below LCT0 as would be the case for Type 4 waste. On this basis a Class D barrier is recommended.

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