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Dr Ragna Redelstorff
Heritage Officer Archaeology, Palaeontology & Meteorites Unit
South African Heritage Resources Agency
111 Harrington Street
Cape Town 8001

Dear Dr Redelstorff

RE: Request for Exemption of any Palaeontological Impact Assessment for the proposed Maretlwana Tributary Project, near Marikana, North West Province

In my capacity as a professional palaeontologist, I am requesting exemption for palaeontological impact assessment in terms of the National Heritage Resources Act (Act 25 of 1999) and the National Environmental Management Act (Act 107 of 1998) which requires that the proposed development must be preceded by the relevant impact assessment, in this case for palaeontology. This letter confirms the recommendation made in 2013 by Bamford but provides a higher resolution geological map.

Background
The Sibanye-Stillwater Marikana Operations is divided into Western Platinum Limited (WPL) and Eastern Platinum Limited (EPL) sections. On the 25th February 2018 a tailings pipeline spill occurred that affected an approximately 2 km stretch of the secondary tributary of the Maretlwana River. This significantly altered the stream's physical, chemical and ecological characteristics. Clean-up of the spilt tailings started during May 2018 and was completed during March 2019. During the clean-up process, unavoidable damage was caused to the riparian vegetation in certain areas. Nearly all of the spilt tailings were removed from the stream, and the flow path of the stream was predominantly reinstated. Some minor alterations to the initial flow path of the tributary were made as rehabilitation measures to limit the remobilisation of remaining tailings.

Sibanye-Stillwater Marikana Operations is located in the Marikana district, 40km east of the town of Rustenburg in the North West Province of South Africa. The mining area

covers approximately 214 km² and stretches more than 30km from east to west and 15km from north to south. This operation is located on the Western Limb of the Bushveld Igneous complex. This project will take place on Portion 44 and 51 of the Farm Middelkraal 466 JQ.

Project description

It was clear that stream clean-up on its own would not suffice as adequate stream reinstatement and additional rehabilitation measures will be required. Dedicated engineering measures and instream prevention measures to streambed scouring/erosion will be required. The engineering measures include various forms of instream and out of stream weirs. These weirs vary from low-level Dongalock structures in the channels feeding into the tributary and instream intermediate height Dongalock as well as larger gabions structures, the latter with Dongalock wing walls.

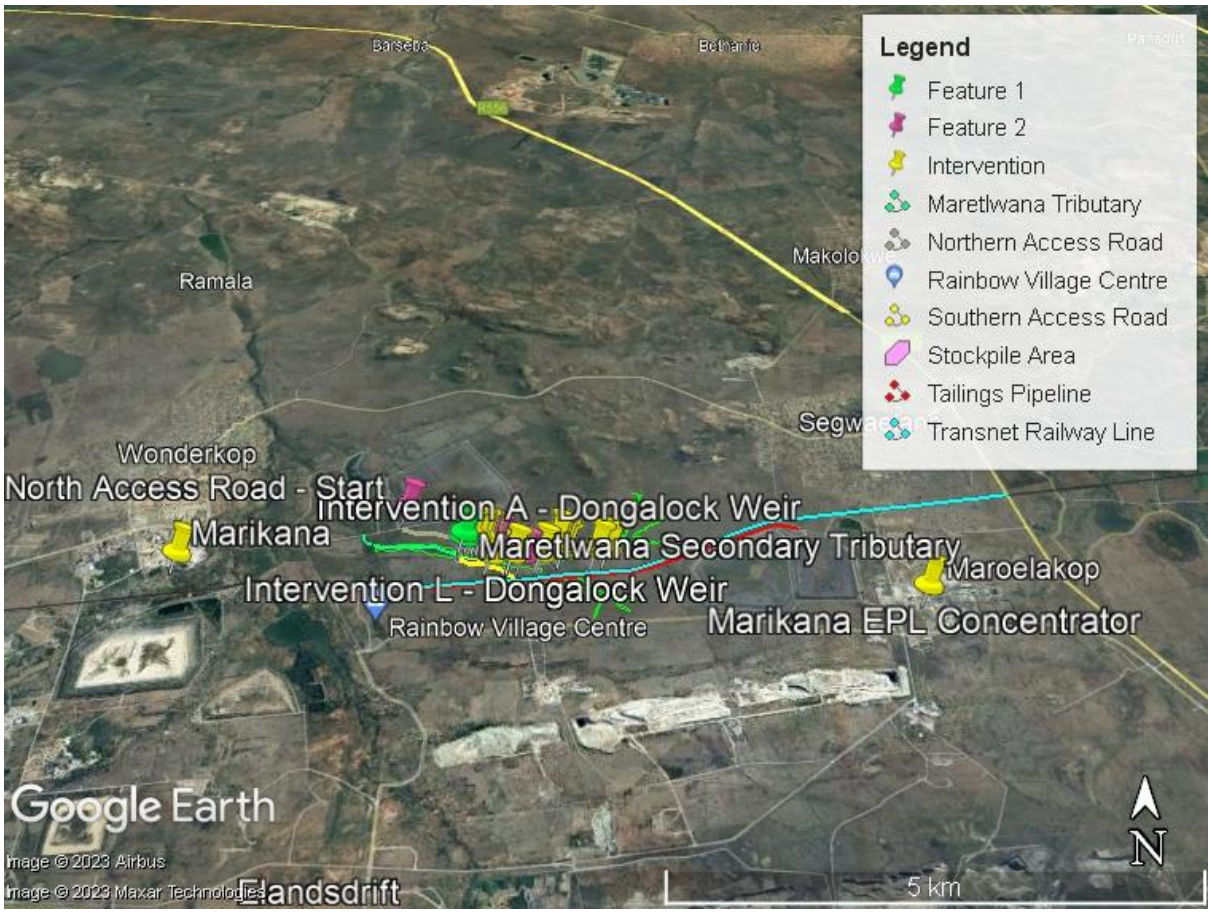

Figure 1: Google Earth site map of the proposed interventions (Dongalock Weirs) to stabilise the tributary to the Maretlwana River on the Marikana Operation property.

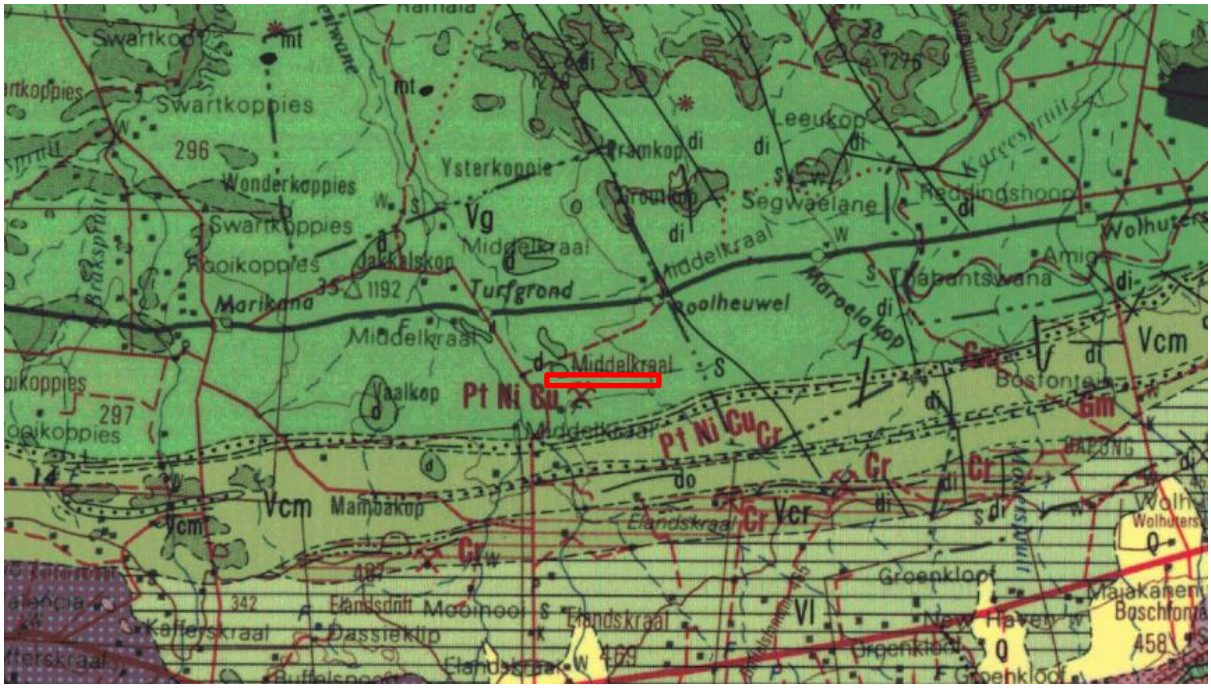

Figure 2: Geological map of the area around the Farm Middelkraal 469. The location of the proposed project is indicated within the red rectangle. Abbreviations of the rock types are: Vg = Pyramid Gabbro-norite; Vcm = Mathlagame Norite-anorthosite; Vl = Tweelaagte Bronzite. Map enlarged from the Geological Survey 1: 250 000 map 2526 Rustenburg.

Figure 3: SAHRIS palaeosensitivity map for the proposed rehabilitation of the tributary to the Maretlwana River shown within the red rectangle. Background colours indicate the following degrees of sensitivity: red = very highly sensitive; orange/yellow = high; green = moderate; blue = low; grey = insignificant/zero.

The tributary lies entirely on non-fossiliferous volcanic and metamorphosed rocks of the Rustenburg Layered Suite (Bushveld Igneous Complex), in particular, on the Pyramid Gabbro-norite (Figure 2). Intrusive volcanic rocks do not preserve fossils. In addition, the Bushveld Igneous Complex were emplaced about 2055 million years ago (Cawthorne et al., Zeh et al., 2020) which precedes the evolution of macroscopic life forms.

There is no chance of finding fossils in the project footprint and this is confirmed by the grey colour-coding in the SAHRIS palaeosensitivity map (Figure 3). We request, therefore, that no further palaeontological impact assessment be required for this project.

Yours faithfully

Prof Marion Bamford
Palaeobotanist; PhD (Wits 1990)

Reference cited:

Cawthorn, R.G., Eales, H.V., Walraven, F., Uken, R., Watkeys, M.K., 2006. The Bushveld Complex. In: Johnson, M.R., Anhaeusser, C.R. and Thomas, R.J., (Eds). The Geology of South Africa. Geological Society of South Africa, Johannesburg / Council for Geoscience, Pretoria. pp 261-281.

Palaeosensitivity map: https://sahris.sahra.org.za/map/palaeo

Zeh, A., Wilson, A.H., Gerdes, A., 2020. Zircon U-Pb-Hf isotope systematics of Transvaal Supergroup – Constraints for the geodynamic evolution of the Kaapvaal Craton and its hinterland between 2.65 and 2.06 Ga. Precambrian Research 345, 105760. https://doi.org/10.1016/j.precamres.2020.105760

Declaration of Independence

This letter has been compiled by Professor Marion Bamford, of the University of the Witwatersrand, sub-contracted by Alta van Dyk Environmental Consultants cc (AvDE), Lyttleton, South Africa. The views expressed in this report are entirely those of the author and no other interest was displayed during the decision making process for the Project.

Specialist: Prof Marion Bamford

Signature: