Kyllinga
CONSULTING

Vegetation Verification for the remining at Sibanye Stillwater

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August 2023

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1 Introduction

Kyllinga Consulting was appointed by EcoPartners to conduct a vegetation verification for the proposed remining of the tailings facility for the Sibanye Stillwater mining activities, Marikana, North-West.

1.1 Project description

The KTD1 tailings storage facility (TSF) has reached its maximum design height of 37 m in February 2008 and are therefore under care and maintenance of the Karee Mine K4 concentrator. The KRD2 tailings facility is expected to reach its end of life around December 2025. Western Platinum (Pty) Ltd is applying for a license to remine the existing KDT1 TSF, which contain historical PGM and Chrome tailings. The TSF is proposed to be remined using hydro-mining and mechanical remining. No new infrastructure is proposed as part of this application, it is only for the remining activity itself. The remining will take place in two phases. It will increase Western Limb Tailings Retreatment Life Of Mine by 15 Years.

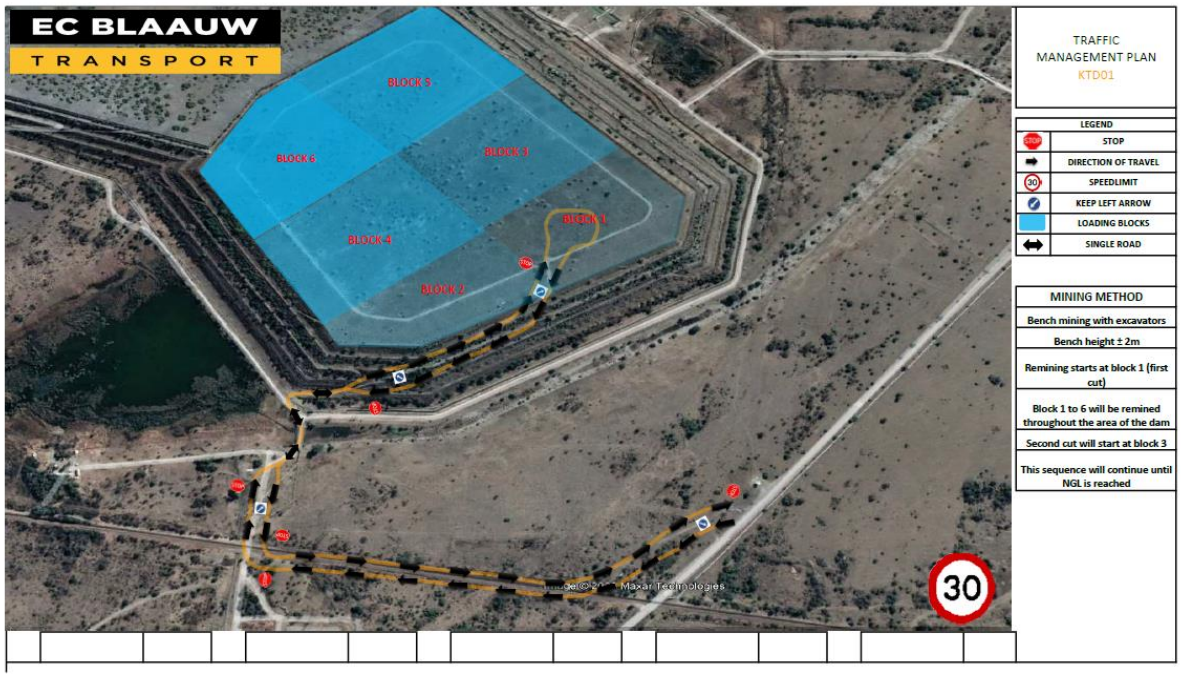

Figure 1: Proposed remining of the KTD1 TSF,

1.2 Limitations

This report is only a verification report and does not include a full assessment. A site visit took place for a related project and the area in question were also visited as part of the assessment. The site visit took place at the end of the growing season, during a wet season with late rains. It is therefore possible that early flowering species and species with early dormancy were missed.

2 Site

2.1 Location and description

The Sibanye Stilwater mine is located to the north-west of Marikana and east of Photshaneng. The area is located approximately 14km to the east of Rustenburg and 7km north of the N4. The area is

mainly used for mining and mining related activities. Some grazing is also taking place in the area. The area is located in a flat to slightly undulating terrain and is mostly underlain by dark turf soils.

3 Background information

3.1 Water resources

The site is located in quaternary catchment A21K. No wetland areas are indicated on site in the National Wetland Map 5 (NWM5). The wetlands on site and in the surroundings were delineated by WCS Scientific in 2022 and by Kyllinga Consulting in 2023.

3.2 North-West C-Plan and vegetation

The site is listed as a Critical Biodiversity Area (CBA) 2 area. In this case it is due to the presence of an Endangered vegetation type, the Marikana Thornveld.

3.1 Annotations on the National Web-Based Environmental Screening Tool

Regulation 16(1)(v) of the Environmental Impact Assessment Regulations, 20145 (EIA Regulations) provides that an applicant for Environmental Authorisation is required to submit a report generated by the Screening Tool as part of its application. On 5 July 2019, the Minister of Environmental Affairs, Forestry and Fisheries published a notice in the Government Gazette giving notice that the use of the Screening Tool is compulsory for all applicants to submit a report generated by the Screening Tool from 90 days of the date of publication of that notice.

The Screening Tool is intended to allow for pre-screening of sensitivities in the landscape to be assessed within the EA process. This assists with implementing the mitigation hierarchy by allowing developers to adjust their proposed development footprint to avoid sensitive areas. The Screening Tool report will indicate the (preliminary) environmental sensitivities that intersect with the proposed development footprint as defined by the applicant as well as the relevant Protocols.

As the Screening Tool contains datasets that are mapped at a national scale, there may be areas where the Screening Tool erroneously assigns, or misses, environmental sensitivities because of mapping resolution and a high paucity of available and accurate data. Broad-scale site investigations will provide for an augmented and site-specific evaluation of the accuracy and 'infilling' of obvious and large-scale inaccuracies. Information extracted from the National Web-based Environmental Screening Tool (Department of Environmental Affairs, 2020), indicated that the study site holds a **low sensitivity** with respect to the relative plant species protocol and a **very high sensitivity** relative to the biodiversity theme (report generated 06/06/2023).

The very high sensitivity is due to:

Sensitivity	Features
Very High	CBA 1
Very High	ESA 1
Very High	ESA 2
Very High	National Protected Area Expansion Strategy (NPAES)
Very High	Marikana Thornveld (Endangered)

4 Methods

Existing information on the site were investigated to determine the status of the vegetation on site. In addition, the site was visited on 3 May and 7 June 2023 for other activities on site and the status of the vegetation was noted.

5 Results and Discussion

5.1 Vegetation Assessment

The area received a designation of highly sensitive in the screening tool. This is mainly due to the presence of the Marikana Thornveld vegetation type in the area, but may also be due to the presence of wetlands.

The TSF and immediate surroundings are completely transformed, as well as the road leading to the TSF. These areas are therefore of not concern from a vegetation point of view. The vegetation located outside the disturbed areas are Modified Marikana Thornveld. This vegetation unit is present in areas where some disturbance took place in the past, including ploughing or heavy grazing, and the vegetation has recovered to resemble the Marikana Thornveld vegetation type, but with several indicators of disturbance present. Indicators of disturbance include a higher density of pioneer species, alien and invasive plant species or higher densities of bush encroachers such as *Dichrostachys lycoides.* Species such a *Ziziphus mucronata* and *Searcia leptodictya* is also present in much lower densities and individuals of *Vachellia karroo and Vachellia tortillis* are all of similar age and size. Although these areas resemble the Marikana Thornveld, the vegetation are of lower conservation importance. In addition, the Modified Marikana Thornveld vegetation type will not be affected by the proposed remining activities. The remining and access road are confined to existing disturbances.

The TSF is located on a historical wetland unit. Dams are present upstream and downstream of the TSF and has been for most of the life of the mine. The wetland area is therefore only present outside the TSF disturbance area and are currently highly artificial. Any wetland unit in the location of the TSF has been destroyed and no wetland vegetation remain in this area. Although it is possible that wetland soils persist below the TSF, it is unlikely that the wetland area can be reinstated without significant rehabilitation effort. The remining of the TSF will however be a logical first step in returning the topographical profile to a form more closely resembling the original profile. The remining activities is unlikely to affect the wetland units, since the remining will be confined to existing disturbances.

5.1.1 Invasive species

A list of alien and invasive species has been published in the Government Gazette of 1 August 2014 in the Alien and Invasive Species Regulations (AIS) under the National Environmental Management Biodiversity Act (Act 10 of 2004). Invasive species are divided into the following four categories:

- “Category 1a: Invasive species which must be combatted and eradicated. Any form of trade or planting is strictly prohibited.
- Category 1b: Invasive species which must be controlled and wherever possible, removed and destroyed. Any form of trade or planting is strictly prohibited.

- Category 2: Invasive species, or species deemed to be potentially invasive, in that a permit is required to carry out a restricted activity. Category 2 species include commercially important species such as pine, wattle and gum trees. Plants in riparian areas are Category 1b.
- Category 3: Invasive species which may remain in prescribed areas or provinces. Further planting, propagation or trade, is however prohibited. Plants in riparian areas are Category 1b."

It is the responsibility of the landowner to control invasive species on site. A list of invasive species recorded on site and in the surroundings during previous assessments are included in Table 1 below.

Table 1: Invasive species recorded on site.

Species	Growth form	Class	Natural Wetlands	Artificial Wetlands	MT	Modified MT	Disturbances	Rocky outcrop
Araujia sericifolia	Forb	Class 1b			x	x		x
Cirsium vulgare	Forb	Class 1b	x	x				
Ricinus communis	Shrub	Class 1b	x			x		
Tamarix chinensis	Shrub	Class 1b		x				
Tecoma stans	Tree	Class 1b				x		
Verbena bonariensis	Forb	Class 1b		x		x		
Verbena braziliensis	Forb	Class 1b					x	
Xanthium spinosum	Shrub	Class 1b				x		
Xanthium strumarium	Shrub	Class 1b	x			x	x	

5.1.2 Species of conservation importance

No threatened plant species were observed on site during the site visit. No threatened plant species are listed in the screening report as potentially occurring on site and no threatened plant species are expected in the area.

6 Conclusion

The conclusions and recommendations apply to the proposed remining of KTD1 TSF:

- The entire TSF and immediate surroundings are transformed and no natural vegetation remain in these areas.
- The access roads are existing roads and already transformed. The road will therefore not impact any portions of the Marikana Thornveld vegetation type.
- The area is not suitable for the expansion of protected areas, since the area is already utilised for mining activities.
- The TSF and access routes were erroneously assigned a very high sensitivity in the screening tool. The area has a low sensitivity.
- The proposed remining activities must remain inside the existing disturbances, as indicated on Figure 1. If any activities take place outside the indicated areas an additional assessment will be required.

- The TSF is located on a historical wetland unit. The wetland in this area were destroyed by the construction of the TSF.
- Artificial dams are present north and south of the TSF.
- The remining activities is unlikely to affect the wetland units, since the remining will be confined to existing disturbances.

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Kyllinga CONSULTING

Addendum A – CV

CURRICULUM VITAE

Name:	**Catharina Elizabeth Venter** trading as Kyllinga Consulting
Position:	Senior Ecologist and Wetland Scientist
Date of Birth:	29 December 1979
Nationality:	South African
Languages:	Afrikaans, English

EDUCATIONAL QUALIFICATIONS

- M.Sc (Botany), University of Pretoria (2003)
- B.Sc Hons (Botany), University of Pretoria (2001)
- B.Sc (Environmental Sciences), University of Pretoria (2000). Majored in Geography and Botany
- Matriculated, Sasolburg High School (1997)

Additional

- Introduction to ArcGIS 1 (2006)
- Bringing your data into ArcGIS (2006)
- Introduction to ArcView 3.x (2003).

FIELDS OF EXPERTISE

- **Ecological Assessment:**
  Ecological Assessments as part of the Environmental Impact Assessment Process
- **Wetland Assessment:**
  Wetland Assessments as part of the Environmental Impact Assessment Process and Water Use Applications, as well as rehabilitation plans for wetlands, including planning or the Working for Wetlands programme. Large scale wetland assessments (catchment scale).
- **GIS:**
  Compilation of maps for submission as part of Environmental Impact Assessment Process. Creating spatial databases and large scale wetland maps (catchment scale). Projection conversions and matching/overlaying different format GIS maps.
- **Environmental Impact Assessment**
  Undertaken numerous Environmental Scoping Reports, as required by the Environment Conservation Act, 1989 (Act 73 of 1989), the National Environmental Management Act, 1998 (Act 107 of 1998), as amended and the Development Facilitation Act, 1995 (Act 67 of 1995). Project experience includes the establishment of various housing typologies, golf courses, commercial and industrial projects, infrastructure development (roads), resorts and/or game lodges as well as filling stations.
- **Public Participation:**
  Undertaken numerous public participation processes, ranging from basic to extensive, as required by relevant environmental legislation.

MEMBERSHIP IN PROFESSIONAL SOCIETIES

- Professional Natural Scientist (Pr.Sci.Nat) in the fields of Botanical Science and Ecological Science (Reg no. 400048/08)
- Member of the Botanical Society of South Africa

EMPLOYMENT HISTORY EXPERIENCE

Kyllinga Consulting (July 2015 - present)

Senior Ecologist responsible for wetland and ecological specialist assessments.

Spatial Ecological Consulting (February 2010 – June 2015)

Senior Ecologist responsible for wetland and ecological specialist assessments.

- Wetland Related Assessments

More than 40 wetland assessments conducted between 2010 and 2015.

- Vegetation Assessments

Approximately 16 vegetation assessments between 2010 and 2015.

- Management Plans

Completed two ecological management plans.

MSA Group Services (previously Exigent Environmental CC) (August 2004 – January 2010)

Environmental Scientist responsible for ecological and wetland assessments and the compilation of maps. Also conducted various scoping and EIA applications and EMPRs.

- Ecological Assessments

  In excess of 50 ecological assessments conducted between 2004 and 2010, including managing the inclusion of the fauna specialist assessments.

- Wetland Assessments

  More than 60 wetland verification projects, wetland delineations and wetland assessments, completed between 2004 and 2010.

- As well as:

  Rehabilitation Projects; Fatal Flaw / Screening Assessments; National Department of Agriculture Authorisations; Mining Related Assessments; Private, Public Partnership Projects; Resource Management Plans (RMP); Environmental Management Plans; Environmental Management Programme; Environmental Exemption Processes; Basic Assessments; Environmental Impact Assessments

Part-time employment (2002-2004)

Tutor for botany practicals; Assisting Wildlife management students with Braun-Blanquette analysis; Researcher for a project on the vegetation communities and ecology of the Kruger National Park; Research assistant for the analysis of street trees in Tshwane urban forest; Various part time projects related to vegetation and wetlands

COUNTRIES OF WORK EXPERIENCE

- South Africa
- Lesotho
- Botswana
- Mozambique

PAPERS AND PUBLICATIONS

Co-author and data contributor to: SIEBEN, E. *et al*. The vegetation of inland wetlands with salt-tolerant vegetation in South Africa: description, classification and explanatory environmental factors, submitted to the South African Journal of Botany for review in Feb 2015.

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Co-author and data contributor to: SIEBEN, E. *et al*. The vegetation of grass lawn wetlands of floodplains and pans in semi-arid regions of South Africa: description, classification and explanatory environmental factors, submitted to the South African Journal of Botany for review in Jan 2015.

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Addendum B – Declaration of Independence

Specialist:	Ina Venter, trading as Kyllinga Consulting		
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Qualifications & relevant experience:	M.Sc. Botany		
Professional affiliation(s) (if any)	South African National Association of Scientific Professions		

I, CE Venter (Ina) , declare that -

General declaration:

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I will take into account, to the extent possible, the matters listed in Regulation 8;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of section 24F of the Act.

Signature of specialist:

Ina Venter, trading as Kyllinga Consulting

Name of company:

30 August 2023

Date: