

Ecological Desktop Study

Prospecting Right application for the prospecting of Chrome ore and Platinum Group Metals (PGM), combined with a Waste License application near Madibeng on the Remaining Extent of Portion 1, Portion 2, Portion 3 (portion of portion 1) of the farm Lekker Sukkel Landgoed 454, the farm Zandfontein 923 and Portion 44 (portion of portion 5), Portion 45 (portion of portion 5), Remaining Extent of Portion 46 (portion of portion 5), Remaining Extent of Portion 226, Portion 343 (portion of portion 41), Portion 369, Portion 370, Portion 371 and Portion 372 of the farm Zandfontein 447, Registration Division: JQ, North West Province.

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Introduction

Milnex 189 CC was contracted by **Thabo-Gaelebele Mineral Resources (Pty) Ltd** as the independent environmental consultant to undertake the Ecological Desktop Study for the Environmental Impact Assessment process for the proposed Prospecting Right application for the prospecting of Chrome ore and Platinum Group Metals (PGM), combined with a Waste License application near Madibeng on the Remaining Extent of Portion 1, Portion 2, Portion 3 (portion of portion 1) of the farm Lekker Sukkel Landgoed 454, the farm Zandfontein 923 and Portion 44 (portion of portion 5), Portion 45 (portion of portion 5), Remaining Extent of Portion 46 (portion of portion 5), Remaining Extent of Portion 226, Portion 343 (portion of portion 41), Portion 369, Portion 370, Portion 371 and Portion 372 of the farm Zandfontein 447, Registration Division: JQ, North West Province. The farm is situated approximately 8km South of the town Madibeng. Milnex 189 CC is a specialist environmental consultancy with extensive experience in the mining industry which provides a holistic environmental management service, including environmental assessment and planning to ensure compliance with relevant environmental legislation. Milnex 189 CC benefits from the pooled resources, diverse skills and experience in the environmental and mining field held by its team that has been actively involved in undertaking environmental studies for a wide variety of mining related projects throughout South Africa. The Milnex 189 CC team has considerable experience in environmental impact assessment and environmental management, especially in the mining industry.

The EAP, Danie Labuschagne, which conducted the desktop study has experience in consulting in the environmental field. His key focuses are on environmental assessment, advice and management and ensuring compliance to legislation and guidelines, GIS and Water Use Licenses. He is currently involved in undertaking EIAs for several projects across the country. He's key qualifications include:

- Masters Degree in Environmental Management and Geography, North West University, SA.
- Honors in Environmental Management (Hons.Env.Man) (Cum Laude), North West University (NWU), SA.
- B. Sc in Geology and Geography, North West University (NWU), SA.
- Implementing Environmental Management Systems (ISO 14001) course from the CEM (Centre for Environmental Management).
- Environmental Law for Environmental Managers course from the CEM (Centre for Environmental Management).
- Environmental Management Systems ISO 14001 Audit: A Lead Auditor Course based on ISO 19011 and ISO 17021(SAATCA Registered) course at the CEM (Centre for Environmental Management).

It should just be noted that Danie Labuschagne **is not** a qualified Ecologist.

The Ecological habitat status of the proposed mining right area, was determined by means of a site visit and a desktop study. In this document a brief description of the ecology, as stated by Mucina and Rutherford (2006), will be given. This information will be supported with a map and site specific photographs.

It should be noted that the status of these vegetation may have changed as the data used from Mucina and Rutherford (2006) is 10 years old.

Small Trees: *Acacia caffra* (d), *A. gerrardii* (d), *A. karroo* (d), *Combretum molle* (d), *Rhus lancea* (d), *Ziziphus mucronata* (d), *Acacia nilotica*, *A. tortilis* subsp. *heteracantha*, *Celtis africana*, *Dombeya rotundifolia*, *Pappea capensis*, *Peltophorum africanum*, *Terminalia sericea*.

Tall Shrubs: *Euclea crispa* subsp. *crispa* (d), *Olea europaea* subsp. *africana* (d), *Rhus pyroides* var. *pyroides* (d), *Diospyros lycioides* subsp. *guerkei*, *Ehretia rigida* subsp. *rigida*, *Euclea undulata*, *Grewia flava*, *Pavetta gardeniifolia*.

Low Shrubs: *Asparagus cooperi* (d), *Rhynchosia nitens* (d), *Indigofera zeyheri*, *Justicia flava*.

Woody Climbers: *Clematis brachiata* (d), *Helinus integrifolius*.

Herbaceous Climbers: *Pentarrhinum insipidum* (d), *Cyphostemma cirrhosum*. Graminoids: *Elionurus muticus* (d), *Eragrostis lehmanniana* (d), *Setaria sphacelata* (d), *Themeda triandra* (d), *Aristida scabrivalvis* subsp. *scabrivalvis*, *Fingerhuthia africana*, *Heteropogon contortus*, *Hyperthelia dissoluta*, *Melinis nerviglumis*, *Pogonarthria squarrosa*.

Herbs: *Hermannia depressa* (d), *Ipomoea obscura* (d), *Barleria macrostegia*, *Dianthus mooiensis* subsp. *mooiensis*, *Ipomoea oblongata*, *Vernonia oligocephala*.

Geophytic Herbs: *Ledebouria revoluta*, *Ornithogalum tenuifolium*, *Sansevieria aethiopica*.

Mucina and Rutherford (2006:462) also states that the conservation of this thornveld type, is endangered with a target of 19%. Only 1% is statutorily conserved in, for example, Magaliesberg Nature Area. More conserved in addition in other reserves, mainly in De Onderstepoort Nature Reserve. Considerably impacted, with 48% transformed, mainly cultivated and urban or built-up areas. Most agricultural development of this unit is in the western regions towards Rustenburg, while in the east (near Pretoria) industrial development is a greater threat of land transformation. Erosion is very low to moderate. Alien invasive plants occur localised in high densities, especially along the drainage lines.

Protected Areas

According to the data for protected areas the proposed portions falls within Marikana Thornveld Threatened Ecosystem.

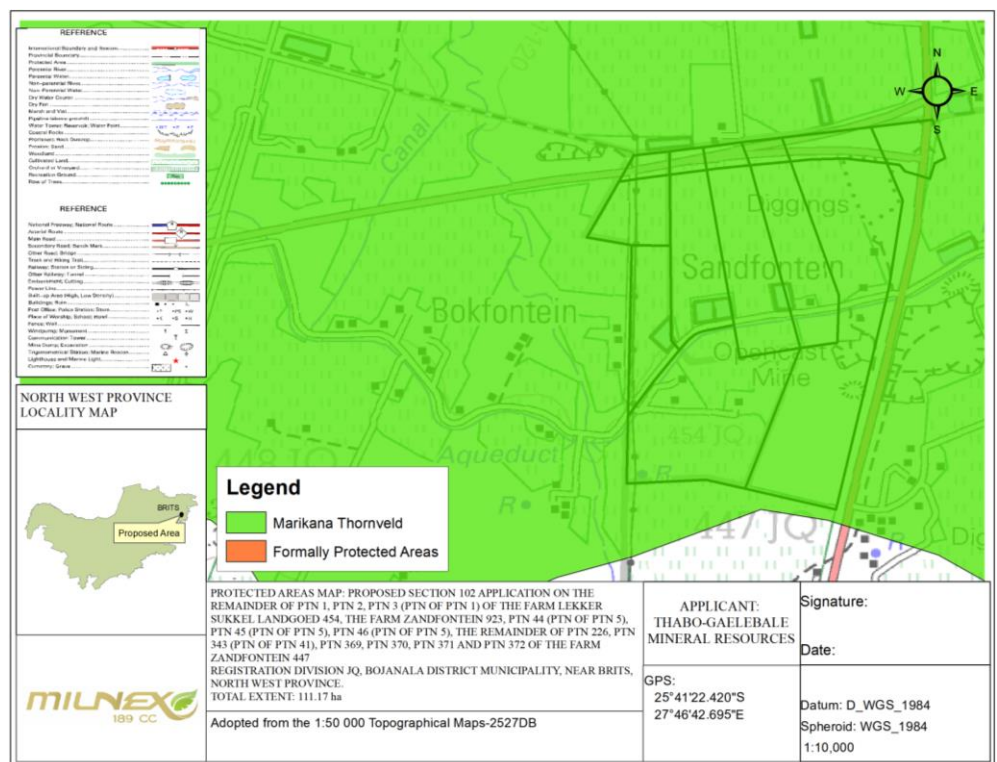


Figure 2: Protected Areas Map

Critical Biodiversity Area

The Department of Rural, Environmental and Agriculture Development (READ) defines Critical Biodiversity Areas and Ecological Support Areas as follows:

Critical Biodiversity Areas (CBAs) are terrestrial and aquatic areas of the landscape that need to be maintained in a natural or near-natural state in order to ensure the continued existence and functioning of species and ecosystems and the delivery of ecosystem services. In other words, if these areas are not maintained in a natural or near-natural state then biodiversity targets cannot be met. Maintaining an area in a natural state can include a variety of biodiversity compatible land uses and resource uses.

Ecological Support Areas (ESAs) are terrestrial and aquatic areas that are not essential for meeting biodiversity representation targets (thresholds), but which nevertheless play an important role in supporting the ecological functioning of critical biodiversity areas and/or in delivering ecosystem services that support socio-economic development, such as water provision, flood mitigation or carbon sequestration. The degree or extent of restriction on land use and resource use in these areas may be lower than that recommended for CBAs.

According to the data for Critical Biodiversity Areas, the proposed area falls within CBA type 2 and ESA type 2. According to the North West Biodiversity Sector Plan (2015) the land management objectives for above mentioned are as follows:

Critical Biodiversity Areas 2 (CBA2)

Maintain in a natural or near-natural state that maximises the retention of biodiversity pattern and ecological process:

- Ecosystems and species fully or largely intact and undisturbed.
- Areas with intermediate irreplaceability or some flexibility in terms of meeting biodiversity targets. There are options for loss of some components of biodiversity in these landscapes without compromising the ability to achieve biodiversity targets, although loss of these sites would require alternative sites to be added to the portfolio of CBAs.
- These are biodiversity features that are approaching but have not passed their limits of acceptable change.

Ecological Support Area 2 (ESA2)

Maintain as much ecological functionality as possible (generally these areas have been substantially modified):

- Maintain current land use or restore area to a natural state.
- Ecosystem NOT in a natural or near-natural state, and has been previously developed (e.g. ploughed).
- Ecosystems significantly disturbed but still able to maintain some ecological functionality.

Sensitive area for Mine

According to the Mining of Biodiversity Guidelines, biodiversity priority areas sensitive to the impacts of mining are categorized into four categories (please see the table below).

Category	Description
A	Legally protected
B	Highest biodiversity importance
C	High biodiversity importance
D	Moderate biodiversity importance

The purpose is to identify and categorize biodiversity priority areas sensitive to the impacts of mining in order to support mainstreaming of biodiversity issues in decision making in the mining sector.

According to the mine guide map, a certain area of the proposed area falls within category B and C. The biodiversity priority areas are as follows:

Highest biodiversity importance (B)

These areas are viewed as necessary to ensure protection of biodiversity, environmental sustainability, and human well-being. The Biodiversity priority areas is as follows:

- Critically endangered and endangered ecosystems
- Critical Biodiversity Areas (or equivalent areas) from provincial spatial biodiversity plans
- River and wetland Freshwater Ecosystem Priority Areas (FEPAs), and a 1km buffer around these FEPAs
- Ramsar Sites

High biodiversity importance (C)

These areas are important for conserving biodiversity, for supporting or buffering other biodiversity priority areas, for maintaining important ecosystem services for particular communities or the country as a whole. The Biodiversity priority areas is as follows:

- Protected area buffers (including buffers around National Parks, World Heritage Sites* and Nature Reserves)
- Transfrontier Conservation Areas (remaining areas outside of formally proclaimed protected areas)
- Other identified priorities from provincial spatial biodiversity plans
- High water yield areas

