Ecological Desktop Study

The proposed Diamonds Alluvial & Diamonds General Mining Permit near Christiana on a certain portion of 4.9 hectares on the Remaining Extent of Portion 1 of the farm Christiana Town & Townlands 325, Registration Division: HO, North West Province.

Reference No. : NW30/5/1/3/2/10472MP

Prepared by

MILNEX 189 CC

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Introduction

Milnex 189 CC was contracted by Veronica Dineo Ntsekeletsa as the independent environmental consultant to undertake the Ecological Desktop Study for the Environmental Impact Assessment process for a Mining Permit of Diamonds Alluvial & Diamonds General, located adjacent (north) Christiana on a certain portion of 4.9 hectares on the Remaining Extent of Portion 1 of the farm Christiana Town & Townlands 325, Registration Division: HO, North West Province. 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.

Vegetation Map

The exact coordinates of the proposed mining right area are plotted to determine the vegetation unit(s), in which the proposed mining activities will take place. The data used, is that provided by Mucina and Rutherford (2006). A vegetation unit is defined by Mucina and Rutherford (2006) as a complex of plant

communities ecologically and historically occupying habitat complexes at the landscape scale. According to Mucina and Rutherford (2006) their vegetation units are the obvious vegetation complexes that share some general ecological properties such as position on major ecological gradients and nutrient levels, and appear similar in vegetation structure and especially in floristic composition.

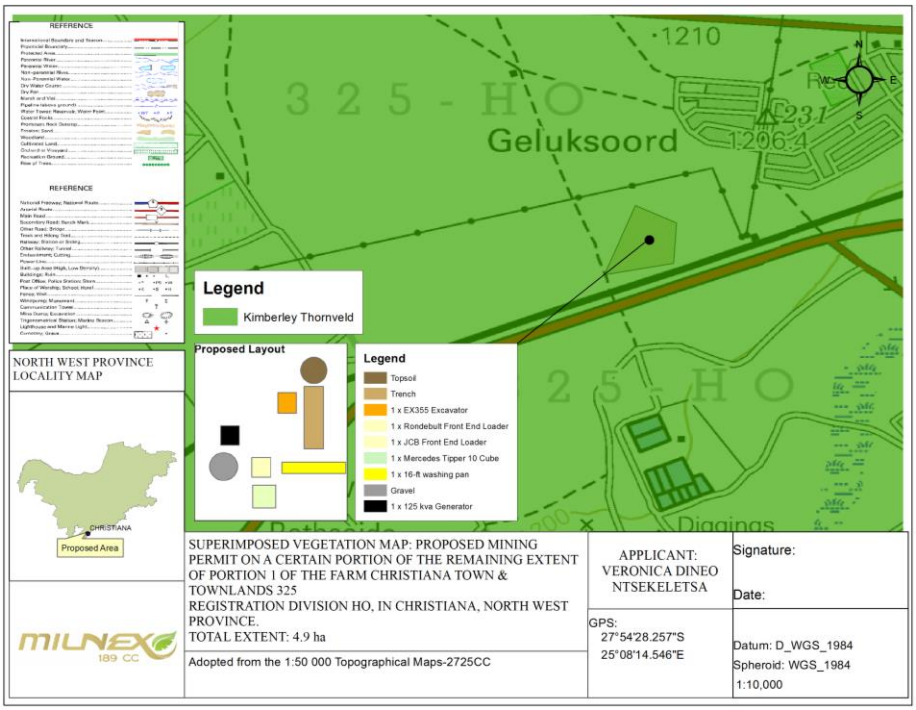

Figure 1: Vegetation Unit Map

The result obtained by plotting the coordinates are as follow:

The proposed area falls within vegetation unit SVk 4, which is known as the Kimberley Thornveld. The Kimberly Thornveld is part of the Eastern Kalahari Bushveld Bioregion, which is a sub-bioregion for the Savanna Biome.

According to Mucina and Rutherford (2006:516), the Kimberley Thornveld vegetation covers the North West, Free State and Northern Cape Provinces: Most of the Kimberley, Hartswater, Bloemhof and Hoopstad Districts as well as substantial parts of the Warrenton, Christiana, Taung, Boshof and to some extent the Barkley West District. This thornveld is situated on an altitude of 1050m – 1400m.

The area often has slightly irregular plains with a well-developed tree layer with *Acacia Erioloba*, *A. tortillis, A. karoo* and *Boscia albitrunca* and a well-developed shrub layer with occasional dense stands of *Tarchonanthus camphoratus* and *A. mellifera*. Grass layer open with much uncovered soil.

Some other important Taxa found on in the area:

Tall Tree: *Acacia erioloba* (d).

Small Trees: *Acacia karroo* (d), *A mellifera* subsp. *detinens* (d), *A. tortilis* subsp. *heteracantha* (d), Rhus lancea.

Tall Shrubs: *Tarchonanthus camphoratus* (d), *Diospyros pallens*, *Ehretia rigida* subsp. *rigida, Euclea crispa* subsp. *ovato Grewia flava, Lycium arenicola, L. hirsutum, Rhus tridactyla.*

Low Shrubs: *Acacia hebeclada,* subsp. *hebclada* (d), *Anthospermum rigidum subsp. pumilum, Helichrysum zeyheri, Hermannia comosa, Lycium pilifolium, Melolobium microphyllum, Pavonia burchelli, Peliostomum leucorrhizum, Plinthus sericeus, Wahlenbergia nodosa.*

Succulent Shrubs: *Aloe hereroensis var. hereroensis, Lycium cinereum*

Graminoids: *Eragrotis lehmanniana* (d), *Aristida canescens, A. congesta, A. mollissima subsp. argentea, Cymbopogon pospischilli, Digitaria argyrograpta, D. eriantha subsp. eriantha, Enneapogon cenchroides, E. scoparius, Eragrostis rigidior, Heteropogon contortus, Themeda triandra.*

Herbs: *Barleria macrotegia, Dicoma schinzii, Harpagophytum* procumbens subsp. *procumbens, Helichrysum cerastioides, Hermbstaedtia odorata, Hibiscus marlothianus, Jamesbrittenia aurantiaca, Lippia scaberrima, Osteospermum muricatum, Vahlia capensis* subsp. *vulgaris.*

Succulent Herbs: *Aloe grandidentata, Piaranthus decipiens.*

Mucina and Rutherford (2006:517) also states that the conservation of this thornveld type, is Least Threatened with a target of 16%. Only 2% of this thornveld is statutorily conserved in Vaalbos National Park and in Sanveld, Bloemhof Dam and S.A. Lombard Nature Reserve. As much as 18% is already transformed, mostly by cultivation. Low erosion is associated with this type of thornveld. The area is mostly used for cattle farming or game ranching. Overgrazing leads to encroachment of *Acacia mellifera* subsp. *detinens*.

Protected Areas

According to the data for protected areas, the proposed area does not fall within a Formally Protected Area, nor Threatened Ecosystem.

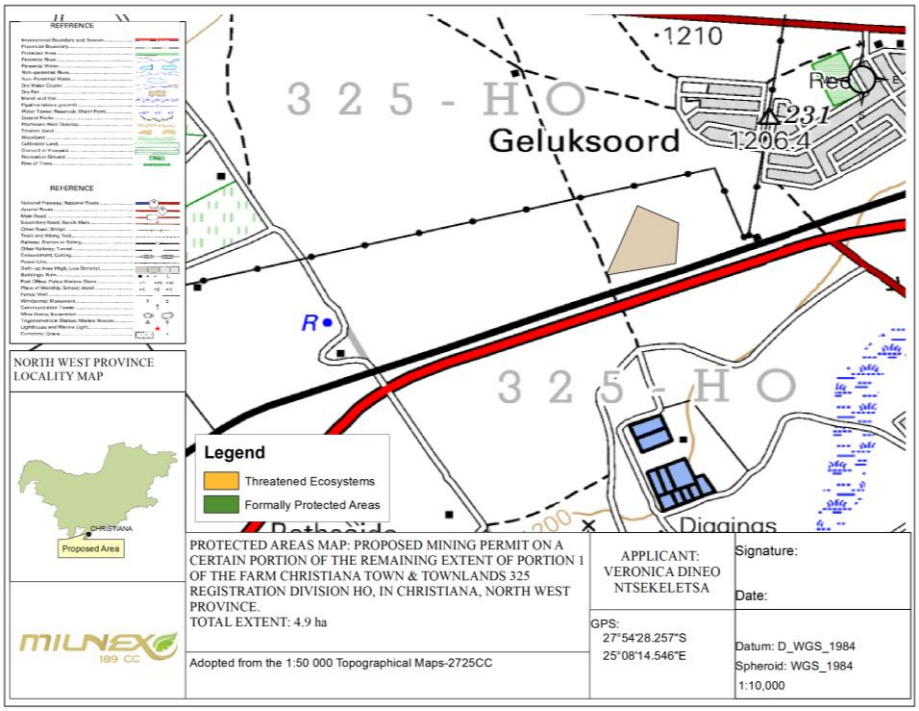

Figure 2: Protected Areas Map

Critical Biodiversity Area

According to B-GIS "Critical biodiversity areas (CBAs) are 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", therefore the purpose of CBA's is simply to indicate spatially the location of critical or important areas for biodiversity in the landscape.

According to the data for Critical Biodiversity Areas the proposed area does not fall within any Critical Biodiversity Area.

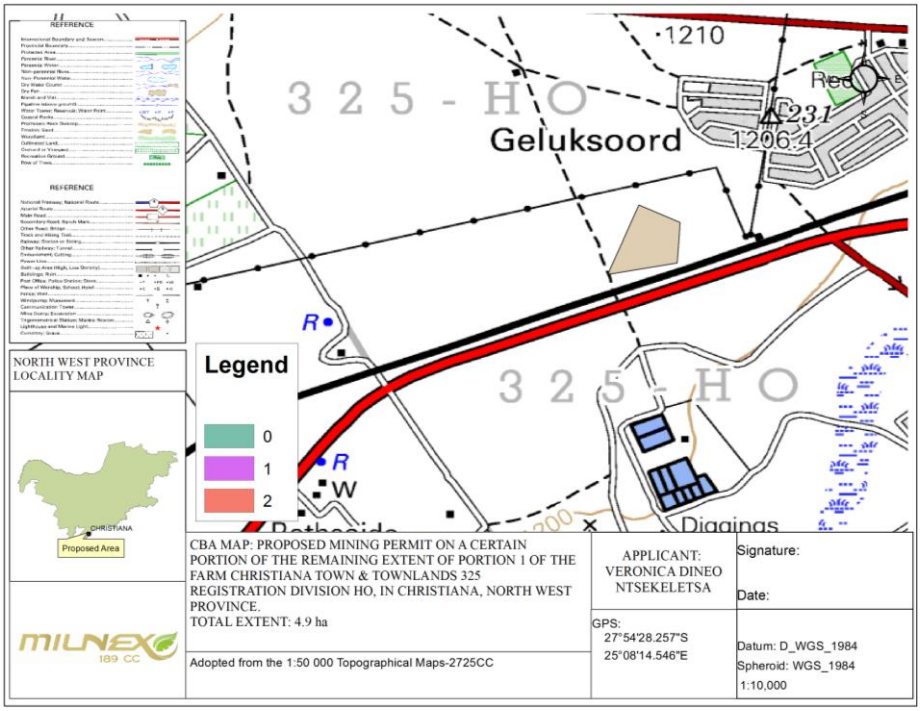

Figure 3: Critical Biodiversity Areas Map.

Sensitive area for Mine

The proposed area does not fall within any biodiversity important area at risk for mining.

Below is figure 4 representing the sensitive area for mining (data from online SANBI)

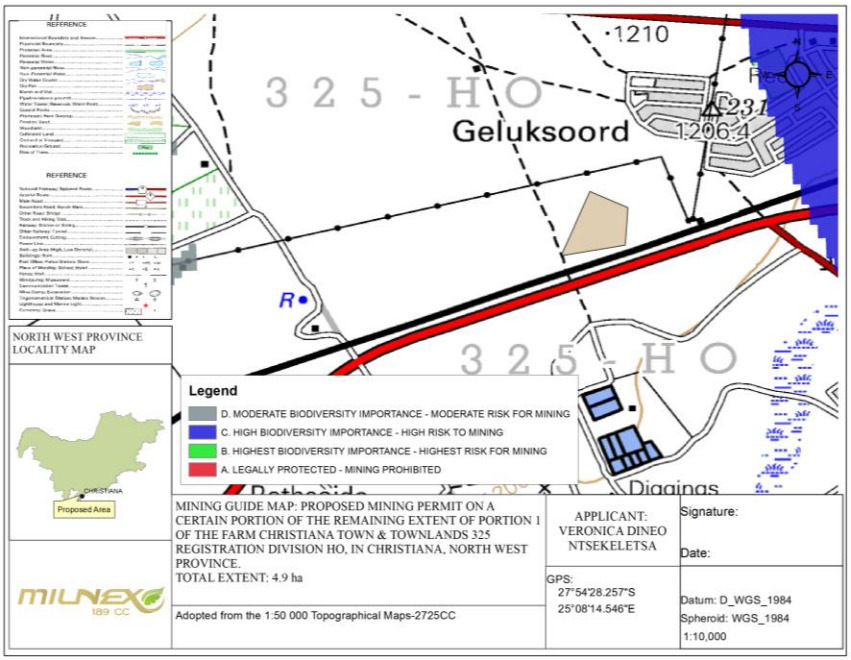

Figure 4: Sensitive area for mine

Wetland Areas

Wetland is defined as land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil (from the South African National Water Act; Act No. 36 of 1998).

The maps below depict all wetland areas on the proposed area. The proposed area consists of no wetland, however the wetland vegetation type falls within the Eastern Kalahari Bushveld Group 3.

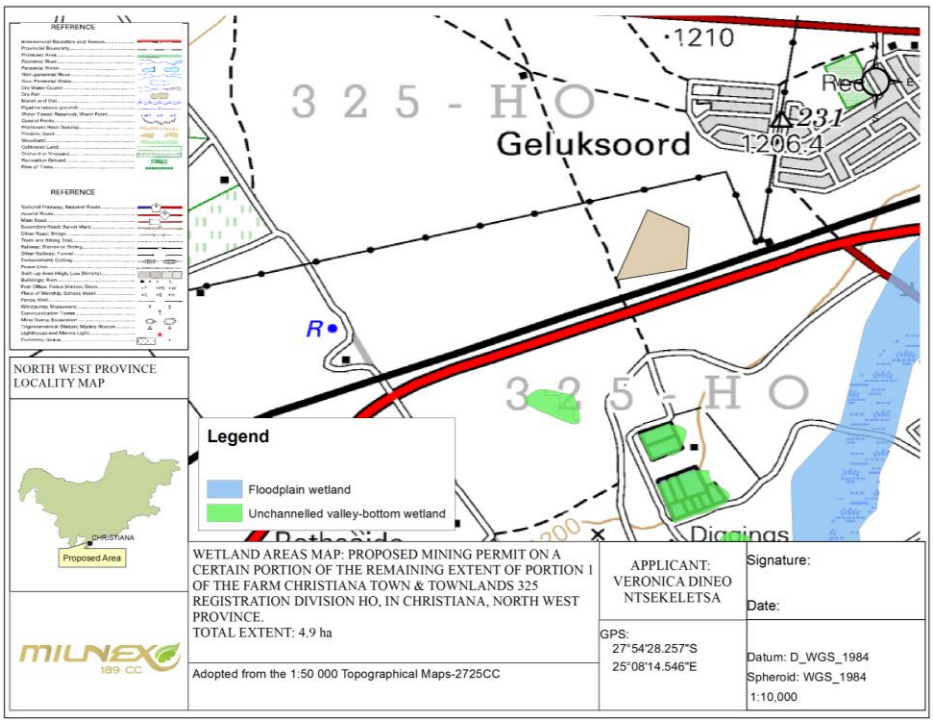

Figure 5: Wetland types present on site

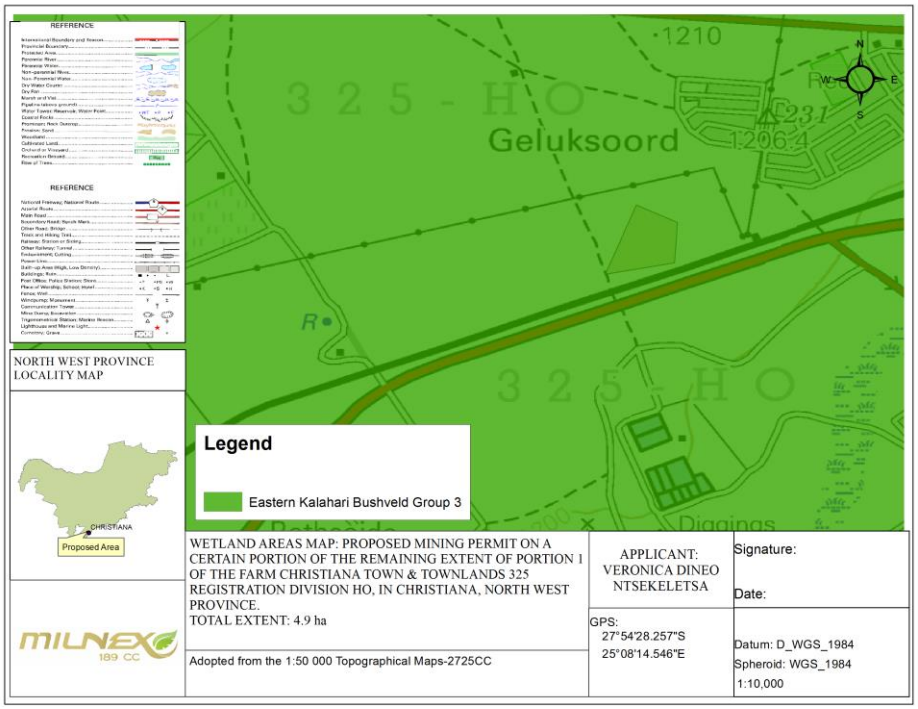

Figure 6: Wetland vegetation type

River Ecosystem Status

The status of the river in question is Largely modified (Class D) in this area. The river does not flow through the proposed area. The figure below depicts the river ecosystem status.

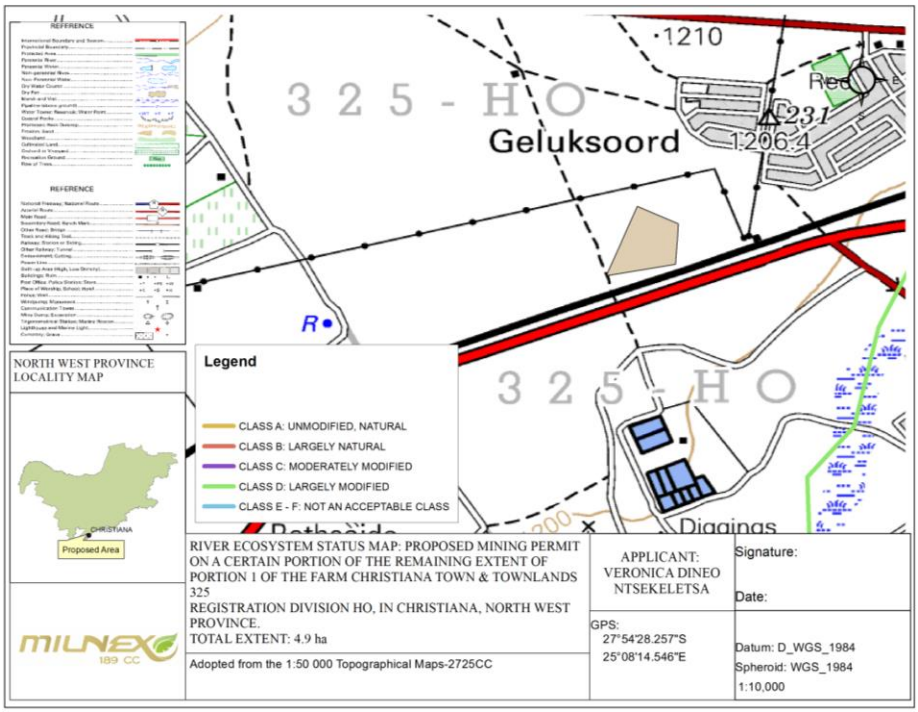

Figure 7: River Ecosystem Status

Recommendations

- Protected trees and plants shall not be removed or damaged without prior approval and permits or licenses from the relevant authority.
- Vegetation clearance, if any, should be kept to the minimum required for the operation.

The EAP herewith confirms the correctness of the information provided in this report.

Signature of the EAP: Danie Labuschagne

Date: 27/03/2017