

BCR Projects (Pty) Ltd Prospecting Right North- west of Mokopane, Limpopo Province

Terrestrial (Vegetation) Biodiversity Desktop Assessment & Plant Species Compliance Statement

Date: August 2022

Report drafted on behalf of:

Environmental Management Assistance



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Expertise of author:

- Working in the field of ecology, and in specific vegetation related assessments, since 2007;
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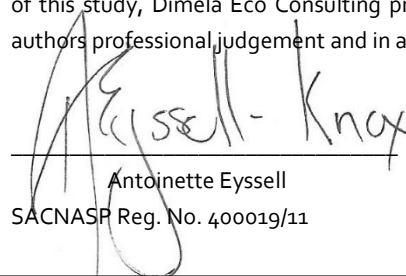
Declaration of independence:

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Based on information provided to Dimela Eco Consulting by the client, and in addition to information obtained during the course of this study, Dimela Eco Consulting present the results and conclusion within the associated document to the best of the authors professional judgement and in accordance with best practise.



Antoinette Eyssell
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_____ 2022.08.15 _____
Date

EXECUTIVE SUMMARY

BCR Projects (Pty) Ltd (the applicant) is applying for the right to prospect Platinum Group Metals on the Farm Zwartfontein 814 LR and Moordkopje 813 LR, in the magisterial district of Mogalakwena, Limpopo.

Due to the large amount of previous diamond core drilling conducted in the area, new drilling locations will only be considered after completion of all the sourced historic exploration results. Thus, for the purpose of this Basic Assessment process, the Environmental Assessment Practitioner and appointed specialist will perform a baseline and/or desktop assessment identifying potential sensitivities in the general area of the properties, followed, and supported by a site verification.

Dimela Eco Consulting was tasked with the high-level vegetation and plant species desktop assessment. Should additional sampling be required using any invasive prospecting methods, the areas where these activities will take place will require the necessary assessments as per the various protocols published for identified themes and approval from the Department of Minerals, Resources and Energy, prior to commencement of any such activities.

The National web-based screening tool indicates that the site falls largely within an area of Low Terrestrial Biodiversity Sensitivity. The southern boundary falls within an area of High Terrestrial Biodiversity Sensitivity. Furthermore, the screening tool shows the site within an area of Low Plant Species Sensitivity and therefore the probability of plant species of conservation concern occurring on the site is low.

The terms of reference were understood as follows:

A. Complete a terrestrial vegetation desktop assessment, highlighting preliminary sensitivities

- Research and report on background information to the site relating to, amongst others, conservation plans and threatened ecosystems;
- Short list plant species of conservation concern with a possibility of occurring on or around the site and for which suitable habitat is likely present;
- Submit a desktop report, highlighting preliminary sensitivities; and
- Include in the above a plan of study for the EIA-phase.

B. Undertake a site verification to verify the desktop findings.

- Short site visit to confirm land-uses and high-level state of the vegetation and possible sensitivities
- Incorporate results into the desktop report.

The assessment entailed a literature review, a short and high-level site verification and reporting. The site visit was undertaken on the 10th of August 2022. Accessible routes were driven through the

prospecting rights area to verify land use and state of vegetation in the remaining natural areas. No vegetation sampling was undertaken.

Due to the historical disturbances and increase in residential infrastructure, most vegetation within the prospecting area was modified from the reference state of Makhado Sweet Bushveld. Natural vegetation was recorded on the higher-lying rocky outcrops within the western portion of the site, while some natural vegetation remains along drainage lines.

The desktop assessment of the available information and site verification results indicated that about half of the vegetation within the prospecting rights area was modified or in a semi-natural state. Some remnant Makhado Sweet Bushveld is in a semi-natural state as its ecological function is maintained while the vegetation composition and structure are largely intact. The Makhado Sweet Bushveld is considered as medium sensitivity to prospecting, provided that large tracks of this group are not cleared.

The bushveld vegetation on the rocky hills is in a natural state and in very good ecological condition. These areas include a high species diversity and the structure, composition, and function remain intact. This vegetation group is also the most likely to support plant species of conservation concern. Although most of the vegetation along the drainage lines were impacted on and degraded, the vegetation retains an important functional role, while species composition and structure are comprised, particularly where drainage lines are in proximity to urban areas.

This report agrees with the national web-based screening tool results, in that about half of the prospecting area are of low terrestrial (vegetation) sensitivity, with a high sensitivity in the south-western corner. However, this report disagrees with the low sensitivity rating along the western boundary as these areas comprise rocky hills and natural bushveld vegetation. Higher lying areas will increasingly become refuge for biodiversity due to the increasing urbanised landscape and climate change.

Although the prospecting rights area is classified by the national screening tool report as low sensitivity for sensitive plant species, this report shortlisted eight (8) such plant species that were historically recorded in the region where the prospecting rights area is situated in. Suitable habitat for these species is present in the rocky bushveld vegetation, as well as along drainage lines (Appendix B). Therefore, this report found that portions of the site are rather of a medium plant species sensitivity. These areas should be searched and classified as high or low, depending on whether plant species of conservation concern are recorded.

This assessment found that the vegetation within the PAOI does not pose a constraint for the application of prospecting rights. However, if any intrusive prospecting is to be undertaken, areas indicated as medium and high sensitivity must be assessed for sensitive vegetation groupings and plant species of conservation concern.

For ease of reference, the following table summaries results of the assessment as per the main requirements of the Protocols for Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial (Vegetation) Biodiversity as published on 20 March 2020.

Summary of the main terrestrial (vegetation) biodiversity findings

Biodiversity (vegetation) aspect	Result
Protected Areas	The Rossouw Snyman Private Nature Reserve is about 20km south of the site.
Limpopo Biodiversity Assessment and Conservation Plan:	<p>The site stretches over Other Natural Areas, and areas listed as having No Natural Habitat. A small Ecological Support Area 2 is present on the north-western boundary of the site. Contrary to the screening tool results, no Critical Biodiversity Area (CBA) are present within the prospecting rights area. The screening tool results show an area of high sensitivity on the south-eastern extent, triggered by a CBA.</p> <p>Impact on species composition and structure of vegetation</p> <p>At the time of writing this report, the project entailed Non-invasive prospecting and thus no activities were proposed. The project aims to secure the prospecting rights based on already available information. Therefore, no impact is expected on species composition and structure.</p>
Listed ecosystems	According to the 2011 Listed Ecosystems, the site is not situated within a Listed Ecosystems published in terms of the National Environmental Management: Biodiversity Act (Act 10 of 2004) in 2011. Also, the recent National Biodiversity Assessment 2018 which represents an update of the assessment of threat status for terrestrial ecosystems, classified the Makhado Sweet Bushveld ecosystems as Least Concern, albeit poorly protected.
Strategic Water Source Areas (SWSA):	The project is not located within a Strategic Water Source Area.
National Freshwater Ecosystem Priority Area (NFEPA)	See wetland / aquatic assessment
Indigenous forest:	Not applicable
Preliminary sensitive vegetation	<ul style="list-style-type: none"> • Rocky bushveld • Remaining Makhado Sweet Bushveld • Vegetation along drainage lines
Plant species of conservation concern	Suitable habitat for eight (8) species of conservation concern are present in the region that the prospecting rights area situated.
Main impacts expected:	<ul style="list-style-type: none"> • None are expected
Cumulative impacts:	<ul style="list-style-type: none"> • Eventual prospecting and mining

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1 INTRODUCTION

BCR Projects (Pty) Ltd (the applicant) is applying for the right to prospect Platinum Group Metals on the Farm Zwartfontein 814 LR and Moordkopje 813 LR, in the magisterial district of Mogalakwena, Limpopo.

The proposed non-invasive prospecting activities will include the following main techniques:

- Data search, field mapping and desktop studies;
- Logging and sampling historical core; and
- Scoping and (pre) feasibility studies.

Due to the large amount of previous diamond core drilling conducted in the area, new drilling locations will only be considered after completion of all the sourced historic exploration results. Thus, for the purpose of this Basic Assessment (BA) process, the Environmental Assessment Practitioner (EAP) and appointed specialist will perform a baseline and/or desktop assessment identifying potential sensitivities in the general area of the properties, followed, and supported by a site verification.

Dimela Eco Consulting was tasked with the high-level vegetation and plant species desktop assessment. Should additional sampling be required using any invasive prospecting methods, the areas where these activities will take place will require the necessary assessments as per the various protocols published for identified themes and approval from the Department of Minerals, Resources and Energy (DMRE), prior to commencement of any such activities.

1.1 Project background and locality

The prospecting area includes the Farm Zwartfontein 814 LR and Moordkopje 813 LR, in the magisterial district of Mogalakwena, Limpopo. The site is about 24km northwest of the town of Mokopane and includes the residential areas of Matopa, Mapela, Ga-Modipane and Kwakwalata Mesopotamia (Figure 1). The Mogalakwena Platinum Mine is situated directly east of the prospecting site.

1.2 Screening tool sensitivity and scope of work

The National web-based screening tool indicates that the site falls largely within an area of Low Terrestrial Biodiversity Sensitivity. The southern boundary falls within an area of High Terrestrial Biodiversity Sensitivity which the screening tool indicates to be a Critical Biodiversity Area. According to the Protocol for the Specialist Assessment and Minimum Requirements for Environmental Impacts on Terrestrial Biodiversity (Published in Government Notice No. 320, Government Gazette 43110 on 20 March 2020 under the National Environmental Management Act, 1998 (act No 107 of 1998)), the high sensitivity gets precedence and impacts must be assessed by a Terrestrial Biodiversity (vegetation) Assessment. However, the project comprises non-invasive prospecting and no impacts are going to take place. Therefore, this report comprises only a vegetation compliance statement (Table 1).

Furthermore, the screening tool shows the site within an area of Low Plant Species Sensitivity and therefore the probability of plant species of conservation concern occurring on the site is low. According to the Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Plant Species (Published in Government Notice No. 1150, Government Gazette 43855 on 30 October 2020 under the National Environmental Management Act, 1998 (act No 107 of 1998) a plant species assessment only needs to be undertaken if the site verification confirms suitable habitat for such species on the site. In addition, this report informs a non-invasive prospecting right application, and no impacts are going to take place. Therefore, this report comprises a plant species compliance statement (Table 1).

Table 1: Compliance statement requirements addressed in this report

Compliance statement requirements for terrestrial biodiversity (vegetation)	Section in this report
4.3.1. the contact details of the specialist, their SACNASP registration number, their field of expertise and a curriculum vitae;	Appendix C
4.3.2. a signed statement of independence by the specialist	p i
4.3.3. a statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;	Section 2.3
4.3.4. a baseline profile description of biodiversity and ecosystems of the site	Section 3
4.3.5 the methodology used to verify the sensitivities of the terrestrial biodiversity features on the site, including equipment and modelling used, where relevant;	Section 2
4.3.8. a description of the assumptions made and any uncertainties or gaps in knowledge or data; and	Section 1.4
4.3.9. any conditions to which this statement is subjected.	Section 7
Compliance statement requirements for terrestrial plant species	Section in this report
5.3.1 contact details and relevant experience as well as the SACNASP registration number of the specialist preparing the compliance statement including a curriculum vitae;	Appendix C
5.3.2 a signed statement of independence by the specialist;	p i
5.3.3 a statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;	Section 2.3
5.3.4 a description of the methodology used to undertake the site survey and prepare the compliance statement, including equipment and modelling used where relevant	Section 2 Appendix B
5.3.6 a description of the assumptions made and any uncertainties or gaps in knowledge or data	Section 1.4
5.3.7 the mean density of observations/ number of samples sites per unit area;	Section 2.3 Section 5.1
5.3.8 any conditions to which the compliance statement is subjected	Section 5.1 Section 7

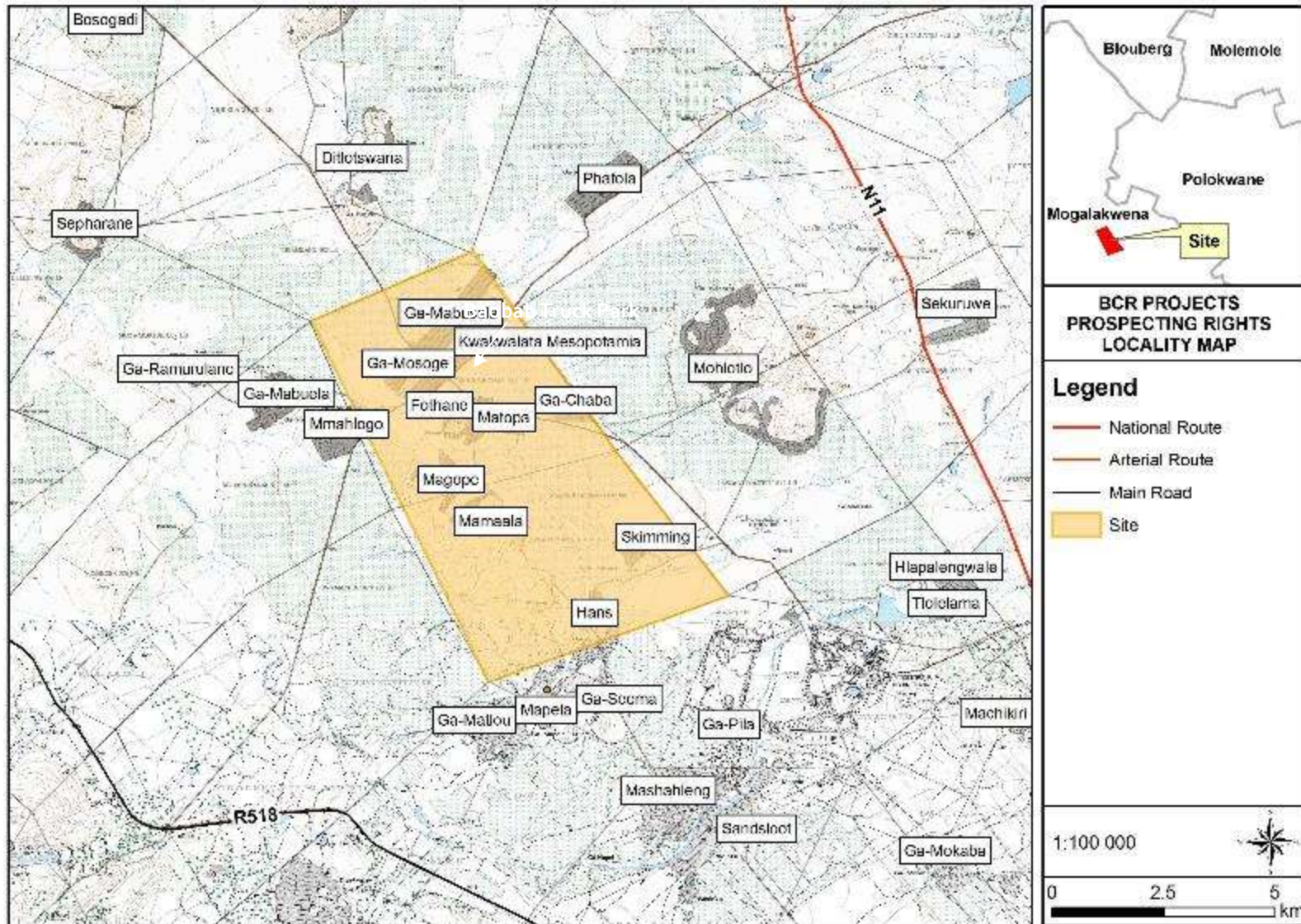


Figure 1: Locality map of the prospecting area

1.3 Terms of reference

The terms of reference were understood as follows:

A. Complete a terrestrial vegetation desktop assessment, highlighting preliminary sensitivities

- Research and report on background information to the site relating to, amongst others, conservation plans and threatened ecosystems;
- Short list plant species of conservation concern with a possibility of occurring on or around the site and for which suitable habitat is likely present;
- Submit a desktop report, highlighting preliminary sensitivities; and
- Include in the above a plan of study for the EIA-phase.

B. Undertake a site verification to verify the desktop findings.

- Short site visit to confirm land-uses and high-level state of the vegetation and possible sensitivities
- Incorporate results into the desktop report.

1.4 Assumptions and gaps in knowledge

The following limitations is relevant, although not considered fatal flaws to the study and level of assessment required:

- No in-depth plant assessment was undertaken. This report is based on available spatial data and literature pertaining to the area that the site is situated in, which was verified during a site verification.
- The results of this report rely on the accuracy of available literature, data from provincial and national data bases and spatial data.
- In the absence of a plant species assessment, the likelihood of plant species of conservation concern occurring within the prospecting rights area are based on a visual assessment of suitable habitat.

2 Methodology

The assessment entailed a literature review, a short and high-level site verification and reporting. The methodology used is shortly summarised below.

2.1 Literature and data review

Data and literature consulted:

- The description of the regional vegetation relied on literature from Mucina & Rutherford (2006).
- The Limpopo Biodiversity Assessment and Conservation Plan.

- Information on plant species recorded for the Quarter Degree Square (QDS) that the site is situated in was extracted from the Botanical Database of Southern Africa hosted by SANBI on the new Plants of Southern Africa website (<https://posa.sanbi.org>).
- The IUCN conservation status for plant species of conservation concern was verified on the website for the Threatened Species Programme, Red List of South African Plants (Red List of South African plants version 2020(<http://redlist.sanbi.org/>)).
- Threatened Ecosystem data was extracted from the NEM:BA listed ecosystems layer (SANBI 2008) and from the 2018 Nasional Spatial Biodiversity Assessment (NSBA) (Skowno *et al*, 2019)
- Relevant literature to the area that the site is situated in.
- Historical aerial imagery downloaded from Chief Directorate: National Geospatial Information Geospatial Portal (<http://www.cdngiportal.co.za/cdngiportal>).
- Citizen Science Website: iNaturalist.org

2.2 Project Area of Influence (PAOI)

The Project Area of Influence (PAOI) are defined as per the Species Environmental Assessment Guideline (SANBI, 2020). The PAOI is based on the development footprint and the potential extent of the impacts (e.g., edge effects) of the project activities. As no activities are proposed at this stage, the site is considered as the primary and secondary PAOI. Downstream habitats are considered as the tertiary PAOI. These are mostly west of the site.

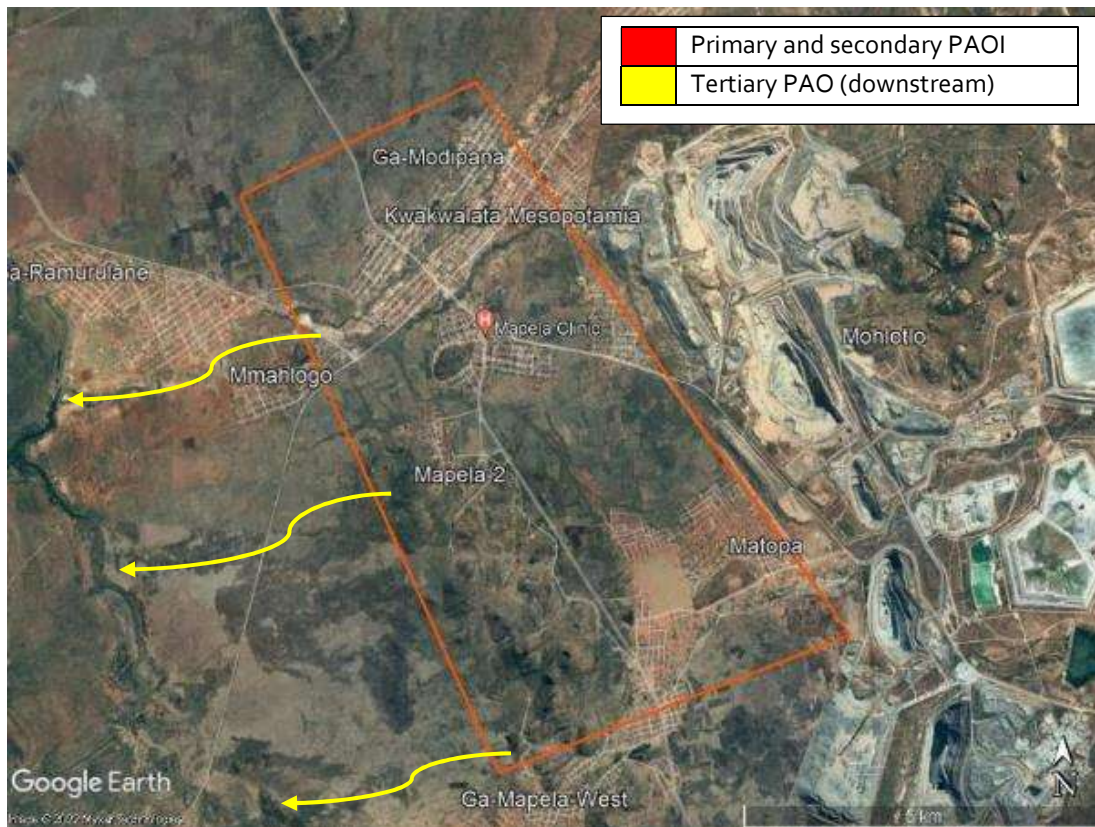


Figure 2: Project Area of Influence

2.3 Site verification

The site visit was undertaken on the 10th of August 2022. Accessible routes were driven through the prospecting rights area to verify land use and state of vegetation in remaining natural areas. No vegetation sampling was undertaken.

2.4 Consultation

The specialist was accompanied by a community member, Mr Mpho Langa, during the site visit. Mr Langa provided background information with regards to historical vegetation clearing, planted specimens of the protected Baobab trees and land uses.

2.5 Vegetation / Ecological Condition

Standardised definitions, as recommended by Lexicon for Biodiversity Planning in South Africa by the South African National Biodiversity Institute (SANBI) were used to describe the state of vegetation and ecological condition (SANBI, 2016). The condition of the vegetation followed the following definitions:

Natural or near natural:	An ecological condition class in which composition, structure and function are still intact or largely intact. Can apply to a site or an ecosystem (good ecological condition). Usually of high sensitivity to development.
Semi-natural or moderately modified	An ecological condition class in which ecological function is maintained even though composition and structure have been compromised (Fair ecological condition). Usually of medium sensitivity to development
Severely or irreversibly modified	An ecological condition class in which ecological function has been compromised in addition to structure and composition. Can apply to a site or an ecosystem (Poor ecological condition). Usually of a low sensitivity to development.
Good ecological condition:	An ecological condition class in which composition, structure and function are still intact or largely intact. Can apply to a site or an ecosystem. (Natural or near natural). Usually of high sensitivity to development.
Fair ecological condition	An ecological condition class in which ecological function is maintained even though composition and structure have been compromised (Moderately modified, semi-natural). Usually of medium sensitivity to development.
Poor ecological condition	An ecological condition class in which ecological function has been compromised in addition to structure and composition. Can apply to a site or an ecosystem (Severely or irreversibly modified). Usually of a low sensitivity to development.

3 BASELINE DESCRIPTION OF THE SITE

The table below shortly summarises the background information to the site.

Table 2: Background information to the site

Province	Limpopo
Protected areas (Figure 1):	The Rossouw Snyman Private Nature Reserve is about 20km south of the site.
Topography and Hydrology (Figure 3):	<p>In general, the site slopes northwards. Rocky outcrops and ridges are present within the south-western quadrant of the site. The highest point is towards the southern boundary at an elevation of about 1175m.</p> <p>Several non-perennial streams, as well as the perennial Witrivier and Mohlosane River drain the site in a westerly direction. The streams drain towards the perennial Mogalakwena River about 4km west of the site. Aerial imagery indicate that most of the vegetation along the drainage lines were cultivated, except rocky and hilly areas in the south-western quadrant of the site.</p>
Strategic Water Source Areas (SWSA)	The project is not located within a Strategic Water Source Area. According to Le Maitre <i>et al.</i> (2018), the project is located about 14km to the northeast of the closet SWSA, Nyl and Dorps River Valley Groundwater Strategic Water Source Area.
Limpopo Biodiversity Assessment and Conservation Plan: (Figure 4)	<p>The site stretches over Other Natural Areas, and areas listed as having No Natural Habitat. A small Ecological Support Area 2 is present on the north-western boundary of the site.</p> <p>Other Natural Areas (ONAs) are open spaces between township areas where grazing and cultivation likely takes place. ONAs are not required to meet conservation targets and are not identified or functional as CBAs or ESAs. No management objectives, land management recommendations or land-use guidelines are prescribed in such areas These areas are nevertheless subject to all applicable town and regional planning guidelines and policy.</p> <p>No Natural Habitat comprises developed and cultivated areas. These areas should be favoured for development before "Other natural areas"</p> <p>Ecological Support Areas (ESA) play an important role in supporting</p>

	<p>the ecological functioning of a protected area or Critical Biodiversity Area, in delivering ecosystem services. In most cases ESA2 sites are those with degradation (as is within the prospecting area), whereas ESA1 are near-natural to natural.</p> <p>Contrary to the screening tool results, no Critical Biodiversity Area (CBA) are present within the prospecting rights area. The screening tool results shows an area of high terrestrial biodiversity in the south-eastern extent of the site, associated with the Mogalakwena River. The screening tool indicates the trigger for the very high rating as a CBA 1, however, this is not listed as a CBA 1 in the Limpopo Biodiversity Assessment and Conservation Plan.</p>
<p>Vegetation (Mucina and Rutherford, 2006) (Figure 6):</p>	<p>The study site is situated within the Savanna Biome of South Africa and in specific, the Mukhado Sweet Bushveld. This bushveld comprises short shrubby bushveld, dominated by <i>Vachellia</i> and <i>Senegalia</i> trees, with a poorly developed grass layer. This vegetation type is poorly protected and classified as Vulnerable to extinction.</p>
<p>Threatened ecosystem:</p>	<p>According to the 2011 Listed Ecosystems, the site is not situated within a Listed Ecosystems published in terms of the Biodiversity Act in 2011.</p> <p>Also, the recent National Biodiversity Assessment (NBA) 2018 which represents an update of the assessment of threat status for terrestrial ecosystems, classified the Mukhado Sweet Bushveld ecosystems as Least Concern, albeit poorly protected (Skowno, <i>et al</i>, 2019).</p>
<p>Ecological processes and drivers in the bushveld:</p>	<p>Summer rainfall coupled with winter fire and regular grazing ensures that the grass layer remains dominant in the bushveld. In addition, the lack of sufficient rainfall prevents the upper layer (trees) from dominating. However, where disturbances and development are present, the tree layer could become increasingly dominant. Also, increased moisture, as well as soil disturbances will result in a densification of the tree layer, particularly in the presence of grazing, in the absence of fire and around frequently used areas.</p>

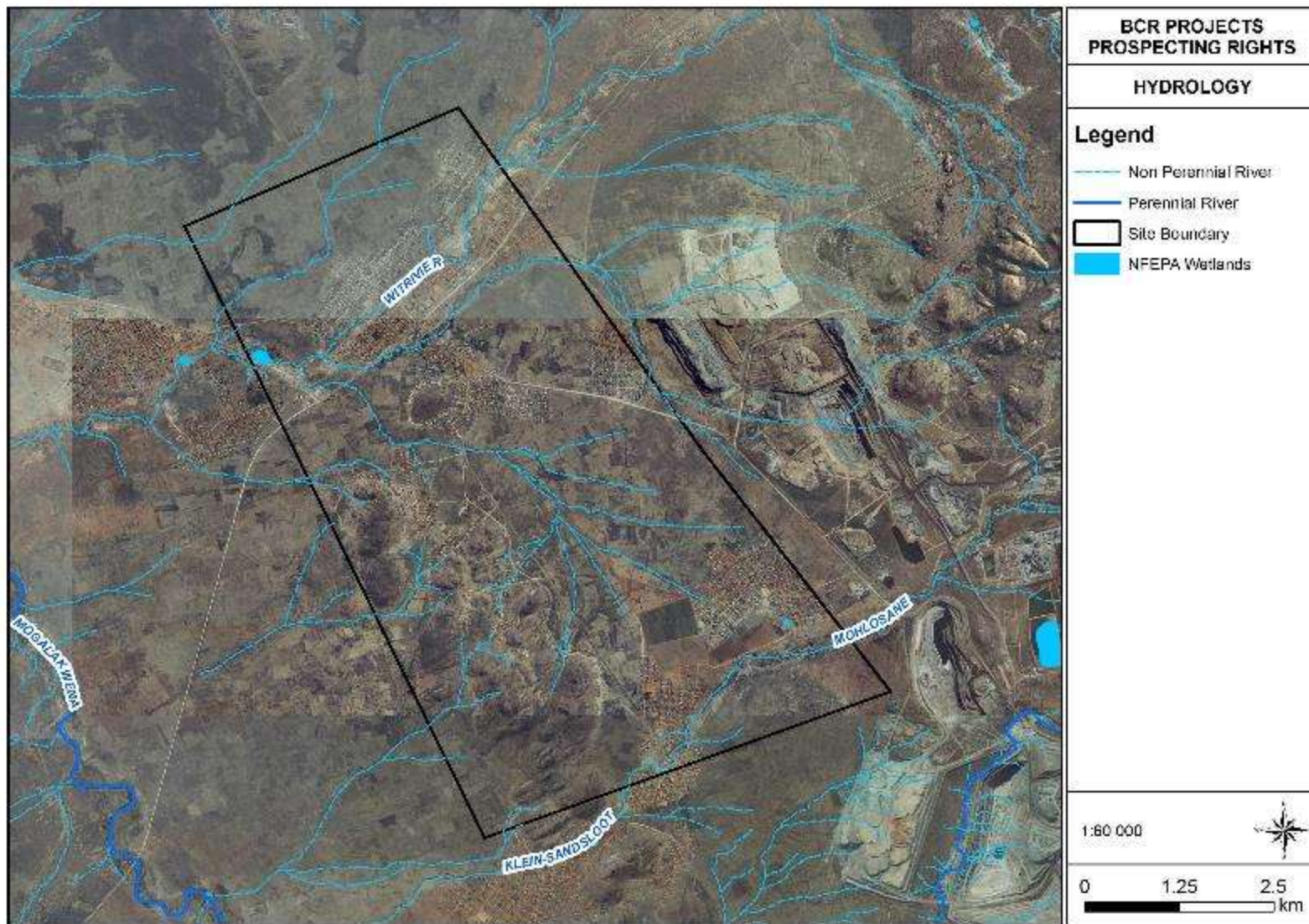


Figure 3: Hydrology of the study area, as per existing spatial layers (NBA, 2018)

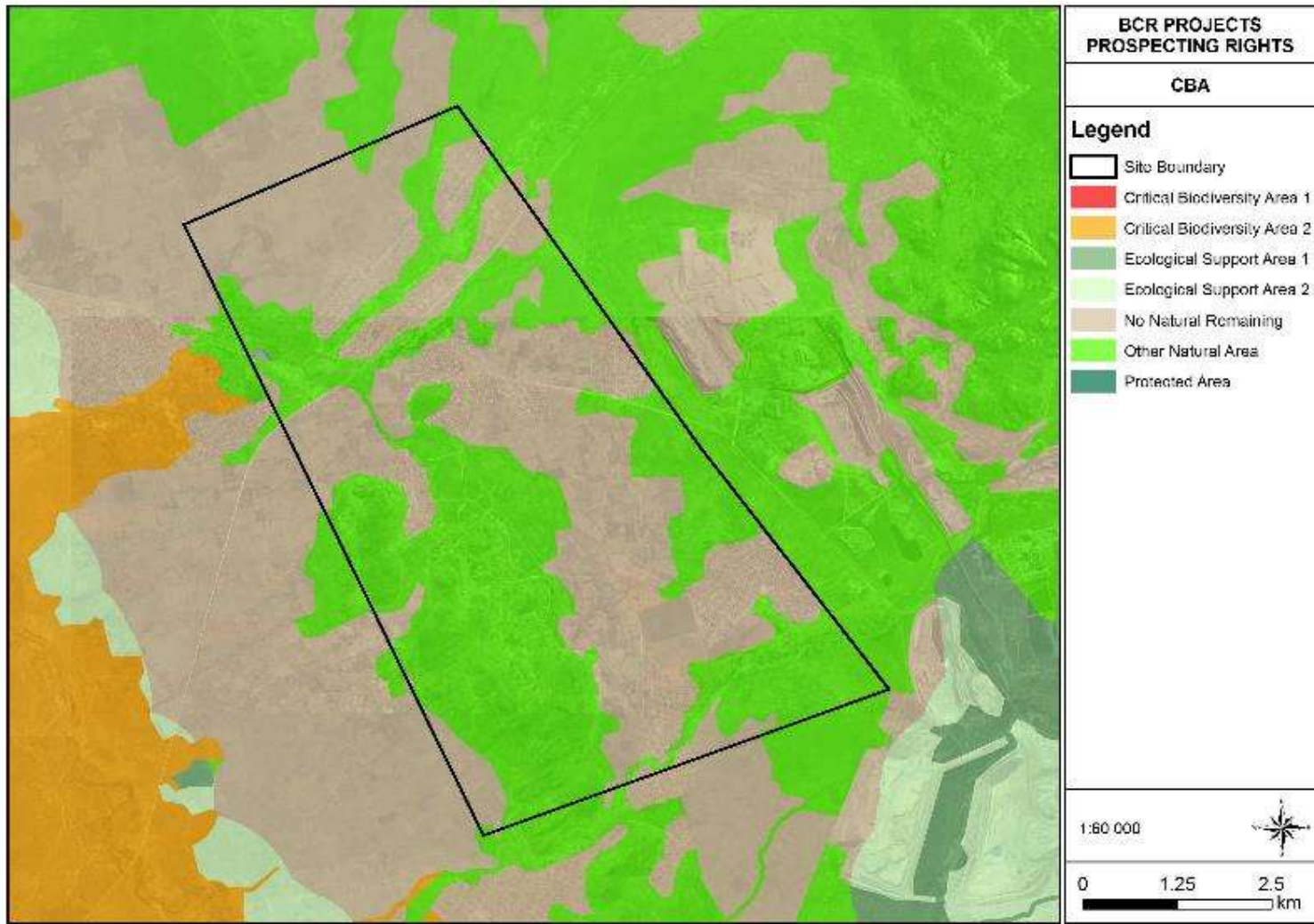


Figure 4: Limpopo Biodiversity Assessment and Conservation Plan



Figure 5: The proposed development in relation to the national vegetation map

4 RESULTS:

4.1 Land use and land cover

Historical aerial imagery dated 1963, shows that the prospecting area comprised rocky areas with lower lying valleys, which were largely cultivated (Figure 6). By the year 1983, residential development around the koppies and drainage lines increased.

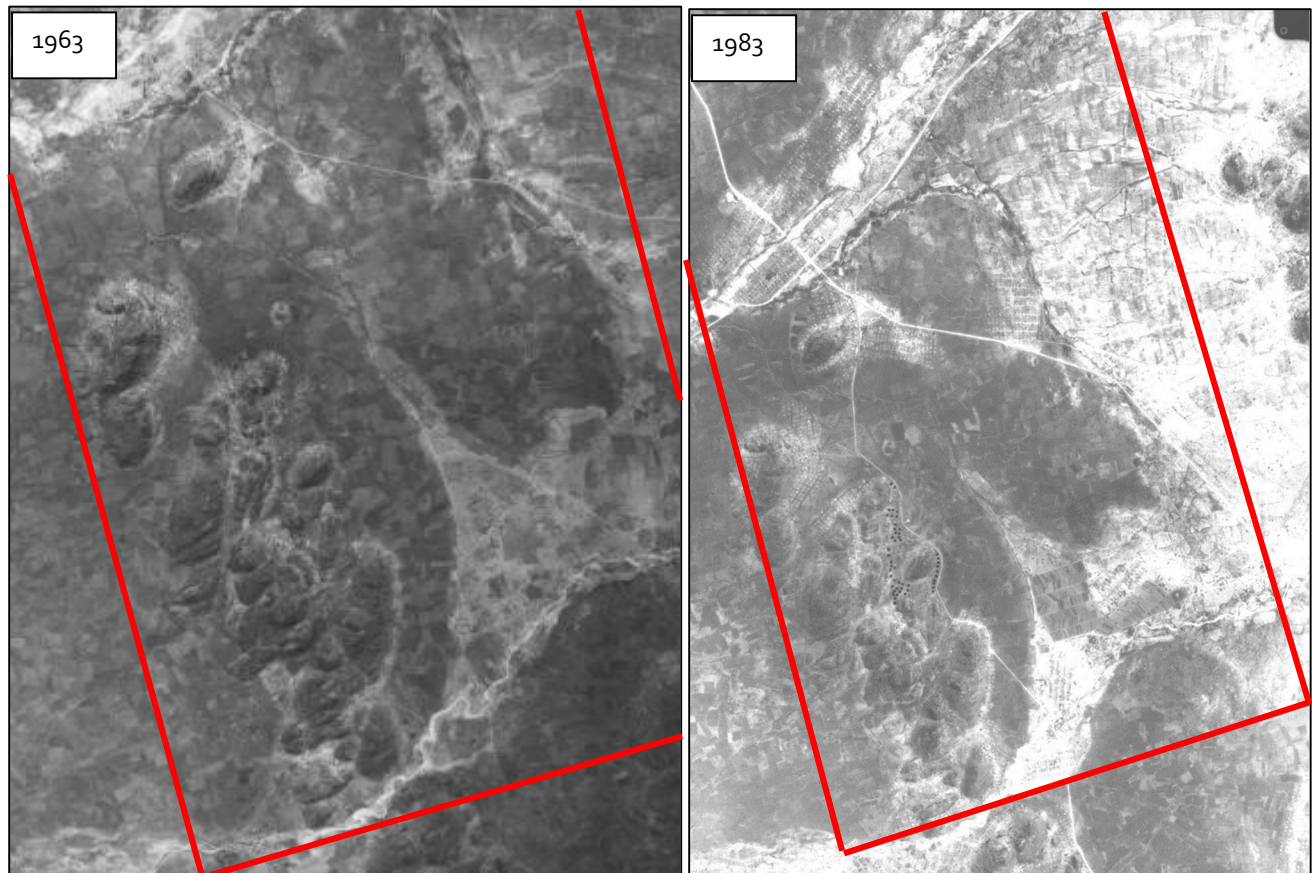


Figure 6: Historical aerial image of the site in the year 1963 (left) and 1983 (right) (Chief Directorate National Geospatial Information Geospatial Portal). The site area is estimated in red

Subsequent Google Earth Satellite imagery shows the commencement of mining to the east of the site as well as the increase in the residential footprint (Figure 7 and Figure 8). Natural vegetation seems restricted to the rocky areas while drainage lines were largely built-up and disturbed. The valleys were cultivated or utilised for grazing.



Figure 7: Google Earth Satellite imagery of the years 2009 showing the increase in disturbance footprints within the site.

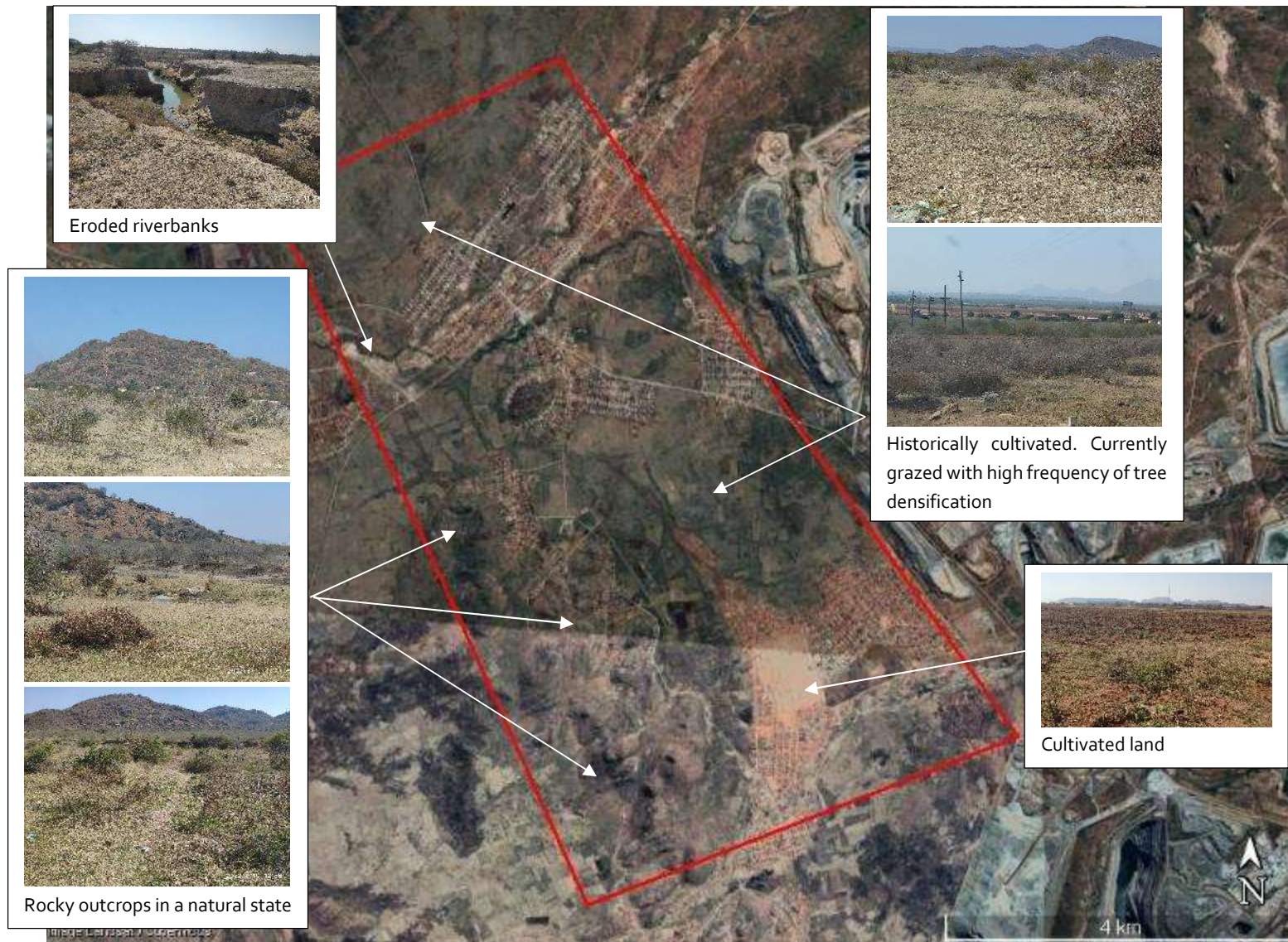


Figure 8: Google Earth Satellite imagery of the prospecting rights area in the year 2021.

4.2 Broad vegetation groups within the PAOI

The prospecting rights area include rocky outcrops and hills, as well as lower lying flat valleys on clay soils. Some red soils were noted in the south-eastern quadrant of the site. the lower lying areas were used for grazing or were historically cultivated for subsistence farming. However, most plots are currently fallow and grazing of goats and cattle is the main land use on much of the site.

Due to the historical disturbances and increase in residential infrastructure, most vegetation within the prospecting area was modified from the reference state of Makhado Sweet Bushveld. Natural vegetation was recorded on the higher lying rocky outcrops within the western portion of the site, while some natural vegetation remains along drainage lines.

Based on the land use, historical disturbance and the results of the site verification, the broad vegetation groups on the site were classified as follows:

1. Built-up and modified
2. Degraded and secondary bushveld
3. Semi-natural Makhado Sweet Bushveld
4. Rocky bushveld vegetation
5. Vegetation along drainage lines

The vegetation groups are shortly discussed below and geographically represented in Figure 9.

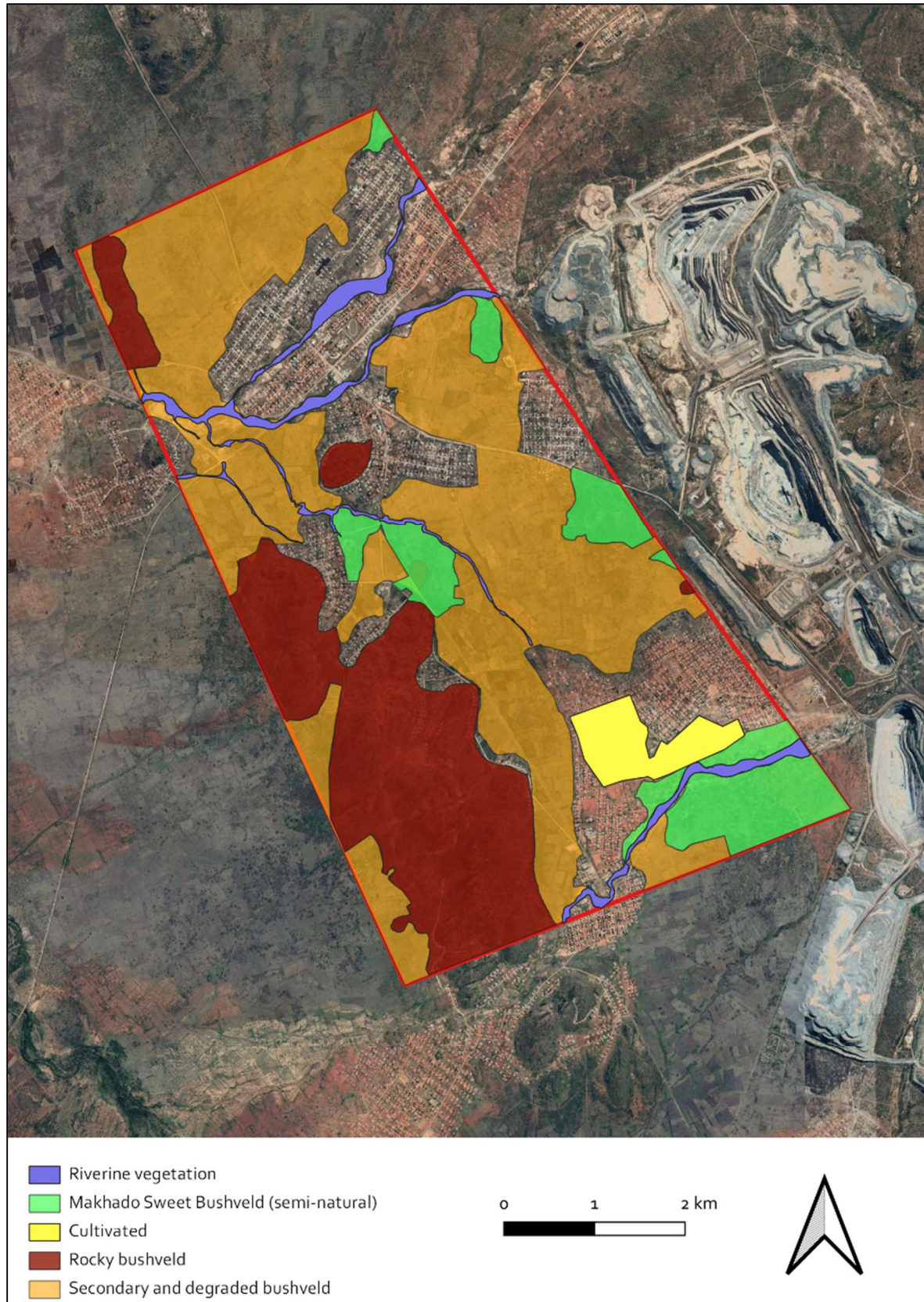


Figure 9: Vegetation groups based on desktop assessment and site verification. Modified areas are not mapped

4.2.1 Built-up and modified

The prospecting area includes modified and built-up land where no natural habitat for vegetation remains. These areas include urban areas, historic quarries, and cultivated fields (Photo plate 1). Other than national protected tree species that may be present along roads, in yards or open fields, no plant species of conservation concern are expected to be present within this modified vegetation group.



Photo plate 1: Modified land include residential areas, informal soccer fields, cultivated lands and bare compacted soils

4.2.2 Degraded and secondary bushveld

Secondary bushveld develops where the original bushveld vegetation was removed or impacted on. After such disturbances cease, pioneer grass species, and eventually subclimax grasses and pioneer tree species, colonise the disturbed soils. This results in a secondary bushveld state with a much lower initial species diversity as opposed to the primary (climax) state prior to any disturbances. In the absence of further disturbances, the secondary bushveld could theoretically return to sub climax or climax bushveld vegetation over time. Much of the clay soils were historically cultivated, while some areas were cleared for building or ceremonies (Langa, *pers comm*). These areas were found to be dominated by a few tree species. The degraded and secondary bushveld on turf soils were present thorough most of the lower lying areas.

Grass species colonising disturbed areas are readily grazed and the historically disturbed areas, as well as areas where degradation took place, were dominated by encroacher tree and shrub species such as *Dichrostachys cinerea* (sickle bush), *Vachellia karoo* (sweet thorn), *Tarchonanthus camphoratus* (camphor bush), and *Dodonea angustifolia* (sand olive). These species are not alien plants, but indigenous plants that tend to become abnormally abundant when the area is degraded. The plants themselves are thus not the problem, but their increased abundance or encroachment into open thornveld / bushveld serves as an indicator of poor land management practices.

No plant species of conservation concern are expected to be present in this group (Appendix B). However, protected tree species, as well as provincial protected species such as the succulents *Orbea*, *Huernia* and *Duvhalia* could be present.



Photo plate 2: Degraded and secondary bushveld

4.2.3 Makhado Sweet Bushveld

Small portions of near-natural Makhado Sweet Bushveld are present in patches through the prospecting rights area. These are mainly confined to foot slopes of the rocky outcrops, and around cultivated and modified land and drainage lines. The vegetation is grazed and disturbances such as dumping were noted.



Photo plate 3: Remnant Central Sandy Bushveld in the south-eastern corner of the prospecting area

These areas were mapped on Google Earth and vegetation sampling may find the area to be secondary or in a better condition from what was perceived during the site verification. These areas were seemingly not cultivated or directly disturbed and may include plant species of conservation concern as listed in Appendix B.

4.2.4 Rocky bushveld vegetation

The higher lying western boundary of the site include rocky hills and outcrops (Photo plate 4). Several smaller outcrops are also embedded in the secondary bushveld vegetation. The vegetation differed markedly from the secondary and semi-natural bushveld vegetation in the lower lying portions of the site and are more likely representative of the Waterberg Mountain Bushveld.

The white stem of the tree *Albizia tanganyicensis* (paper-barked False-thorn) was most notable against the rocks, along with the protected *Sclerocarya birrea subsp caffra* (marula). Succulents include *Euphorbia ingens* and *Aloe marlothii*. These areas were minimally disturbed by footpaths and grazing, while deeper soils in-between the hills were used for small cemeteries.

The rocky areas are expected to include the highest indigenous species diversity within the prospecting area and are also the most likely to support plant species of conservation concern (Appendix B). Hills and koppies are further characterized by high spatial heterogeneity due to the range of differing slopes and altitudes all resulting in differing soil, light and hydrological conditions. Landscapes composed of spatially heterogeneous abiotic conditions provide a greater diversity of potential niches for plants and animals than do homogeneous landscapes. Ridges provide future refuge for biodiversity in an urbanized landscape as they function as islands even within a natural landscape due to their structural and environmental isolation from the landscape (Samways & Hatton, 2000). According to climate change modelling, level topography will be sensitive to future climate change and as such, in a landscape affected by climate change chances of species survival will be higher on ridges.



Photo plate 4: Vegetation on rocky hill and outcrops

4.2.5 Vegetation within the drainage lines

The drainage lines ranged from areas where standing water was noted to drier areas that support plant species with an affinity to moist or at least temporary saturated conditions. Most of the perennial and non-perennial streams were heavily impacted by grazing and dumping, as well as encroachment from buildings.

The perennial Witrivier and Mohlosane River drain the site in a westerly direction and included permanent water. Parts of Witrivier included large stands of *Cyperus* species (likely *C sexangularis*), while other parts of the river were eroded and devoid of vegetation (Photo plate 5 and 6). The Mohlosane River seems to be the least impacted on with a dense grassy layer and diversity of tree noted (Photo plate 7).

At least one plant species of conservation concern could be present along the drainage lines, only in areas that was not historically disturbed. Several protected tree species could be present, including the provincially protected *Spirostachys africana* (tamboti).



Photo plate 5: Tributary to the Mooirivier in the north-eastern corner of the site



Photo plate 6: The Mooirivier on the north-western extent of the site (top images) and adjacent to Mapela Road (below images)



Photo plate 7: A section of the Mohlosane River along the southern boundary of the prospecting area

5 PROTECTED PLANT SPECIES

5.1 Plant species of conservation concern

Plants of conservation concern are those plants that are important for South Africa's conservation decision making processes and include all plants that are Threatened, Extinct in the wild, Data deficient, Near-threatened, Critically rare and Rare (Figure 10). Chapter 4, Part 2 of NEMA Biodiversity Act, 2004 (Act No. 10, 2004) provides for listing of species that are threatened or in need of protection to ensure their survival in the wild, while regulating the activities, including trade, which may involve such listed threatened or protected species and activities which may have a potential impact on their long-term survival.

The national screening tool report list this site as being of low plant species sensitivity, indicating that no plant species of conservation concern were previously recorded or are expected to be present on or immediately around the site. However, a list of eight (8) plants of conservation concern was compiled using information from the South African National Biodiversity Institute's (SANBI) Botanical Database of Southern Africa (BODATSA) (SANBI, 2016), Raimondo *et al*, (2009) and information from the Citizen Science website, iNaturalist.

Appendix B lists the species that were historically recorded in the area and for which suitable habitat may be present within the broadly delineated vegetation groups in the prospecting area. Five (5) of the species listed in Appendix B are likely to be present in the rocky hills in the south-western quadrant of the site. One (1) species only occurs on black turf soils which is present through much of the site, while an Endangered species could be present along riparian vegetation that was not historically disturbed. One (1) near-threatened bushveld species could be present in remaining semi-natural and natural vegetation within the prospecting rights area.

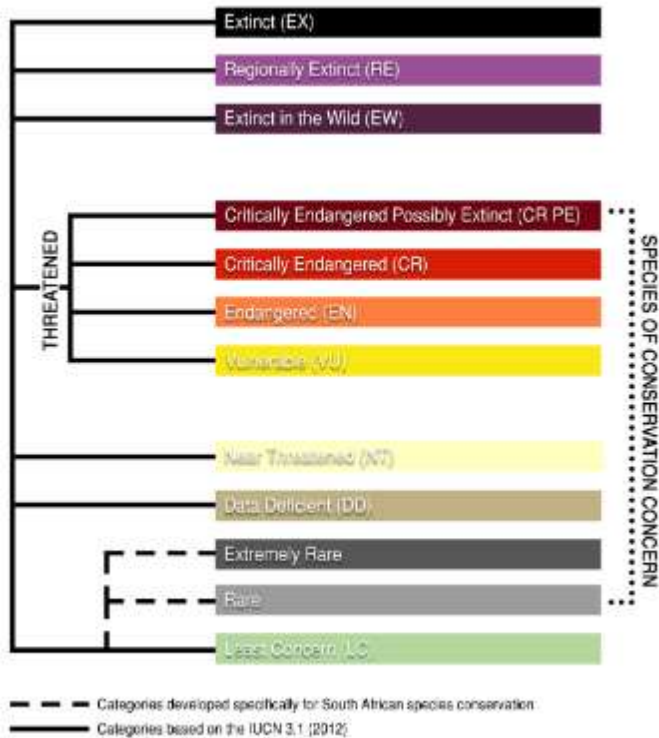


Figure 10: Categories of species of conservation concern (SCC) modified from the IUCN's extinction risk categories (reproduced in part from IUCN, 2012).

5.2 NEMBA Threatened or Protected Plant Species (TOPS)

Chapter 4, Part 2 of the National Environmental Management: Biodiversity Act (No. 10 of 2004), (NEMBA) provides for listing of plant and animal species as threatened or protected. If a species is listed as threatened, it must be further classified as Critically Endangered, Endangered or Vulnerable. These species are commonly referred to as TOPS listed. The Act defines these classes as follows:

- Critically endangered species: any indigenous species facing an extremely high risk of extinction in the wild in the immediate future.
- Endangered species: any indigenous species facing a high risk of extinction in the wild in the near future, although it is not a critically endangered species.
- Vulnerable species: any indigenous species facing an extremely high risk of extinction in the wild in the medium-term future; although it is not a critically endangered species or an endangered species.
- Protected species: any species which is of such high conservation value or national importance that it requires national protection. Species listed in this category will include, among others, species listed in terms of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

Certain activities, known as 'Restricted Activities', are regulated on listed species using permits by a special set of regulations published under the Act. Restricted activities regulated under the act are keeping, moving, having in possession, importing, and exporting, and selling. The first list of threatened and protected species published under NEMBA was published in the government gazette on the 23rd of February 2007 along with the Regulations on Threatened or Protected Species.

The plant *Harpagophytum procumbens* (devil's claw) are present in the project area and are highly likely to be present on the site. This species is listed as a protected medicinal plant.

5.3 Provincially Protected Plants

Several plants are provincially protected by the Limpopo Environmental Management Act 2003 (Act 7 of 2003). These plants are not to be removed, damaged, or destroyed without a permit from the Limpopo Department of Economic Development Environment and Tourism.

Several provincially protected plant species are likely present in the area, including *Spirostachys africana* (tamboti) and succulent species such as *Orbea*, *Duvhlaia* species, and *Brachystema*.

If these plants are pruned, damaged, or removed for the any activities related to actual prospecting, a permit to do so must be obtained from the Limpopo Department of Economic Development Environment and Tourism.

5.4 National Protected Trees

The National Forest Act, 1998 (Act No. 84 of 1998) enforces the protection of several indigenous trees. The removal, thinning or relocation of protected trees will require a permit from the Department of Agriculture, Land Reform and Rural Development (DALRD, formerly Agriculture, Forestry and Fisheries) ((Notice of the List of Protected Tree Species under the National Forests Act, 1998 (ACT NO 84 OF 1998), Notice 536 of 2018, Government Gazette, 7 September 2018). The following table lists the protected trees that were recorded within the prospecting area during the site verification.

Table 3: National protected trees recorded and likely to occur

Species name	Common name
<i>Sclerocarya birrea</i> subsp <i>caffra</i>	Morula
<i>Combretum imberbe</i>	Leadwood
<i>Boscia albitrunca</i>	Shepherds' tree
<i>Adansonia digitata</i> (Planted around historic homestead (Mr Langa, perss comm))	Baobab

6. COMPLIANCE STATEMENTS

6.1 Biodiversity (vegetation) compliance statement

The desktop assessment of the available information and site verification results indicated that about half of the vegetation within the prospecting rights area were modified or in a semi-natural state. Modified and built-up areas were irreversibly modified from the reference state of Makhado Sweet Bushveld. The vegetation is modified as the ecological function has been compromised in addition to structure and composition (SANBI, 2016). Such areas are in a poor ecological condition and of a low sensitivity to development. Such areas do not pose a constraint to prospecting.

Degraded and secondary vegetation are moderately modified systems in which some of the ecological function is maintained even though the vegetation composition and structure have been compromised (SANBI, 2016). Such areas are in a poor to fair ecological condition and of a low sensitivity to prospecting. However, protected tree species may be present and should be avoided by any related activities, or a permit for their removal / pruning should be applied for. Most types of development can proceed within these areas with little to no impact on conservation worthy vegetation. Edge effects to other proximate sensitivity classes must be mitigated / prevented.

Remaining Makhado Sweet Bushveld are in a semi-natural state. The ecological function is maintained while the vegetation composition and structure are largely intact. Furthermore, this vegetation unit is classified as Vulnerable. The bushveld is considered as medium sensitivity to prospecting, provided that large tracks of this group is not cleared.

The bushveld vegetation on the rocky hills is in a natural state and in a very good ecological condition. These areas include a high species diversity and the structure, composition and function remain intact (SANBI, 2016). This vegetation group is also the most likely to support plant species of conservation concern (Appendix B).

Watercourses are protected environments (National Water Act 36 of 1998). Although most of the vegetation along the drainage lines were impacted on and degraded, the vegetation retains an important functional role, while species composition and structure are comprised, particularly where drainage lines are in proximity to urban areas.

Both these vegetation groups should be considered sensitive and if any prospecting takes place, this should be localised and limited in footprint. The footprint areas must be ground-truthed for plant species of conservation concern and national protected tree species prior to commencement of any activities.

From a vegetation perspective, this report agrees with the screening tool report results that indicates the modified, degraded and secondary vegetation of low sensitivity. However, rocky bushveld and

watercourses are areas of high sensitivity, and the screening tool only shows high sensitivity along the Mohlosane River and areas that include remaining Makhado Sweet Bushveld.

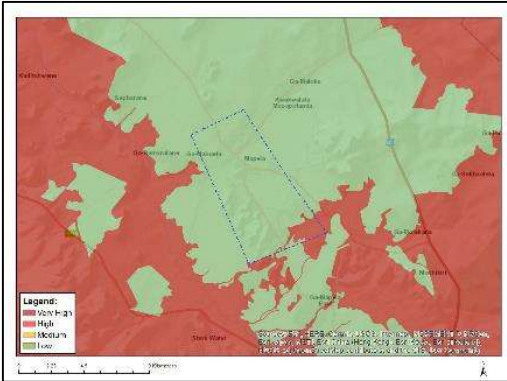
6.2 Plant species compliance statement

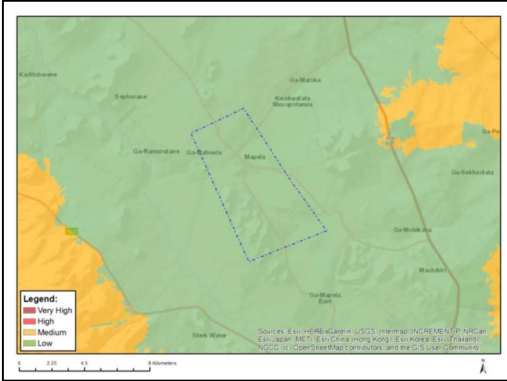
The site is classified by the national screening tool report as low sensitivity for sensitive plant species, indicating that the site is unlikely to support plant species of conservation concern (Table 4). However, this report shortlisted eight (8) such plant species that was historically recorded in the region that the prospecting rights area is situated in. Suitable habitat for these species is present in the rocky bushveld vegetation, as well as along drainage lines (Appendix B). Therefore, this report found that portions of the site are rather of a medium plant species sensitivity. These areas should be searched and classified as high or low, depending on whether plant species of conservation concern are recorded.

7. SUMMARY OF DESKTOP VERIFICATION VS SCREENING TOOL RESULTS

The following table summarises the report findings and compares it to the screening tool results.

Table 4: Summary of desktop assessment and site verification

SCREENING TOOL SENSITIVITY	DESKTOP PRELIMINARY SENSITIVITY	OUTCOME STATEMENT/PLAN OF STUDY	RELEVANT SECTION MOTIVATING VERIFICATION
DESKTOP VEGETATION IMPACT ASSESSMENT			
<p style="text-align: center;">Low for most of the entire site Very high in southeastern corner</p> 	<p>Low: Modified land, degraded and secondary bushveld</p> <p>Medium to low: Near-natural Makhado Sweet Bushveld</p> <p>High: Rocky bushveld Vegetation along drainage lines</p>	<p>From a vegetation perspective, this report agrees with the screening tool report results that indicates the modified, degraded and secondary vegetation of low sensitivity. However, rocky bushveld and watercourses are areas of high sensitivity, and the screening tool only shows high sensitivity along the Mohlosane River and areas that include remaining Makhado Sweet Bushveld. The screening tool states this area to be a CBA, however, the Limpopo Conservation Plan does</p>	<p>Section 4.2 Figure 9 & 11 Conclusion</p>

SCREENING TOOL SENSITIVITY	DESKTOP PRELIMINARY SENSITIVITY	OUTCOME STATEMENT/PLAN OF STUDY	RELEVANT SECTION MOTIVATING VERIFICATION
not indicate a CBA within the prospecting rights area			
DESKTOP PLANT SPECIES IMPACT ASSESSMENT			
<p style="text-align: center; color: green;">Low for entire site</p> 	<p>Medium Rocky bushveld and vegetation along drainage lines are suitable habitat for plant species of conservation concern and in the absence of a plant species assessment, this report disagrees with the low sensitivity rating of the screening tool. this sensitivity</p> <p>Low sensitivity areas correspond largely to the desktop delineated modified land, and secondary and degraded bushveld and are unlikely to support plant species of conservation concern</p>	<p>This report shortlisted eight (8) sensitive plant species that was historically recorded in the region that the prospecting rights area is situated in. Suitable habitat for these species is present in the rocky bushveld vegetation, as well as along drainage lines. Therefore, this report found that portions of the site are rather of a medium plant species sensitivity. These areas should be searched and classified as high or low, depending on whether plant species of conservation concern are recorded.</p>	<p>Section 5.1 Figure 11 Appendix B Conclusion</p>

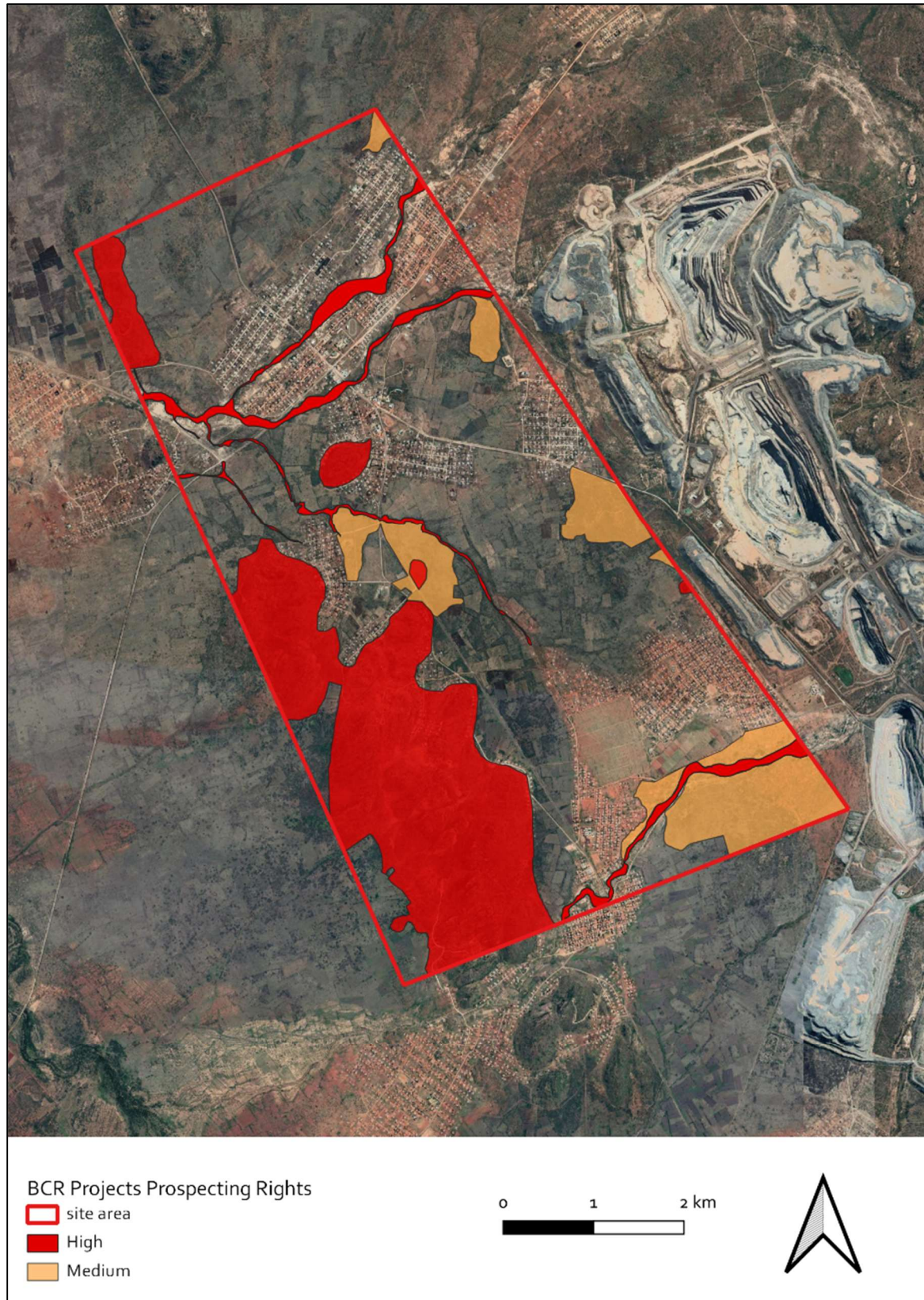


Figure 11: Sensitive areas within the prospecting rights area, based on desktop assessment and site verification

8. REASONED OPINION FOR ISSUING AN ENVIRONMENTAL AUTHORISATION

Due to the historical disturbances and increase in residential infrastructure, most vegetation within the prospecting area was modified from the reference state of Makhado Sweet Bushveld. Natural vegetation was recorded on the higher lying rocky outcrops within the western portion of the site, while some natural vegetation remains along drainage lines.

The desktop assessment of the available information and site verification results indicated that about half of the vegetation within the prospecting rights area were modified or in a semi-natural state. Some remnant Makhado Sweet Bushveld is in a semi-natural state as its ecological function is maintained while the vegetation composition and structure are largely intact. The Makhado Sweet Bushveld is considered as medium sensitivity to prospecting, provided that large tracks of this group are not cleared.

The bushveld vegetation on the rocky hills is in a natural state and in a very good ecological condition. These areas include a high species diversity and the structure, composition and function remain intact. This vegetation group is also the most likely to support plant species of conservation concern. Although most of the vegetation along the drainage lines were impacted on and degraded, the vegetation retains an important functional role, while species composition and structure are comprised, particularly where drainage lines are in proximity to urban areas.

This report agrees with the national web-based screening tool results, in that about half of the prospecting area are of low terrestrial (vegetation) sensitivity, with a high sensitivity in the south-western corner. However, this report disagrees with the low sensitivity rating along the western boundary as these areas comprise rocky hills and natural bushveld vegetation. Higher lying areas will increasingly become refuge for biodiversity due to the increasing urbanised landscape and climate change.

Although the prospecting rights area is classified by the national screening tool report as low sensitivity for sensitive plant species, this report shortlisted eight (8) such plant species that was historically recorded in the region that the prospecting rights area is situated in. Suitable habitat for these species is present in the rocky bushveld vegetation, as well as along drainage lines (Appendix B). Therefore, this report found that portions of the site are rather of a medium plant species sensitivity. These areas should be searched and classified as high or low, depending on whether plant species of conservation concern are recorded.

This assessment found that the vegetation within the PAOI does not pose a constraint for the application of prospecting rights. However, if any prospecting is undertaken, areas indicated as medium and high sensitivity must be assessed for sensitive vegetation groupings and plant species of conservation concern.

For ease of reference, the following table summaries results of the assessment as per the main requirements of the Protocols for Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial (Vegetation) Biodiversity as published on 20 March 2020.

Summary of the main terrestrial (vegetation) biodiversity findings

Biodiversity (vegetation) aspect	Result
Protected Areas	The Rossouw Snyman Private Nature Reserve is about 20km south of the site.
Limpopo Biodiversity Assessment and Conservation Plan:	<p>The site stretches over Other Natural Areas, and areas listed as having No Natural Habitat. A small Ecological Support Area 2 is present on the north-western boundary of the site. Contrary to the screening tool results, no Critical Biodiversity Area (CBA) are present within the prospecting rights area. The screening tool results show an area of high sensitivity on the south-eastern extent, triggered by a CBA.</p> <p>Impact on species composition and structure of vegetation</p> <p>At the time of writing this report, the project entailed Non-invasive prospecting and thus no activities were proposed. The project aims to secure the prospecting rights based on already available information. Therefore, no impact is expected on species composition and structure.</p>
Listed ecosystems	According to the 2011 Listed Ecosystems, the site is not situated within a Listed Ecosystems published in terms of the National Environmental Management: Biodiversity Act (Act 10 of 2004) in 2011. Also, the recent National Biodiversity Assessment 2018 which represents an update of the assessment of threat status for terrestrial ecosystems, classified the Makhado Sweet Bushveld ecosystems as Least Concern, albeit poorly protected.
Strategic Water Source Areas (SWSA):	The project is not located within a Strategic Water Source Area.
National Freshwater Ecosystem Priority Area (NFEPA)	See wetland / aquatic assessment
Indigenous forest:	Not applicable
Preliminary sensitive vegetation	<ul style="list-style-type: none"> • Rocky bushveld • Remaining Makhado Sweet Bushveld • Vegetation along drainage lines
Plant species of conservation concern	Suitable habitat for eight (8) species of conservation concern are present in the region that the prospecting rights area situated.
Main impacts expected:	<ul style="list-style-type: none"> • None are expected
Cumulative impacts:	<ul style="list-style-type: none"> • Eventual prospecting and mining

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SANBI databases: <http://posa.sanbi.org/searchspp.php> / <http://SIBIS.sanbi.org>

SANBI Threatened Species Programme <http://redlist.sanbi.org/>

10. GLOSSARY

Alien species	Plant taxa in a given area, whose presence there, is due to the intentional or accidental introduction as a result of human activity
Azonal	Water-logged and salt-laden habitats require specially adapted plants to survive in these habitats. Consequently the vegetation deviates from the typical surrounding zonal vegetation and are considered to be of azonal character (Mucina & Rutherford, 2006)
Biodiversity	Biodiversity is the variability among living organisms from all sources including inter alia terrestrial, marine and other aquatic ecosystems and ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems
Biome	A major biotic unit consisting of plant and animal communities having similarities in form and environmental conditions, but not including the abiotic portion of the environment.
Buffer zone	A collar of land that filters edge effects.
Conservation	The management of the biosphere so that it may yield the greatest sustainable benefit to present generation while maintaining its potential to meet the needs and aspirations of future generations. The wise use of natural resources to prevent loss of ecosystems function and integrity.
Conservation concern (Plants of...)	Plants of conservation concern are those plants that are important for South Africa’s conservation decision making processes and include all plants that are Threatened (see Threatened), Extinct in the wild, Data deficient, Near threatened , Critically rare, Rare and Declining . These plants are nationally protected by the National Environmental Management: Biodiversity Act. Within the context of these reports, plants that are provincially protected are also discussed under this heading.
Conservation status	An indicator of the likelihood of that species remaining <u>extant</u> either in the present day or the near future. Many factors are taken into account when assessing the conservation status of a species: not simply the number remaining, but the overall increase or decrease in the population over time, breeding success rates, known threats, and so on
Conservation Importance	The importance of a site for supporting biodiversity features of conservation concern present e.g. populations of IUCN Threatened and Near-Threatened species (CR, EN, VU & NT), Rare, range-restricted species, globally significant populations of congregatory species, and areas of threatened ecosystem types, through predominantly natural processes.
Community	Assemblage of populations living in a prescribed area or physical habitat, inhabiting some common environment.

Critically Endangered	A taxon is Critically Endangered when it is facing an extremely high risk of extinction in the wild in the immediate future.
Data Deficient	There is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status. However, “data deficient” is therefore not a category of threat. Listing of taxa in this category indicates that more information is required and acknowledges the possibility that future research will show that threatened classification is appropriate.
Declining	A taxon is declining when it does not meet any of the five IUCN criteria and does not qualify for the categories Threatened or Near Threatened, but there are threatening processes causing a continuous decline in the population (Raimondo <i>et al</i> , 2009).
Ecological Corridors	Corridors are roadways of natural habitat providing connectivity of various patches of native habitats along or through which faunal species may travel without any obstructions where other solutions are not feasible
Ecosystem	Organisms together with their abiotic environment, forming an interacting system, inhabiting an identifiable space
Edge effect	Inappropriate influences from surrounding activities, which physically degrade habitat, endanger resident biota and reduce the functional size of remnant fragments including, for example, the effects of invasive plant and animal species, physical damage and soil compaction caused through trampling and harvesting, abiotic habitat alterations and pollution
Endangered	A taxon is Endangered when it is not Critically Endangered but is facing a very high risk of extinction in the wild in the near future
Endemic	Naturally only found in a particular and usually restricted geographic area or region
Exotic species	Plant taxa in a given area, whose presence there, is due to the intentional or accidental introduction as a result of human activity
Forb	An herbaceous plant other than grasses.
Habitat	Type of environment in which plants and animals live
Indigenous	Any species of plant, shrub or tree that occurs naturally in South Africa
In Situ	“In the place” In Situ conservation refers to on-site conservation of a plant species where it occurs. It is the process of protecting an endangered plant or animal species in its natural habitat. The plant(s) are not removed, but conserved as they are. Removal and relocation could kill the plant and therefore in situ conservation is preferred/ enforced.
Invasive species	Naturalised alien plants that have the ability to reproduce, often in large numbers. Aggressive invaders can spread and invade large areas

Koppie	South African term for hill.
Mitigation	The implementation of practical measures to reduce adverse Impacts
Near Threatened	A Taxon is Near Threatened when available evidence indicates that that it nearly meets any of the five IUCN criteria for Vulnerable, and is therefore likely to qualify for a threatened category in the near future (Raimondo <i>et al</i> , 2009).
Plant Community	A collection of plant species within a designated geographical unit, which forms a relatively uniform patch, distinguishable from neighbouring patches of different vegetation types. The components of each plant community are influenced by soil type, topography, climate and human disturbance. In many cases there are several soil types within a given plant community (Gobbat <i>et al</i> , 2004)
Protected Plant	According to Provincial Nature Conservation Ordinances or Acts, no one is allowed to sell, buy, transport, or remove this plant without a permit from the responsible authority. These plants are protected by provincial legislation.
Threatened	Species that have naturally small populations, and species which have been reduced to small (often unsustainable) population by man’s activities
Red Data	A list of species, fauna and flora that require environmental protection - based on the IUCN definitions. <i>Now termed Plants of Conservation Concern</i>
Species diversity	A measure of the number and relative abundance of species
Species richness	The number of species in an area or habitat
Threatened	Threatened Species are those that are facing a high risk of extinction, indicated by placing in the categories Critically Endangered (CR), Endangered (E) and Vulnerable (VU) (Raimondo <i>et al</i> , 2009)
Transformation	The removal or radical disturbance of natural vegetation, for example by crop agriculture, plantation forestry, mining or urban development. Transformation mostly results in a serious and permanent loss of biodiversity and fragmentation of ecosystems, which in turn lead to the failure of ecological processes. Remnants of biodiversity may survive in transformed landscapes
Vegetation Association	A complex of plant communities ecologically and historically (both in spatial and temporal terms) occupying habitat complexes at the landscape scale. Mucina and Rutherford (2006) state: “Our 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 floristic composition”.
Vulnerable	A taxon is Vulnerable when it is not Critically Endangered or Endangered but meets any of the five IUCN criteria for Vulnerable and are therefore facing a high risk of extinction in the wild in the future (Raimondo <i>et al</i> , 2009)

APPENDIX A: SAMPLE TRACK AND POINTS



APPENDIX B: PLANTS OF CONSERVATION CONCERN

The following species has a possibility of occurring within the greater study area.

Species	Conservation status	Habitat	Likelihood of occurrence on the site or surrounds
<i>Drimia elata</i>	Data deficient (Taxonomic problems)	Varied habitat - rocky grassland	Could be present in remaining natural vegetation and at rocky areas on the hills and koppies, particularly in the south-western quadrant of the site
<i>Indigofera leendertziae</i>	Data deficient (Taxonomic problems)	Unknown	Could be present within remaining natural vegetation
<i>Myrothamnus flabellifolius</i>	Data deficient (Taxonomic problems))	Habitat comprises shallow soil over rock, crevices and rocky hillsides in full sun	Could be present at rocky areas on the ridges and koppies within the site
<i>Stenostelma umbelluliferum</i>	Near Threatened	This plant's habitat is limited to deep black turf mainly near drainage lines on vertic soils with high clay content in grassland or savanna	Potential to occur in the clay soils through much of the site. The specialist has noted this species in secondary vegetation before, and therefore the secondary bushveld could also likely support this species.
<i>Adenia fruticosa</i>	Near Threatened	Arid woodland, rocky outcrops, slopes and sandy flats, on dolomite, granite and quartzite, 800-1400 m.	This species is likely present in the rocky hills within the south-western quadrant of the site.
<i>Brachystelma hirtellum</i>	Near Threatened	Bushveld	Could be present in remaining semi-natural and natural vegetation within the study area
<i>Dicliptera fruticosa</i>	Near Threatened	Savanna and open woodland, shady areas on rocky magnetite and dolomite slopes.	Could be present in remaining natural vegetation and particularly rocky areas on the ridges and koppies.
<i>Ophioglossum gracillimum</i>	Endangered	Seasonally moist areas in open deciduous woodland	Could be present in remaining natural vegetation along drainage lines and rivers. This species is small and very rare.

APPENDIX C: SPECIALIST CV

Curriculum Vitae

Antoinette Eyssell-Knox

Personal Information Summary

Name: Antoinette Eyssell-Knox
Highest qualification: MSc Environmental Science (2010), University of Pretoria
Professional membership: SACNASP Pr Sci Nat (400019/11) Ecological Science
Company: Dimela Eco Consulting
Contact details: Antoinette@dimela-eco.co.za
Tel 083 642 6295

Professional Experience

1. Environmental Management:

I have been working in the field of environmental management as a vegetation specialist since the year 2007 (11 years). I have been self-employed since November 2011.

Nov 2011 – current: Dimela Eco Consulting
Sep 2007 – Nov 2011: Strategic Environmental Focus (SEF)

Main field of work and experience include:

- Vegetation assessments, overviews or scans;
- Strategic ecological assessments;
- Ecological management, rehabilitation- and biodiversity action plans (including alien vegetation management);
- Specialist input: Gauteng and North-West Outlook Reports, ecological conditional requirements for Green Star rating;
- Ground-truthing of vegetation related data;
- Review of ecological reports; and
- Mentoring.

2. Environmental Education:

2011 – current: Writer of the ecology feature for the bimonthly Supernova Kids Magazine
Aug 2003 – Sep 2007: Snr Environmental Education Officer, South African National Biodiversity Institute (SANBI), Pretoria National Botanical Garden

3. Horticulture

Jun – Jul 2003: Horticultural Trainer, 7 Shaft Training Centre, Johannesburg
May 1997 – Mar 2002: Horticulturist, Pretoria National Botanical Garden (then NBI, now SANBI)

Qualifications

- M.Sc Environmental Science, University of Pretoria (2010)
Dissertation: *Land cover change and its effect on future land uses*
- B. Sc (Hons) Horticulture, University of Pretoria (1999-2000)
Dissertation: *Horticultural uses of the indigenous Barleria species*
- B. Sc (Agriculture) Horticulture, University of Pretoria (1993-1996)

Memberships and Affiliations

SACNASP: Registered as a Professional Natural Scientist in the field of ecology since 2011 (Reg no 400019/11)
Botsoc: Member of the Botanical Society of Southern Africa since 2013

Course History

2018: Asteraceae Identification Course
2015: SAGIC Invasive Species Consultant Training
2012: Tools for Wetland Assessment (Rhodes University – September 2012)
2012: Landscape Functional Assessment, introductory workshop with David Tongway and Prof Klaus Kellner (North West University)
2012: Soil Classification and Wetland Delineation (Terra Soil)
2007: ISO 14000 Advanced EMS Auditors Course (SGS & University of Pretoria)
2007: Introduction into Forestry Stewardship Council (FSC) (University of Pretoria)
2006: Permaculture training course (S.E.E.D)
2005: Project Management Course (Wildlife and Environment Society of South Africa (WESSA) Umgeni Valley)
2004: Grass and plant identification courses

Presentations

July 2007: Environmental Education in a changing world, World Environmental Education Conference (WEEC), Durban
Sept 2006: Environmental Education, BGCI Conference, Oxford England

Selected Project Experience (2011 onwards)

1. Provincial Environmental Outlook Reports

2017-2018: Vegetation input: Gauteng Outlook Report
in process: Vegetation input: North-West Outlook Report

2. Open Space Planning

Nov 2015: The proposed Kaalspruit Open Space Project, Thembisa, Gauteng. Kaalspruit River Rehabilitation Biodiversity Scan: (NuLeaf Planning and Environmental)

2015-2016: City of Johannesburg Open Space Planning – vegetation input for Linbro Park, Bassonia, Kyalami and Ruimsig areas (Iggdrasil)

3. Management- and Rehabilitation Plans

April-May 2012: Vegetation base line study and input into Biodiversity Action Plan for Kumba Iron Ore (Lidwala Consulting Engineers)

Jan 2015: Environmental Management Plan for the Krugersdorp Nature Reserve – vegetation section

Jan 2016: Tharisa Mine Railway Line – Vegetation rehabilitation plan (Limosella Consulting)

Sept 2016: General vegetation rehabilitation plan for the proposed Mezo Kitchens Panel Processing Facility (Shangoni)

Nov 2016: General Ecological Rehabilitation and Monitoring Plan for the N4 additional lane between: R52 Koster offramp & D1325 Marikana Interchange; and The R512 (Brits West Interchange) & K67 (Ga-Rankuwa Interchange) North West and Gauteng Provinces

Nov 2016: Biodiversity Management Plan: Afrisam (Sa) (Pty) Ltd, Dudfield Cement – vegetation input

June 2017: Rehabilitation planning for the Klip- Lower and Upper Rietspruit Water Management Units (Pregio, via Limosella Consulting)

Dec 2017: Eskom underground cable river crossings – vegetation input into rehabilitation plants (Envirolution)

4. Linear Infrastructure

March 2012: Kranspoort road upgrade Protected tree identification (Lidwala Consulting Engineers)

Oct 2012: Eskom: Perseus to Gamma Vegetation assessment (Mokgope Consulting)

March 2013: Diepsloot Eskom line and substation, Johannesburg (Envirolution)

Nov 2013: Masa Ngwedi 750kV and 400kV lines (Limpopo & North-West Provinces) Section D & E Vegetation Input for EMP (Mandara Consulting)

2013-2014 Eskom: Northern Alignments (Perseus in the Northern Cape to Juno in the Western Cape) (Mokgope Consulting)

Feb 2014: Meteor substation, as well as the 88kV line between the Pulsar, Meteor and Sonland substations, Sebokeng, (Nsovo Environmental Consulting)

Dec 2014: Upgrading of Internal Roads in Stinkwater, Hammanskraal (Gauteng) (GladAfrica)

Sept 2015: Railway Siding for GCMC Open Cast Mine, Lephalale (Limpopo)

Feb 2016: N4 - Additional lane between Brits and Rustenburg (Environamic)

Nov 2016: Aggeneis-Paulputs 400kV Powerline and Substations Upgrades

Feb 2017: Proposed Lulamisa to Diepsloot East to Blue Hills to Crowthorne 88kv Power Line / Cable and 2 Substations Gauteng (Envirolution)

May 2017: Proposed 132 kV Powerline Between Fochville Municipal Substation and an Existing Line, Gauteng Province (Envirolution)

5. Solar Developments

January 2012: Schmidtsdrift, Northern Cape Vegetation Assessment for Solar Panels (Nuleaf)

Aug 2015: Proposed Construction of A 75mw Solar Energy Facility Project, Limpopo Tshikovha Environmental and Communication Consulting

6. Mining

- April 2012: Rietfontein Open Cast Vegetation assessment (Cabanga Concepts)
- Jan 2013: Vierfontein Colliery Vegetation assessment and EMP input (Cabanga Concepts)
- Jan 2017: G&W Base and Industrial Minerals Koppies Betonite Mine Vegetation Assessment & Management Input Report (Cabanga Concepts)

7. Other Development

- Dec 2013: Marekele Bush camp – vegetation & fauna assessments (NuLeaf)
- May 2013: Komati Power Station – Coal stockyard (Envirolution)
- April 2014: Blesboklaagte & Leeupoort Township development (Shangoni)
- May 2014: Goldi Farm Composting Site, Section 24G Fauna and Flora assessment and Summary document (Shangoni)
- Feb 2015: TOPIGS: Proposed Piggery, Mpumalanga (Shangoni)
- May 2015: Kwaggasrant Recycling Facility Upgrade (Shangoni)
- Oct 2016: Proposed piggery on portion 139 of the farm Honingnestkrans 269JR Vegetation and Fauna investigation (Methale Environmental Consulting)
- Oct 2017: Ongoing Clinic Development & Proposed Emergency Medical Services Facility on Prt 79 of the farm De Wagendrift 417 JR Gauteng Province. (Methale Environmental Consultants)

8. Plant relocation and monitoring

- April 2014: Relocation of *C bulbipermum*, overlooked Colliery in Mpumalanga (Cabanga Concepts)
- Feb 2017: Monitoring report for the relocated *Crinum bulbispermum* at Overlooked Colliery
- May 2017: Relocation of protected plant species: Evander Mine

9. International:

- Oct 2009: Tatu, Nairobi: Vegetation Assessment (Kenya) (Lokisa Environmental Consulting)
- Sept 2014: Vegetation input to the Regional Environmental and Social Assessment of Coal-based Energy Projects along the South Africa- Botswana Border (World bank Project, Mott MacDonald)

10. Mentorship:

- May 2017: Technical Peer Review of the vegetation section for the Emfuleni Bulk Water Supply Pipelines: Ecological Assessment. GIBB Engineering & Architecture (Pty) Ltd
- Nov 2017: Mentorship and Technical Peer Review of the vegetation section for the Merensky-Kennedy Powerline: vegetation assessment GIBB Engineering & Architecture (Pty) Ltd