

**PALAEONTOLOGICAL DESKTOP ASSESSMENT OF THE PROPOSED WATER USE LICENCE
APPLICATION FOR THE TAU LEKOA GOLD MINING COMPANY (PTY) LTD**

Compiled for:

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EXECUTIVE SUMMARY

Tau Lekoa Gold Mining Company (Pty) Ltd appointed Environmental Impact Management Services (Pty) Ltd (EIMS) to apply for a Water Use License (WUL) for the existing Tau Lekoa mine. According to the National Heritage Resources Act (Act No 25 of 1999, Section 38), a palaeontological impact assessment is required to identify the occurrence of fossil material within the proposed development footprint and to calculate the impact of the construction and operation (although minimal) of the proposed project on the palaeontological resources.

The proposed development footprint of the Water Use Licence application is completely underlain by the Rietgat Formation, Platberg Group and Ventersdorp Supergroup as well as the Vryheid Formation of the Ecca Group (Karoo Supergroup). Fossil heritage in the Rietgat Formation consist of unicellular organisms and stromatolites. According to the SAHRIS PalaeoMap the Rietgat Formation has a moderate palaeontological sensitivity and only requires a detailed desktop study. However, the Vryheid Formation of the Ecca Group has a high palaeontological sensitivity (see SAHRIS PalaeoMap) and a site visit is recommended for developments in this formation. Regardless of the rare and periodic occurrence of fossils in this biozone a single fossil can have a huge scientific importance as many fossil taxa are known from a single fossil.

As an EIA is not in the scope of this development it is recommended that a professional palaeontologist visit the proposed development site of the powerlines and PCD, after initial ground clearance has been completed to evaluate the presence of fossils in the development footprint. In the event of fossils being present at the proposed development site the necessary application for the relevant permits must be obtained from SAHRA

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2 INTRODUCTION

Tau Lekoa Gold Mining Company (Pty) Ltd appointed Environmental Impact Management Services (Pty) Ltd (EIMS) to apply for a Water Use Licence (WULA) for the existing Tau Lekoa mine. The mine comprises of the Tau Lekoa Section (situated on portions 27 and 31 of the farm Goedgenoeg 433 IP and farm Boshhoek 466), approximately ~6 km southwest of Orkney, North-West Province, and the neighbouring Weltevreden Section (located on Farm Weltevreden 130 and farm Jonkerskraal 475), in the Free State Province (Fig. 1-2). When the mine was purchased by Tau Lekoa Gold Mining Company (Pty) Ltd. from Buffelsfontein Gold Mines Limited, the WUL to the affected properties was discarded and thus a new WUL is necessary. The Tau Lekoa mine is an active mine, while the existing Weltevreden Section is presently flooded and it is necessary that it is dewatered for future operations.

Mining activities are conducted at depths between 800 metres to 1,743 metres and operations involve underground mining of the Ventersdorp Contact Reef (VCR). A twin-shaft system is used, with seven shaft levels at an average of 70 panels during operation. Due to the geologically complex orebody present at Tau Lekoa Mine, mining is conducted through a scattered mining method where orebody is accessed via footwall tunnelling while stoping is placed on strike. Underground gold ores are mined through drill, blast and water jetting/scraping narrow reef mining systems that make use of hydropower as a means of drilling and primary ore movement.

Ore mined at the Tau Lekoa Mine is processed and treated in preparation for gold extraction at the Nicolor South plant located at Stilfontein. Tau Lekoa has mined reserves on farm Goedgenoeg and Jonkerskraal. But it is now necessary for an extension of the underground operations on farm Jonkerskraal and commencement of operations on farm Weltevreden to prolong the life of mine. The extension of the life of mine automatically converts to sustained jobs of the existing mine employees and contractors, and the creation of new jobs and contracts, and thus in the long run contributes to the country's Gross Domestic Product (GDP) of South Africa.

2.1 LEGISLATION

NATIONAL HERITAGE RESOURCES ACT (ACT 25 OF 1999)

Cultural Heritage in South Africa, includes all heritage resources, is protected by the National Heritage Resources Act (Act 25 of 1999). Heritage resources as defined in Section 3 of the Act include **“all objects recovered from the soil or waters of South Africa, including archaeological and**

palaeontological objects and material, meteorites and rare geological specimens”. Palaeontological heritage is unique and non-renewable and is protected by the above mentioned Act. Palaeontological resources may not be unearthed, moved, broken or destroyed by any development without prior assessment and without a permit from the relevant heritage resources authority.

This Palaeontological Environmental Impact Assessment forms part of the Heritage Impact Assessment (HIA) and adhere to the conditions of the Act. According to **Section 38**, an HIA is required to assess any potential impacts to palaeontological heritage within the development footprint.

ACCORDING TO SECTION 35 OF THE NATIONAL HERITAGE RESOURCES ACT 1999, DEALING WITH ARCHAEOLOGY, PALAEOLOGY AND METEORITES:

35. (1) Subject to the provisions of section 8, the protection of archaeological and palaeontological sites and material and meteorites is the responsibility of a provincial heritage resources authority: Provided that the protection of any wreck in the territorial waters and the maritime cultural zone shall be the responsibility of SAHRA.

(2) Subject to the provisions of subsection (8) (a), all archaeological objects, palaeontological material and meteorites are the property of the State. The responsible heritage authority must, on behalf of the State, at its discretion ensure that such objects are lodged with a museum or other public institution that has a collection policy acceptable to the heritage resources authority and may in so doing establish such terms and conditions as it sees fit for the conservation of such objects.

(3) Any person who discovers archaeological or palaeontological objects or material or a meteorite in the course of development or agricultural activity must immediately report the find to the responsible heritage resources authority, or to the nearest local authority offices or museum, which must immediately notify such heritage resources authority.

(4) No person may, without a permit issued by the responsible heritage resources authority—

(a) Destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;

(b) Destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;

(c) trade in, sell for private gain, export or attempt to export from the Republic any category of archaeological or palaeontological material or object, or any meteorite; or

(d) Bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assist in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites.

(5) When the responsible heritage resources authority has reasonable cause to believe that any activity or development which will destroy, damage or alter any archaeological or palaeontological site is under way, and where no application for a permit has been submitted and no heritage resources management procedure in terms of section 38 has been followed, it may—

(a) Serve on the owner or occupier of the site or on the person undertaking such development an order for the development to cease immediately for such period as is specified in the order;

(b) Carry out an investigation for the purpose of obtaining information on whether or not an archaeological or palaeontological site exists and whether mitigation is necessary;

(c) if mitigation is deemed by the heritage resources authority to be necessary, assist the person on whom the order has been served under paragraph (a) to apply for a permit as required in subsection (4); and (d) recover the costs of such investigation from the owner or occupier of the land on which it is believed an archaeological or palaeontological site is located or from the person proposing to undertake the development if no application for a permit is received within two weeks of the order being served.

(6) The responsible heritage resources authority may, after consultation with the owner of the land on which an archaeological or palaeontological site or a meteorite is situated, serve a notice on the owner or any other controlling authority, to prevent activities within a specified distance from such site or meteorite.

(7) (a) Within a period of two years from the commencement of this Act, any person in possession of any archaeological or palaeontological material or object or any meteorite which was acquired other than in terms of a permit issued in terms of this Act, equivalent provincial legislation or the National Monuments Act, 1969 (Act No. 28 of 1969), must lodge with the responsible heritage resources authority lists of such objects and other information prescribed by that authority. Any such object which is not listed within the prescribed period shall be deemed to have been recovered after the date on which this Act came into effect. (b) Paragraph (a) does not apply to any public museum or university. (c) The responsible authority may at its discretion, by notice in the *Gazette* or the *Provincial Gazette*, as the case may be, exempt any institution from the requirements of paragraph (a) subject to such conditions as may be specified in the notice, and may by similar notice withdraw or amend such exemption.

(8) An object or collection listed under subsection (7) — (a) Remains in the ownership of the possessor for the duration of his or her lifetime, and SAHRA must be notified who the successor is; and (b) must be regularly monitored in accordance with regulations by the responsible heritage authority.

HERITAGE RESOURCES MANAGEMENT

38. (1) Subject on the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as (a) the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300 m in length; (b) the construction of a bridge or similar structure exceeding 50 m in length; (c) any development or other activity which will change the character of a site—(i) exceeding 5 000 m² in extent; or (ii) involving three or more existing erven or subdivisions thereof; or (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority (d) the re-zoning of a site exceeding 10 000 m² in extent; (e) or any other category of development provided for in regulations by SAHRA or a Provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

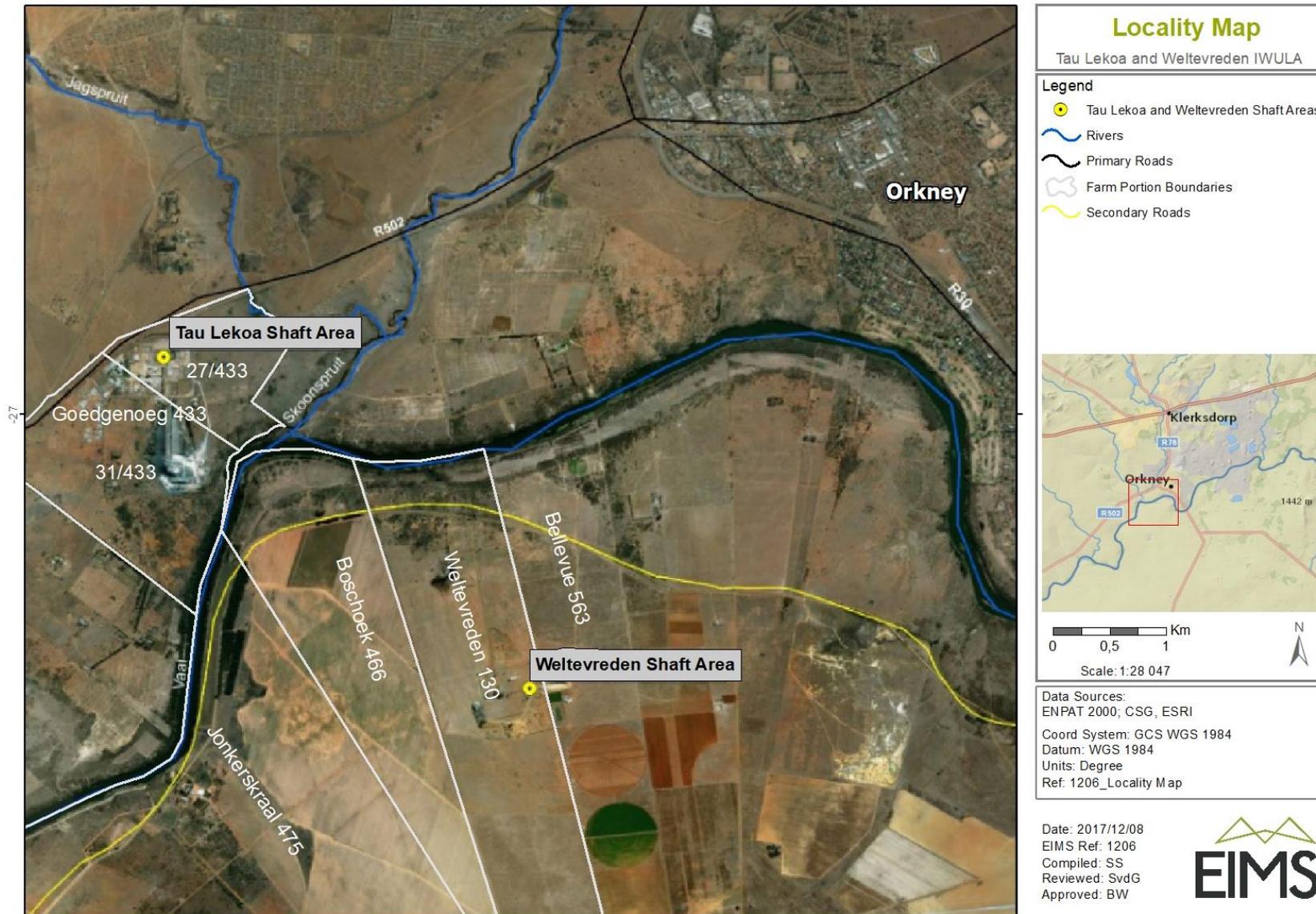


Figure 1. The location of the Tau Lekoa Mine. (Map provided by EIMS).

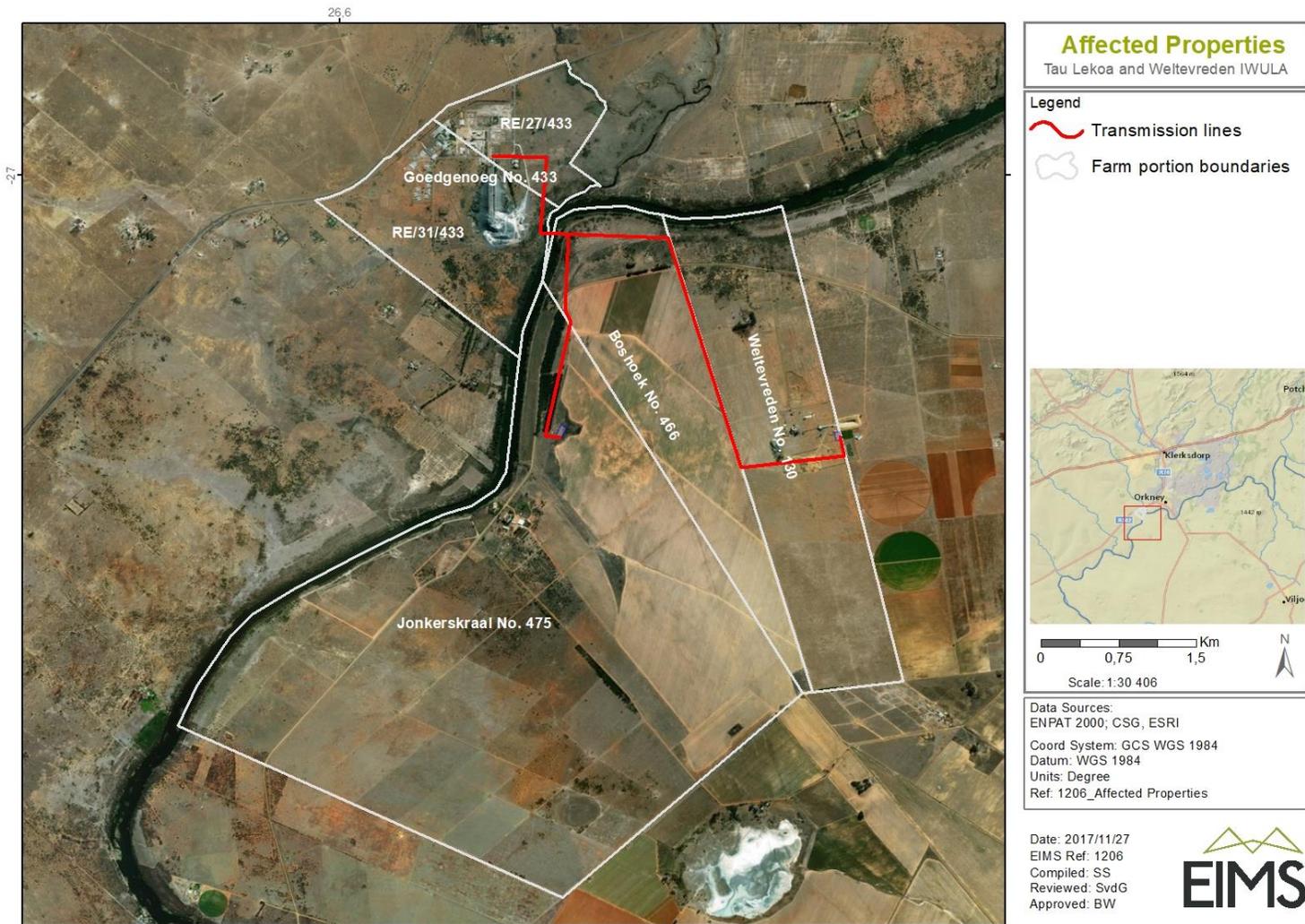


Figure 2. The location of the Tau Lekoa Mine (situated on portions 27 and 31 of the farm Goedgenoeg 433 IP and farm Boshoek 466), approximately ~6 km southwest of Orkney, North-West Province, and the neighbouring Weltevreden Section (located on Farm Weltevreden 130 and farm Jonkerskraal 475), in the Free State Province (Map provided by EIMS).

3 OBJECTIVE

The objective of a Palaeontological Impact Assessment, is to determine the impact of the mining operations (“the development”) on potential palaeontological material at the site.

According to the “SAHRA APM Guidelines: Minimum Standards for the Archaeological and Palaeontological Components of Impact Assessment Reports” the aims of the palaeontological impact assessment are: 1) to identify the palaeontological importance of the exposed and subsurface rock formations in the development footprint 2) to evaluate the palaeontological importance of the formations 3) to determine the impact of the development on fossil heritage; and 4) to recommend how the developer ought to protect or mitigate damage to fossil heritage.

When a palaeontological desktop study is conducted, the potentially fossiliferous rocks (i.e. groups, formations, etc.) present within the study area are established from geological maps. The topography of the development area is identified using 1:50 000 topography maps as well as Google Earth Images of the development area. Fossil heritage within each rock section is obtained from previous palaeontological impact studies in the same region, the PalaeoMap from SAHRIS; and databases of various institutions (identifying fossils found in locations specifically in areas close to the development area). The palaeontological importance of each rock unit of the development area is then calculated. The possible impact of the proposed development footprint on local fossil heritage is established on the following criteria: 1) the palaeontological importance of the rocks and 2) the type and scale of the development footprint and 3) quantity of bedrock excavated.

In the event that rocks of moderate to high palaeontological sensitivity are present within the study area, a field-based assessment by a professional palaeontologist is necessary. Based on the desktop data as well as a field examination of the sedimentary rock exposures, the impact significance of the planned development is measured with recommendations for any further studies or mitigation. Generally, destructive impacts on palaeontological heritage only occur during the construction phase. The excavations will transform the current topography and may destruct or permanently seal-in fossils at or below the ground surface. Fossil Heritage will then no longer be accessible for scientific research.

4 GEOLOGICAL AND PALAEOLOGICAL HERITAGE

The proposed development footprint of the Water Use Licence is completely underlain by the Rietgat Formation, Platberg Group and Ventersdorp Supergroup (Fig. 3-5). According to the SAHRIS PalaeoMap the Rietgat Formation has a moderate palaeontological sensitivity.

4.1 VENTERSDORP SUPERGROUP (3000 -2100 MILLION YEARS AGO)

After the stabilization of the Kaapvaal Craton a succession of four basins developed of which the Ventersdorp Supergroup was the second last to develop. This ancient Supergroup provides a remarkable volcano-sedimentary supracrustal record that comprises the largest and widespread volcanic rocks on the Kaapvaal Craton. The best exposures of the Ventersdorp Supergroup is in the North West Province, Northern Cape Province as well as Gauteng and southern Botswana. This Supergroup consists of the Kliprivierberg Group (oldest) which is overlain by the younger Platberg Group. The Platberg Group is divided into 6 Formations namely the Allanridge, Bothaville Rietgat, Makwassie Goedgenoeg and Kameeldoorns Formations (from youngest to oldest Formation).

Sediments of the Rietgat Formation consists mainly of lavas with minor metasediments (breccias, cherts, fluvial and lacustrine conglomerates, minor shales, and stromatolitic carbonates). These ancient rocks (Archaean and Proterozoic Eons) comprise of unicellular organisms such as cyanobacteria. To date none of these ancient fossils have been described from the North West Province, and thus any recording of these organisms will be very important.

Stromatolites are layered mounds, columns and sheet-like sedimentary rocks. These structures were originally formed by the growth of layer upon layer of cyanobacteria, a single-celled photosynthesizing microbe. Cyanobacteria are prokaryotic cells (simplest form of modern carbon-bases life). Stromatolites are first found in Precambrian rocks and are known as the earliest known fossils. The oxygen atmosphere that we depend on was generated by numerous cyanobacteria photosynthesizing during the Archaean and Proterozoic Era.

4.2 VRYHEID FORMATION

The Vryheid Formation is characterized by light grey, fine to coarse sandstone and siltstone sediments. The dark coloured siltstones can be accredited to the presence of carbon enrichment and coal beds. Deltaic mudrocks, sandstones and coastal and fluvial deposits are also present in this formation. These sediments were possibly deposited on a sandy shoreline beyond massive swamplands. In these swamps, plants accumulated and formed the coal deposits that are mined today (Johnson et al, 2006).

The Vryheid Formation (Ecca Group) is world renowned for the occurrence of coal beds formed by the accumulation of plant material. Bamford (2011) reported that only a small amount of data have been published on the potentially fossiliferous plant deposits of the Vryheid Formation and that most likely well preserved material are present around coal mines while in other areas the exposures are poor and of little interest. When plant fossils do occur they are usually abundant.

Plant fossils of the Vryheid Formation include *Azaniodendron fertile*, *Cyclodendron leslii*, *Sphenophyllum hammanskraalensis*, *Annularia sp.*, *Raniganjia sp.*, *Asterotheca spp.*, *Liknopetalon enigmata*, *Hirsutum sp.*, *Scutum sp.*, *Ottokaria sp.*, *Estcourtia sp.*, *Arberia sp.*, *Lidgettonia sp.*, *Noeggerathiopsis sp.*, *Podocarpidites sp* as well as more than 20 *Glossopteris* species). Lycopods, scarce ferns and horsetails, rich diversity of glossopterids, cordaitaleans, conifers and ginkgoaleans and rare fossil wood are present as well as diverse palynomorphs. In recent years plant fossils have been under-collected despite continuing mining activities.

Abundantly found trace fossils with a low diversity are also found in the Vryheid Formation as well as rare insects, possible conchostracans, non-marine bivalves and fish scales. This Formation is also characterised by its trace fossil assemblages of the non-marine *Mermia* Ichnofacies and insect fossils track ways. The *Mesosaurus* reptile may also be present.

5 GEOGRAPHICAL LOCATION OF THE SITE

The Tau Lekoa Section of the mine is located on portions 27 and 31 of the farm Goedgenoeg 433 IP and farm Boshhoek 466), approximately ~6 km southwest of Orkney, North-West Province, and the neighbouring Weltevreden Section (located on Farm Weltevreden 130 and farm Jonkerskraal 475), in the Free State Province (Fig. 1-2).

6 METHODS

A desktop study was conducted to assess the potential risk to palaeontological material (fossils and trace fossils) in the proposed area of development. When writing the desktop report the author's experience, topographical and geological maps, aerial photos (using Google Earth, 2017), and other reports from the same area were used to assess the proposed new infrastructure.

6.1 ASSUMPTIONS AND LIMITATIONS

The accurateness of Palaeontological Desktop Impact Assessments as part of heritage impact assessments are restricted by old fossil databases that does not always include relevant locality or geological formations. The geology in various areas of South Africa is based exclusively on aerial photographs. The accuracy of the sheet explanations for geological maps are inadequate as the focus was never intended to be on palaeontological material.

Vast areas of South Africa have not been studied palaeontologically. Fossil data gathered from similar Assemblage Zones but in different areas, might provide information on the presence of fossil heritage

in an unmapped area. Desktop studies of similar geological formations generally accept the presence of unexposed fossil heritage within the development areas. The accuracy of a Palaeontological Impact Assessment may be improved through a field-survey when bedrock exposures and potentially fossiliferous superficial sediments are present in the development area.

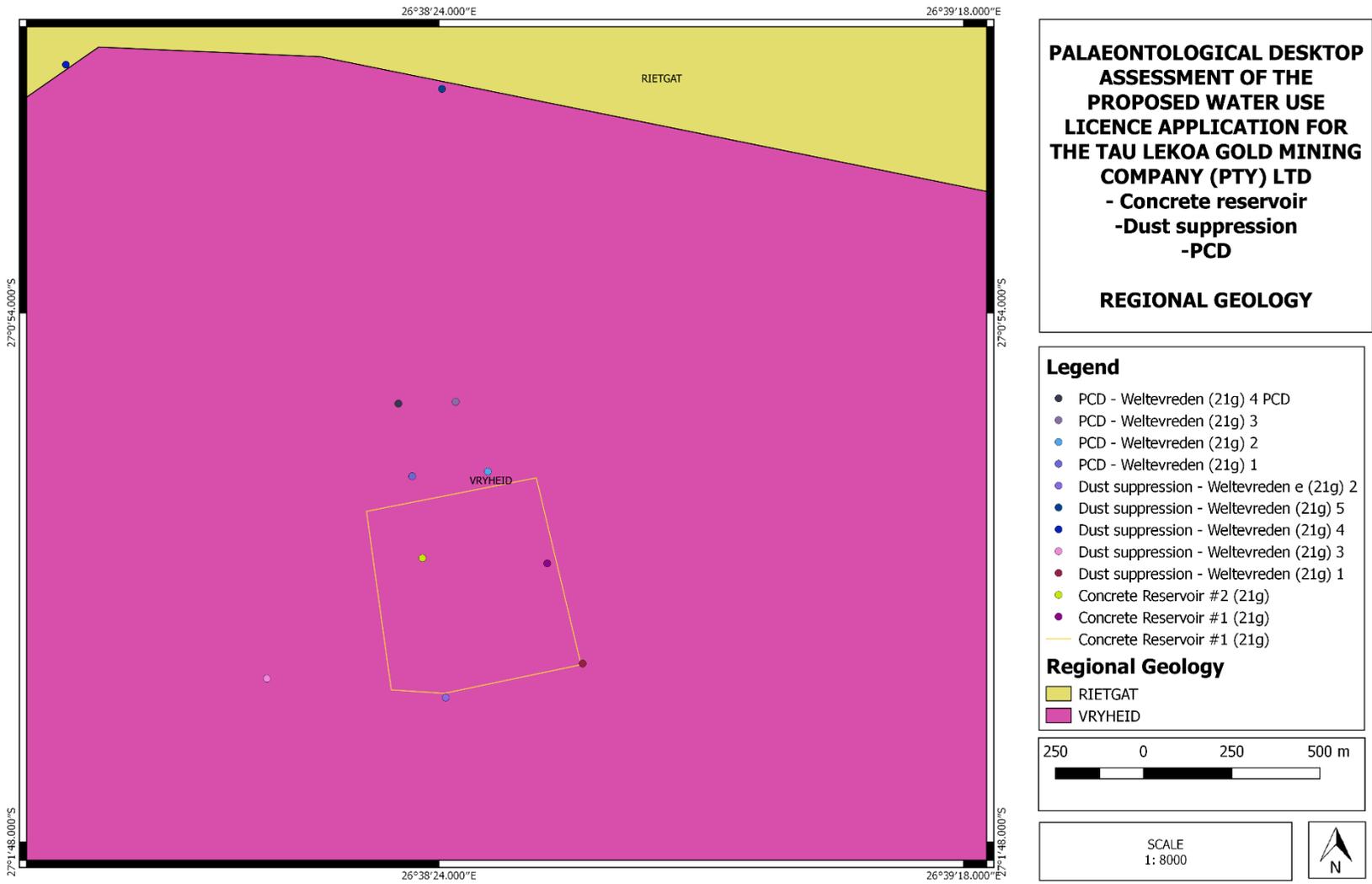


Figure 3. The surface geology of the proposed Water Use Licence (WULA) for the existing Tau Lekoa mine. The proposed development footprint of the Water Use Licence application is completely underlain by the Rietgat Formation, Platberg Group and Ventersdorp Supergroup as well as the Vryheid Formation of the Ecca Group. This map reflects the dust suppression, PCD and concrete reservoirs of the development (see legend). Map drawn QGIS Desktop 2.18.14.

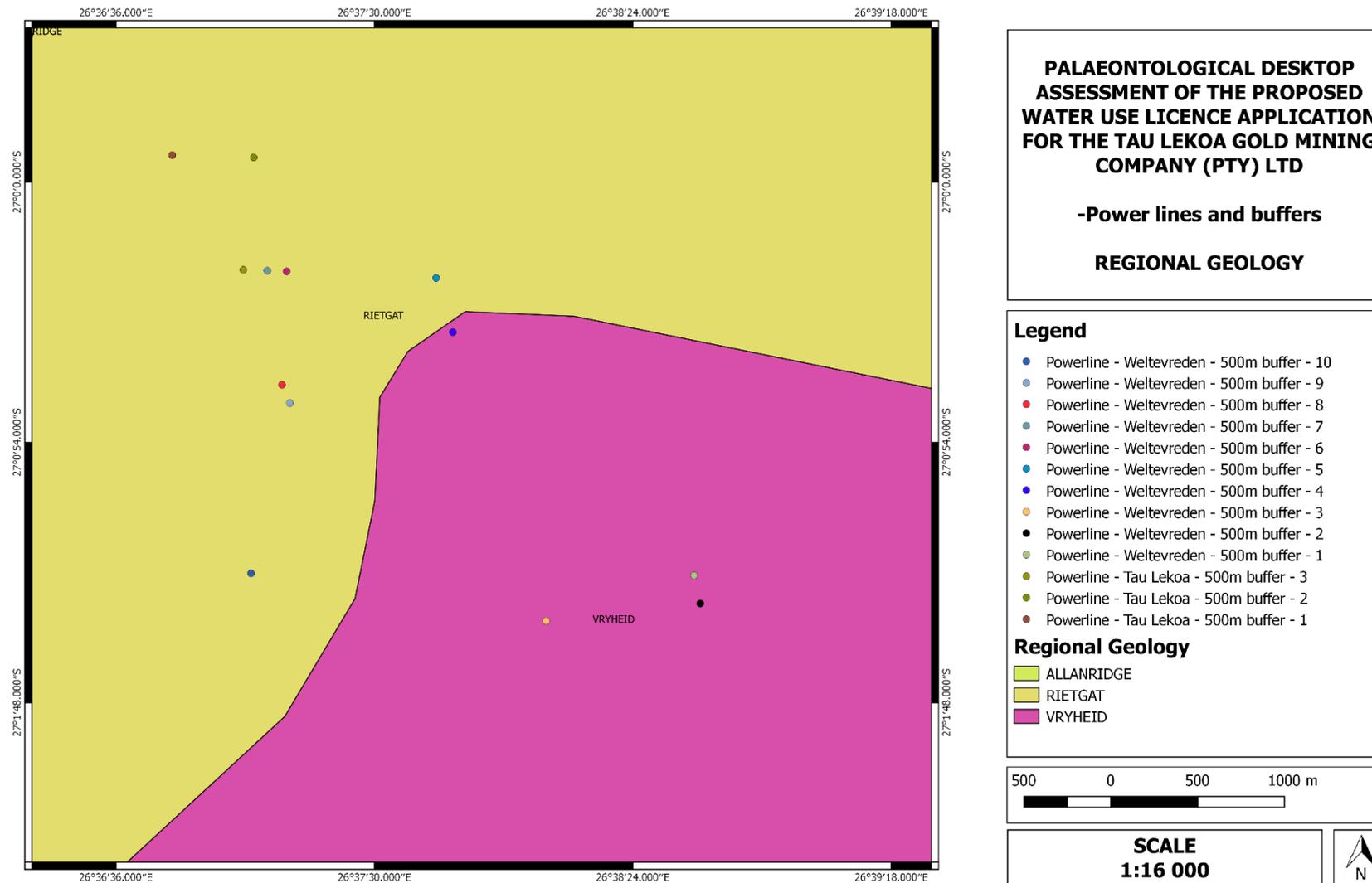


Figure 4. The surface geology of the proposed Water Use Licence (WULA) for the existing Tau Lekoa mine. The proposed development footprint of the Water Use Licence application is completely underlain by the Rietgat Formation, Platberg Group and Ventersdorp Supergroup as well as the Vryheid Formation of the Ecca Group. This map reflects the powerlines of the development (see legend). Map drawn QGIS Desktop 2.18.14.

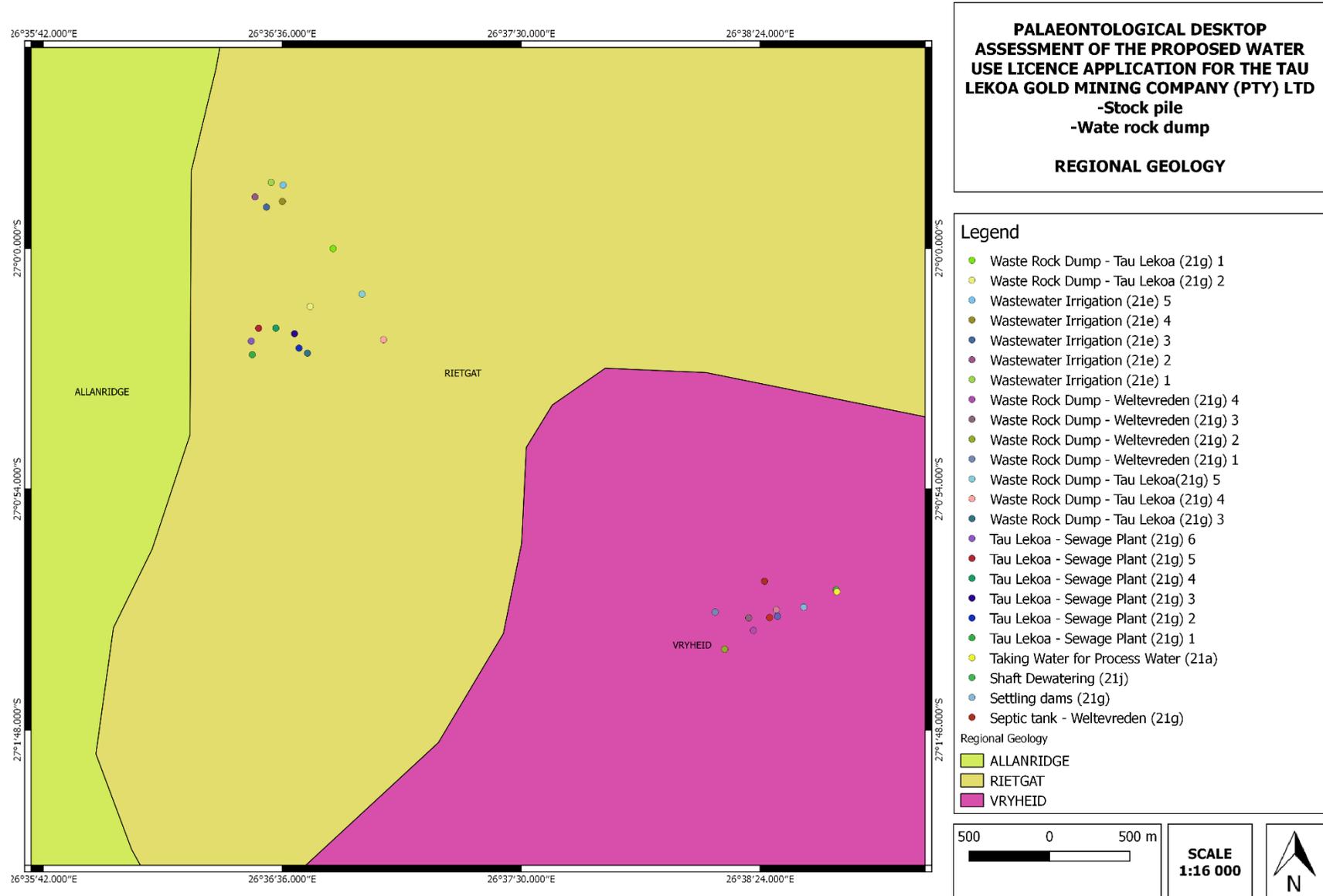


Figure 5. The surface geology of the proposed Water Use Licence (WULA) for the existing Tau Lekoa mine. The proposed development footprint of the Water Use Licence application is completely underlain by the Rietgat Formation, Platberg Group and Ventersdorp Supergroup as well as the Vryheid Formation of the Ecca Group. This map reflects the waste rock dumps, sewage plants, septic tanks and settling dams (see legend) on the development footprint. Map drawn QGIS Desktop 2.18.14.

7 Impact Rating System

Impact assessment must take account of the nature, scale and duration of impacts on the environment whether such impacts are positive or negative. Each impact is also assessed according to the following project phases:

- Construction
- Operation
- Decommissioning

Where necessary, the proposal for mitigation or optimisation of an impact should be detailed. A brief discussion of the impact and the rationale behind the assessment of its significance should also be included. The rating system is applied to the potential impacts on the receiving environment and includes an objective evaluation of the mitigation of the impact. In assessing the significance of each impact the following criteria is used:

Table 1: *The rating system*

NATURE		
Include a brief description of the impact of environmental parameter being assessed in the context of the project. This criterion includes a brief written statement of the environmental aspect being impacted upon by a particular action or activity.		
GEOGRAPHICAL EXTENT		
This is defined as the area over which the impact will be experienced.		
1	Site	The impact will only affect the site.
2	Local/district	Will affect the local area or district.
3	Province/region	Will affect the entire province or region.
4	International and National	Will affect the entire country.
PROBABILITY		
This describes the chance of occurrence of an impact.		
1	Unlikely	The chance of the impact occurring is extremely low (Less than a 25% chance of occurrence).
2	Possible	The impact may occur (Between a 25% to 50% chance of occurrence).

3	Probable	The impact will likely occur (Between a 50% to 75% chance of occurrence).
4	Definite	Impact will certainly occur (Greater than a 75% chance of occurrence).

Table 1 Continues

DURATION		
This describes the duration of the impacts. Duration indicates the lifetime of the impact as a result of the proposed activity.		
1	Short term	The impact will either disappear with mitigation or will be mitigated through natural processes in a span shorter than the construction phase (0 – 1 years), or the impact will last for the period of a relatively short construction period and a limited recovery time after construction, thereafter it will be entirely negated (0 – 2 years).
2	Medium term	The impact will continue or last for some time after the construction phase but will be mitigated by direct human action or by natural processes thereafter (2 – 10 years).
3	Long term	The impact and its effects will continue or last for the entire operational life of the development, but will be mitigated by direct human action or by natural processes thereafter (10 – 30 years).
4	Permanent	The only class of impact that will be non-transitory. Mitigation either by man or natural process will not occur in such a way or such a time span that the impact can be considered indefinite.
INTENSITY/ MAGNITUDE		
Describes the severity of an impact.		
1	Low	Impact affects the quality, use and integrity of the system/component in a way that is barely perceptible.
2	Medium	Impact alters the quality, use and integrity of the system/component but system/component still continues to function in a moderately modified way and maintains general integrity (some impact on integrity).

3	High	Impact affects the continued viability of the system/ component and the quality, use, integrity and functionality of the system or component is severely impaired and may temporarily cease. High costs of rehabilitation and remediation.
4	Very high	Impact affects the continued viability of the system/component and the quality, use, integrity and functionality of the system or component permanently ceases and is irreversibly impaired. Rehabilitation and remediation often impossible. If possible rehabilitation and remediation often unfeasible due to extremely high costs of rehabilitation and remediation.

Table 1 Continues

REVERSIBILITY		
This describes the degree to which an impact can be successfully reversed upon completion of the proposed activity.		
1	Completely reversible	The impact is reversible with implementation of minor mitigation measures.
2	Partly reversible	The impact is partly reversible but more intense mitigation measures are required.
3	Barely reversible	The impact is unlikely to be reversed even with intense mitigation measures.
4	Irreversible	The impact is irreversible and no mitigation measures exist.
IRREPLACEABLE LOSS OF RESOURCES		
This describes the degree to which resources will be irreplaceably lost as a result of a proposed activity.		

1	No loss of resource	The impact will not result in the loss of any resources.
2	Marginal loss of resource	The impact will result in marginal loss of resources.
3	Significant loss of resources	The impact will result in significant loss of resources.
4	Complete loss of resources	The impact is result in a complete loss of all resources.
CUMULATIVE EFFECT		
This describes the cumulative effect of the impacts. A cumulative impact is an effect which in itself may not be significant but may become significant if added to other existing or potential impacts emanating from other similar or diverse activities as a result of the project activity in question.		
1	Negligible cumulative impact	The impact would result in negligible to no cumulative effects.
2	Low cumulative impact	The impact would result in insignificant cumulative effects.
3	Medium cumulative impact	The impact would result in minor cumulative effects.
4	High cumulative impact	The impact would result in significant cumulative effects

Table 1 Continues

SIGNIFICANCE		
<p>Significance is determined through a synthesis of impact characteristics. Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The calculation of the significance of an impact uses the following formula:</p> <p>(Extent + probability + reversibility + irreplaceability + duration + cumulative effect) x magnitude/intensity.</p> <p>The summation of the different criteria will produce a non-weighted value. By multiplying this value with the magnitude/intensity, the resultant value acquires a weighted characteristic which can be measured and assigned a significance rating.</p>		
Points	Impact significance rating	Description
6 to 28	Negative low impact	The anticipated impact will have negligible negative effects and will require little to no mitigation.
6 to 28	Positive low impact	The anticipated impact will have minor positive effects.
29 to 50	Negative medium impact	The anticipated impact will have moderate negative effects and will require moderate mitigation measures.
29 to 50	Positive medium impact	The anticipated impact will have moderate positive effects.
51 to 73	Negative high impact	The anticipated impact will have significant effects and will require significant mitigation measures to achieve an acceptable level of impact.
51 to 73	Positive high impact	The anticipated impact will have significant positive effects.
74 to 96	Negative very high impact	The anticipated impact will have highly significant effects and are unlikely to be able to be mitigated adequately. These impacts could be considered "fatal flaws".
74 to 96	Positive very high impact	The anticipated impact will have highly significant positive

8 FINDINGS AND RECOMMENDATIONS

The proposed development footprint of the Water Use Licence application is completely underlain by the Rietgat Formation, Platberg Group and Ventersdorp Supergroup as well as the Vryheid Formation of the Ecca Group (Karoo Supergroup). Fossil heritage in the Rietgat Formation consist of unicellular organisms and stromatolites. According to the SAHRIS PalaeoMap the Rietgat Formation has a moderate palaeontological sensitivity and only requires a detailed desktop study. However, the Vryheid Formation of the Ecca Group has a high palaeontological sensitivity (see SAHRIS PalaeoMap) and a site visit is recommended for developments in this formation. Regardless of the rare and periodic occurrence of fossils in this biozone a single fossil can have a huge scientific importance as many fossil taxa are known from a single fossil.

As an EIA is not in the scope of this development it is recommended that a professional palaeontologist visit the proposed development site of the powerlines and PCD, after initial ground clearance has been completed to evaluate the presence of fossils in the development footprint. In the event of fossils being present at the proposed development site the necessary application for the relevant permits must be obtained from SAHRA

9 REFERENCES

ALMOND, J., PETHER, J, and GROENEWALD, G. 2013. South African National Fossil Sensitivity Map. SAHRA and Council for Geosciences.

GRADSTEIN, F.M., J.G.OGG, M.D. SCHMITZ & G.M.OGG. (Co-ordinators). 2012. The Geologic Time Scale 2012. Boston, USA: Elsevier, 2 volumes plus chart, 1176 pp.

GROENEWALD, G. and GROENEWALD, D. 2014. SAHRA Palaeotechnical Report: Palaeontological Heritage of the Free State. South African Heritage Resources Agency, Pp 1-7.

GROENEWALD, G. and GROENEWALD, D. 2014. SAHRA Palaeotechnical Report: Palaeontological Heritage of North West. South African Heritage Resources Agency, Pp 1-6.

KENT, L.E. 1980. Part 1: Lithostratigraphy of the Republic of South Africa, South West Africa/Namibia and the Republics of Bophuthatswana, Transkei and Venda. SACS, Council for Geosciences, pp. 535-574.

MCCARTHY, T. & RUBIDGE, B. 2005. The story of Earth and life: a southern African perspective on a 4.6-billion-year journey. 334pp. Struik, Cape Town.

PARTRIDGE, T.C. et al. 2006. Cenozoic deposits of the interior. In: M.R. Johnson, et. al. (eds). The Geology of South Africa. Geological Society of South Africa.

RUBIDGE, B.S. (Ed.) 1995. Biostratigraphy of the Beaufort Group (Karoo Supergroup). South African Committee for Biostratigraphy, Biostratigraphic Series No. 1., 46 pp. Council for Geoscience, Pretoria.

SNYMAN, C.P. (1996). *Geologie vir SuidAfrika*, Departement Geologie, Universiteit van Pretoria, Pretoria, 1: 513 pp.

VAN DER WALT, M., DAY, M., RUBIDGE, B. S., COOPER, A. K. & NETTERBERG, I. (2010). *Utilising GIS technology to create a biozone map for the Beaufort Group (Karoo Supergroup) of South Africa*. *Palaeontologia Africana*, 45: 1-5.

10 QUALIFICATIONS AND EXPERIENCE OF THE AUTHOR

The author (Elize Butler) has an MSc in Palaeontology from the University of the Free State, Bloemfontein, South Africa. She has been working in Palaeontology for more than twenty three years. She has extensive experience in locating, collecting and curating fossils, including exploration field trips in search of new localities in the Karoo Basin. She has been a member of the Palaeontological Society of South Africa for 10 years. She has been conducting Palaeontological Impact Assessments since 2014

Declaration of Independence

I, Elize Butler, declare that –

General declaration:

- I act as the independent palaeontological specialist in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting palaeontological impact assessments, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I will take into account, to the extent possible, the matters listed in section 38 of the NHRA when preparing the application and any report relating to the application;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- I will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
- I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not
- All the particulars furnished by me in this form are true and correct;

- I will perform all other obligations as expected a palaeontological specialist in terms of the Act and the constitutions of my affiliated professional bodies; and
- I realise that a false declaration is an offence in terms of regulation 71 of the Regulations and is punishable in terms of section 24F of the NEMA.

Disclosure of Vested Interest

- I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Regulations;

PALAEONTOLOGICAL CONSULTANT: Banzai Environmental (Pty) Ltd

CONTACT PERSON: Elize Butler

Tel: +27 844478759

Email: elizebutler002@gmail.com

SIGNATURE:

A handwritten signature in black ink, appearing to read 'Elize Butler'.