

PALAEONTOLOGICAL COMPLIANCE STATEMENT

TETRA4 33KV AND 132KV
POWERLINES PROJECT NEAR
VIRGINIA, WITHIN THE MATJHABENG
LOCAL MUNICIPALITY, FREE STATE
PROVINCE

June 2023

COMPILED FOR: PGS HERITAGE



EXECUTIVE SUMMARY

PGS Heritage appointed Banzai Environmental to conduct the Palaeontological Desktop Assessment (PDA) to assess TETRA4 33KV and 132KV Powerlines Project near Virginia, within the Matjhabeng Local Municipality, Free State Province. Under the National Environmental Management Act 107 of 1998 (NEMA) and to comply with the National Heritage Resources Act (No 25 of 1999, section 38) (NHRA), this PDA is necessary to confirm if fossil material could potentially be present in the approved development area and to evaluate the potential impact of the proposed changes to the development on the Palaeontological Heritage.

An assessment of the original PIA conducted by Butler (2022) for the Tetra4 expansion project found that the proposed development is underlain by Quaternary sediments as well as Permian aged sandstone and shale of the Adelaide Subgroup (Beaufort Group, Karoo Supergroup). The PalaeoMap of the South African Heritage Resources Information System (SAHRIS) indicates that the Palaeontological Sensitivity of Quaternary sediments is Moderate, while that of the Adelaide Subgroup (Beaufort Group) is Very High (Almond and Pether, 2009; Almond *et al.*, 2013, Groenewald *et al* 2014). The updated geology of the area (Council for Geosciences) indicated that the development is underlain by Quaternary sediments while the Adelaide Subgroup is represented by the Balfour Formation. A two-day site-specific site investigation was conducted and found no visible evidence of fossiliferous outcrops in the development footprint.

Our desktop assessment of the 33KV and 132KV Powerlines footprint concluded that the proposed Powerlines are underlain by Quaternary deposits as well as the Adelaide Subgroup, while the updated geology (Council for Geosciences) refined the counties geology and indicates that the development is underlain by alluvium, colluvium eluvium and gravel. Our assessment thus concurs with the above-mentioned study of 2022.

Topographical as well as Google Earth images indicate that the relief of the proposed project is low, and outcrops in the area are rare. Therefore, the proposed power line development in the approved development will not lead to detrimental impacts on the palaeontological reserves of the area.

If Palaeontological Heritage is uncovered during surface clearing and excavations the **Chance find Protocol** attached should be implemented immediately. Fossil discoveries ought to be protected and the ECO/site manager must report to South African Heritage Resources Agency (SAHRA) (Contact details: SAHRA, 111 Harrington Street, Cape Town. PO Box 4637, Cape Town 8000, South Africa. Tel: 021 462 4502. Fax: +27 (0)21 462 4509. Web: www.sahra.org.za) so that mitigation (recording and collection) can be carried out.

Preceding any collection of fossil material, the specialist would need to apply for a collection permit from SAHRA. Fossil material must be curated in an accredited collection (museum or



university collection), while all fieldwork and reports should meet the minimum standards for palaeontological impact studies suggested by SAHRA.



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1 INTRODUCTION

PGS Heritage appointed Banzai Environmental to conduct the Palaeontological Desktop Assessment (PDA) to assess TETRA4 33KV and 132KV Powerlines Project near Virginia, within the Matjhabeng Local Municipality, Free State Province. Under the National Environmental Management Act 107 of 1998 (NEMA) and to comply with the National Heritage Resources Act (No 25 of 1999, section 38) (NHRA), this PDA is necessary to confirm if fossil material could potentially be present in the approved development area and to evaluate the potential impact of the proposed changes to the approved development on the Palaeontological Heritage.

1.1 Background

Butler (2022) conducted the (Palaeontological Impact Assessment (PIA) for the Proposed Tetra4 Gas Gathering Phase 2, near Virginia in the Free State. The objective of this 2022 Environmental Assessment was to expand the existing production capabilities (**Figure 1**). This study found that the proposed Tetra4 development is underlain by Quaternary sediments, as well as Permian aged sandstone and shale of the Adelaide Subgroup (Beaufort Group, Karoo Supergroup) (**Figure 2**). The PalaeoMap of the South African Heritage Resources Information System (SAHRIS) indicates that the Palaeontological Sensitivity of the Quaternary sediments is Moderate and that of the Adelaide Subgroup is Very High (Almond and Pether, 2009; Almond *et al.*, 2013, Groenewald et al 2014). However, no visible evidence of fossiliferous outcrops was identified during the two-day site-specific field survey of the Tetra4 development footprint.

Based on the site investigation as well as desktop research it was concluded that fossil heritage of scientific and conservational interest in the development footprint is rare. The project obtained Environmental Authorisation.

On 20 April 2023 a Draft Basic Assessment Report has been submitted for the proposed TETRA4 33KV AND 132KV Powerlines Project near Virginia, within the Matjhabeng Local Municipality, Free State Province. As a comprehensive site investigation was conducted in 2022 no further Palaeontological Assessments were conducted for the Basic Assessment of the new **33KV and 132KV Powerlines Project**. However, the Department of Forestry, Fisheries and the Environment (DFFE) has requested additional specialist input (letter of 25 May 2023) to be submitted for the Draft Basic Assessment Report of the Tetra4 33KV and 132 KV Powerline Project. This Desktop report has been compiled as response to the DFFE comment.



Figure 1: Map indicating the location of the Tetra4 Gas Gathering Phase 2 in the Free State (Butler, 2022).

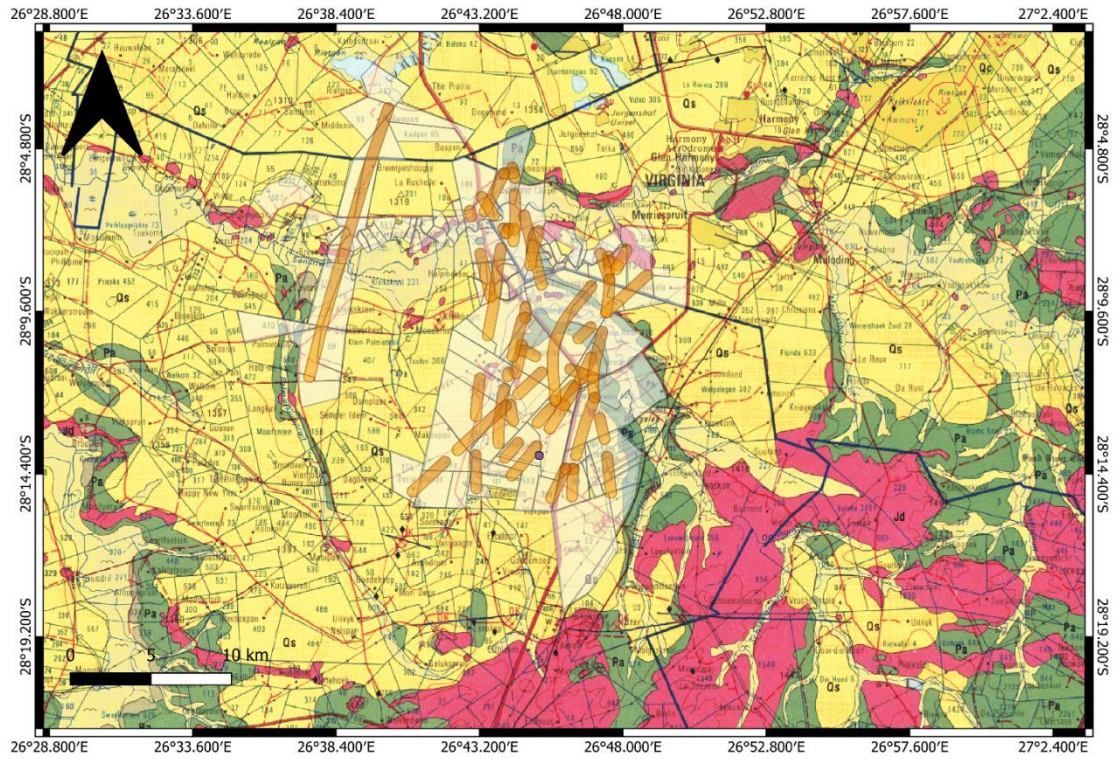


Figure 2: Extract of the 1:250 000 Winburg 2826 Geological map (1998) (Council of Geoscience, Pretoria) indicating the surface geology of the proposed development underlain by Quaternary sediments (Qs, yellow) with a portion underlain by the Adelaide Subgroup (Pa) (Beaufort Group, Karoo Supergroup) (Butler, 2022).



1.2 Site information

Table 1: Site coordinates		
33 KV powerline		
North western point	28°10'50.49"S	26°43'38.06"E
South eastern Point	28°11'6.01"S	26°44'6.07"E
132 KV Powerline		
Northern Point	28° 7'36.33"S	26°43'12.00"E
Southern Point	28° 9'58.49"S	26°45'15.97"E

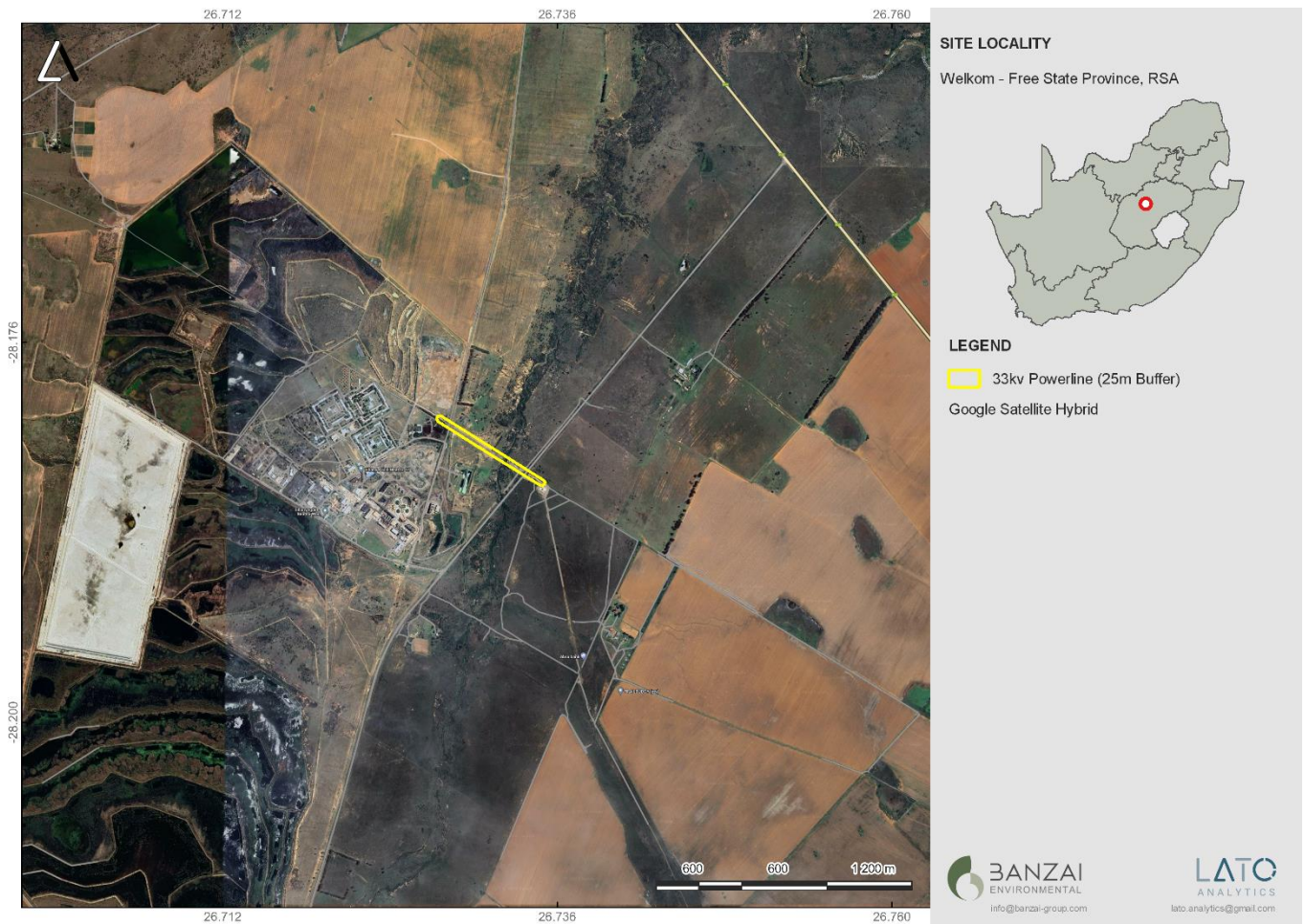


Figure 3: Location of the proposed TETRA4 33KV Powerline within the Matjhabeng Local Municipality, Free State.

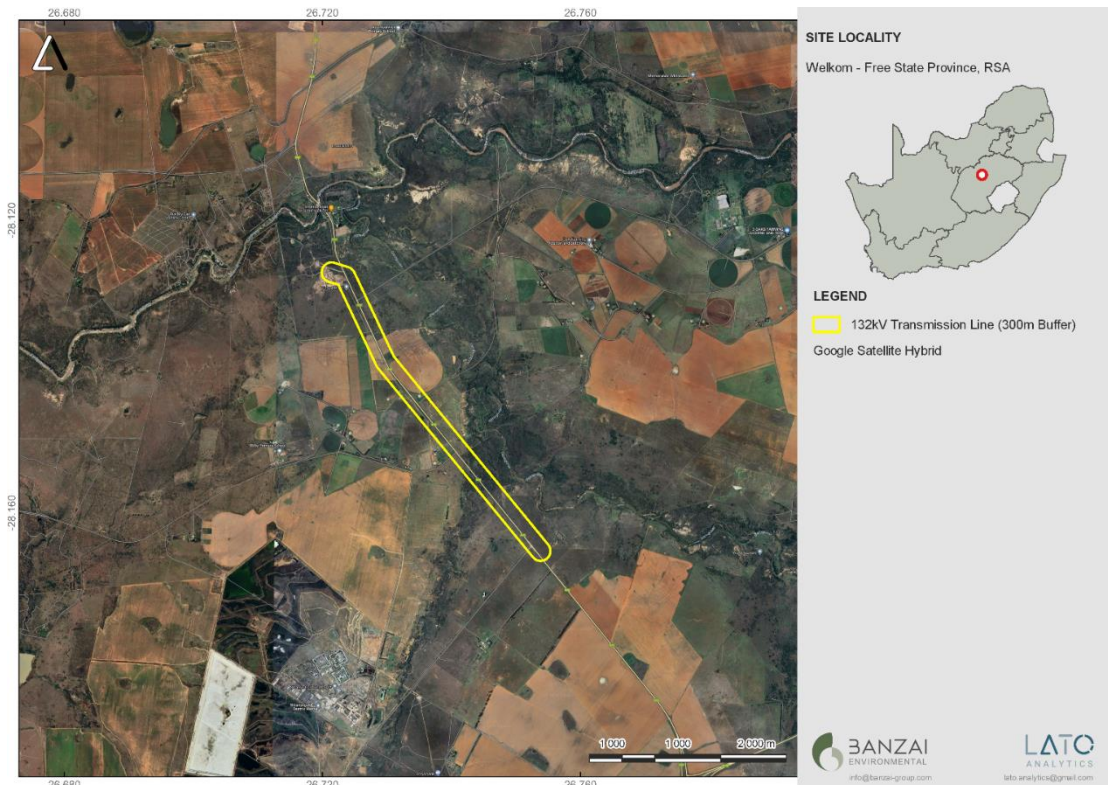


Figure 4: Location of the 132KV Transmission line within the Matjhabeng Local Municipality, Free State Province.

2 QUALIFICATIONS AND EXPERIENCE OF THE AUTHOR

This study has been conducted by Mrs Elize Butler. She has conducted approximately 400 palaeontological impact assessments for developments in the Free State, KwaZulu-Natal, Eastern, Central, and Northern Cape, Northwest, Gauteng, Limpopo, and Mpumalanga. She has an MSc (*cum laude*) in Zoology (specializing in Palaeontology) from the University of the Free State, South Africa and has been working in Palaeontology for more than thirty years. She has experience in locating, collecting, and curating fossils. She has been a member of the Palaeontological Society of South Africa (PSSA) since 2006 and has been conducting PIAs since 2014.

3 METHODS

In terms of the National Environmental Management Act (Act 107 of 1998, as amended) (NEMA) Environmental Impact Assessment (EIA) Regulations [4 December 2014, Government Notice (GN) R982, R983, R984 and R985, as amended), various aspects of the approved development may have an impact on the environment and are considered to be listed activities. These activities require environmental authorisation (EA) from the Competent Authority (CA), namely



the Department of Small Business Development, Tourism and Environmental Affairs (DESTEA), prior to the commencement thereof.

In accordance with GN 320 of 20 March 2020 and GN 1150 of 30 October 2020¹ (i.e., “the Protocols”) of the NEMA EIA Regulations of 2014 (as amended), prior to commencing with a specialist assessment, a site sensitivity verification must be undertaken to confirm the current land use and environmental sensitivity of the approved project area as identified by the National Web-Based Environmental Screening Tool (i.e., Screening Tool). Elize Butler as Palaeontology Specialist have been commissioned to verify the sensitivity of the approved GH-PV1 and the proposed amendments under these specialist protocols.

Site Sensitivity Verification Methodology

The Palaeontology Sensitivity Verification was undertaken by the following methodology:

- The site sensitivity is established through the National Environmental Web-Based Screening Tool
- The Site is mapped on the relevant Geological Map to determine the underlying geology of the development
- Then the site is mapped on the South African Heritage Resources Information System (SAHRIS) PalaeoMap, and the Sensitivity of the approved development established.
- Other information is obtained by using satellite imagery and
- Palaeontological Impact Assessments and Desktop Assessments of projects in the same area are studied.

3.1 Assumptions and Limitations

The focal point of geological maps is the geology of the area and the sheet explanations of the Geological Maps were not meant to focus on palaeontological heritage. Many inaccessible regions of South Africa have never been reviewed by palaeontologists and data is generally based on aerial photographs alone. Locality and geological information of museums and universities databases have not been kept up to date or data collected in the past have not always been accurately documented.

Areas with similar Assemblage Zones in other areas is also used to provide information on the existence of fossils in an area which has not documented in the past. When using similar Assemblage Zones and geological formations for Desktop studies it is generally **assumed** that

¹ GN 320 (20 March 2020): Procedures for The Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(A) and (H) and 44 of the National Environmental Management Act, 1998, when applying for Environmental Authorisation



exposed fossil heritage is present within the footprint. A field-assessment will thus improve the accuracy of the desktop assessment and thus this study has been commissioned.

4 GEOLOGICAL AND PALAEOONTOLOGICAL HISTORY

The TETRA4 33KV and 132KV Powerlines Project in the Free State Province. is depicted on the 1:250 000 Winburg 2826 (Visser & Nolte;1998) Geological Map (Council for Geosciences, Pretoria) (**Figure 5 - 6**). These maps indicate that the proposed 33KV powerline and 25 m buffer (**Figure 5**) is entirely underlain by Quaternary superficial deposits [yellow single bird figure, represents alluvium; and Qs represents aeolian sand, **Table 2**] while the 132KV Transmission line (**Figure 6**) is also underlain by Quaternary superficial deposits as well as the Adelaide Subgroup (Pa; green) (Beaufort Group, Karoo Supergroup). The PalaeoMap of SAHRIS indicates that the Palaeontological Sensitivity of the Quaternary superficial deposits are Moderate while that of the Adelaide Subgroup is Very High (Almond *et al*, 2013; SAHRIS website) (**Figure 7-8**). Updated geology compiled by the Council of Geosciences (Pretoria) refined the geology (**Figure 9-10**) and indicates that the proposed development is underlain by Quaternary alluvium, colluvium and eluvium.

Maud (2012) found that the climatic fluctuations in the Cenozoic Era were responsible for the formation of most geomorphologic features in southern Africa. The most dramatic climatic changes during the Cenozoic occurred specifically during the last 1.8 Ma (Barnosky, 2005). Climate in the Quaternary Period were both drier and wetter than the present and resulted in changes in river flow patterns, sedimentation processes and vegetation variation (Tooth *et al*, 2004). Netterberg (1978, 1980) revised the South African calcretes and found that the calcretes comprise of glaebular calcrete (with separate nodules), hardpan calcrete that contain solid limestone and honeycomb calcrete (fusing with glaebules). These calcretes are locally conglomeratic with clasts of exotic pebbles and reworked calcretes. Mammalian teeth, bones and horn cores as well as reptile skeletons and ostrich egg fragments may be preserved in these calcretes. Non-marine mollusc shells and microfossils are also known from Quaternary deposits, while plant material such as foliage, wood, pollens, and peats have also been recovered. Trace fossils include vertebrate tracks, termite and insect burrows, termitaria as well as rhizoliths. Some of these calcretes may be diamondiferous.

The Virginia/Welkom District is known for the presence of fluvial deposits along the present river courses that includes diatomite (diatom deposits), calcareous tufa, pedocretes, peats, spring deposits, soils and gravel and other Tertiary calcrete deposits. These sediments are important for understanding the Early and Late Pliocene period (De Ruiter *et al*, 2010). The late Cenozoic (Plio-Pleistocene) floodplain deposits (overbank sediments) found near the Sand-, Doring-, Vals-



and Vet River systems including pan sites, contain confined but abundant mammal vertebrate fossil sites. Meiring (1955) described an *in situ* proboscidian fossil (mammoth), comprising of a lower molar, large part of a tusk as well as a proximal portion of an ulna from the Sand River near Virginia. This specimen was found in pebbly channel-fill sediments about 40 m above the current riverbed. Originally described as *Archidiskodon scotti* (Meiring 1955) but was later assigned to the Pliocene species *Mammuthus subplanifrons* (Coppens et al. 1978). Later investigations uncovered a diverse fauna that include amphibians, birds, fish, reptiles, as well as several proboscideans, perissodactyls and artiodactyls from the same site (De Ruiter 2010). Terrace gravels above the Vet River, southwest of Welkom have uncovered Pliocene fossils while surveys along the Doring, Vals, Sand and Vet Rivers produced moderately fossiliferous overbank sediments and erosional gullies that comprise of a variety of Quaternary-aged mammals (Brink et al. 1999; De Ruiter et al. 2011) Ancient pan sites, for example near Whites produced rich Quaternary-aged mammal fossil remains.

The most southern portion of the 132KV Transmission powerline is underlain by a series of Karoo sandstones, mudstones, and shales, deposited under fluvial environments of the Adelaide Subgroup (Beaufort Group) (**Figure 6**). The Adelaide Subgroup contains alternating greyish-red, bluish-grey, or greenish grey mudrocks in the southern and central parts of the Karoo Basin with very fine to medium-grained, grey lithofeldspathic sandstones.

The updated geology refined the geology and indicate=s that the development is underlain by the Balfour Formation of the Adelaide Subgroup.

The Upper Adelaide Subgroup comprise of the *Daptocephalus* Assemblage Zone (AZ) that expands into the lower Palingkloof of the Upper Balfour Formation. This Zone is characterized by the occurrence of the two therapsids namely *Dicynodon* and *Theriognathus*. The *Daptocephalus* AZ shows the greatest vertebrate diversity and includes numerous well-preserved genera and species of dicynodonts, biarmosuchians, gorgonopsian, therocephalian and cynodont therapsid Synapsida. Captorhinid Reptilia are also present while eosuchian Reptilia, Amphibia and Pisces are rarer in occurrence. Trace fossils of vertebrates and invertebrates as well as *Glossopteris* flora plants have also been described.

The lower Palingkloof Member is of special importance as it precedes the Permo-Triassic Extinction Event which destroyed the vertebrate fauna and extinguished the diverse glossopterid plants. The lower *Lystrosaurus declivis* AZ forms part of the Katberg Formation. Fauna and flora from this assemblage zone is rare as few genera survived the Permo-Triassic Extinction Event. The *Lystrosaurus declivis* AZ is characterized by the dicynodont, *Lystrosaurus*, and captorhinid reptile, *Procolophon*, biarmosuchian and gorgonopsian Therapsida did not survive into the *Lystrosaurus* Assemblage Zone although the therocephalian and cynodont Therapsida are present in moderate quantities. Captorhinid Reptilia is reduced, but this interval is characterised



by a unique diversity of oversize amphibians while fossil fish, millipedes and diverse trace fossils have also been recorded.

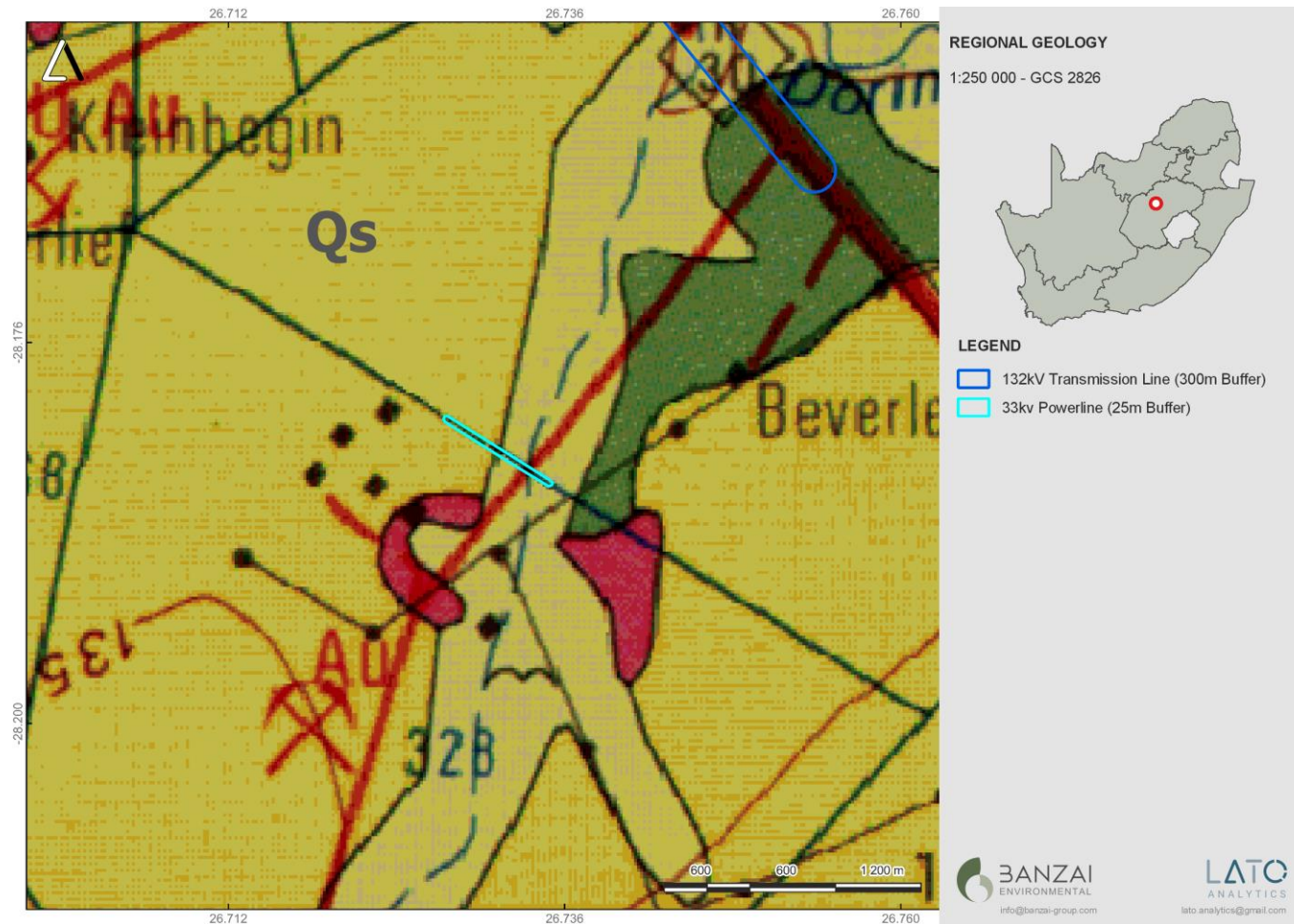


Figure 5. Extract of the 1:250 000 Winburg 2826 Geological map (Council of Geoscience, Pretoria) indicates that the Tetra4 33KV power line in the Free State Province is entirely underlain by Quaternary superficial sediments (alluvium - yellow single bird figure and Qs, aeolian sand).

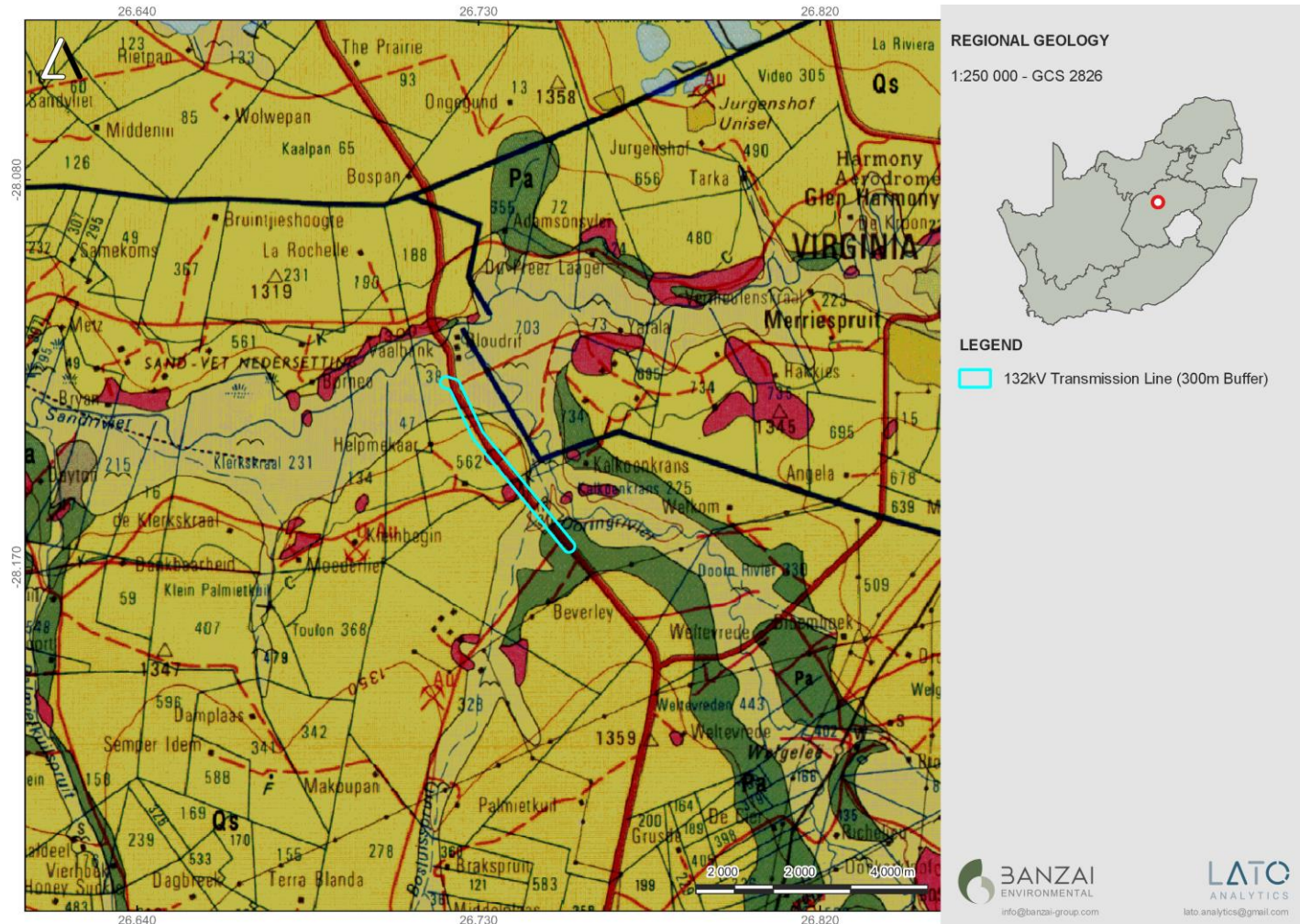


Figure 6. Extract of the 1:250 000 Winburg 2826 Geological map (Council of Geoscience, Pretoria) indicates that the Tetra4 132KV Transmission power line in the Free State is underlain by Quaternary superficial sediments (alluvium - yellow single bird figure and Qs, aeolian sand) while the southern portion is underlain by the Adelaide Subgroup (Beaufort Group).



Table 2: Legend to the 1:250 000 Winburg 2826 (1998) Geological Map (Council for Geosciences, Pretoria)

		SEDIMENTÊRE EN VULKANIESE GESTEENTES SEDIMENTARY AND VOLCANIC ROCKS				INTRUSIEWE GESTEENTES INTRUSIVE ROCKS	
		SUPERGROEP SUPERGROUP	GROEP GROUP	SUBGROEP SUBGROUP	FORMASIE FORMATION		
KWARTÊR QUATERNARY					~	~	Alluvium; verkalkte alluvium en riviergruis Alluvium; calcified alluvium and river gravel
					Qs	Qs	Sand; rooi en grys eoliese duinesand Sand; red and grey aeolian dune sand
					Qc	Qc	Kalkkreet en oppervlakkalksteen Calcrete and surface limestone
					Jd	Jd	Doleriet; gang (/) Dolerite; dyke (/)
					Jdb	Jdb	Basaltiese lawa; ondergeskikte fynkorrelrige sandsteen Basaltic lava; subordinate fine-grained sandstone
JURA JURASSIC				Drakensberg	Jdb	Jdb	
TRIAS TRIASSIC	KAROO	BEAUFORT	Tarkastad	Clarens	Tc	Tc	Fyn- tot baie fynkorrelrige lig-oranje tot pienk sandsteen Fine- to very fine-grained pale-orange to pink sandstone
				Elliot	Te	Te	Rooi siltsteen en moddersteen, ondergeskikte baie fynkorrelrige sandsteen Red siltstone and mudstone, subordinate very fine-grained sandstone
				Molteno	Tm	Tm	Baie grof- tot mediumkorrelrige sandsteen, ondergeskikte moddersteen Very coarse- to medium-grained sandstone, subordinate mudstone
					Tt	Tt	Fyn- tot mediumkorrelrige, geel en kakiekleurige sandsteen; rooi, pers, blou en groen moddersteen Fine- to medium-grained, yellow and khaki-coloured sandstone; red, purple, blue green mudstone
					Pa	Pa	Baie fyn- tot grofkorrelrige, gelerige wit en wit sandsteen; blougrys moddersteen en skalie; ondergeskikte konglomeraat Very fine- to coarse-grained, buff white and white sandstone; blue-grey mudstone and shale; subordinate conglomerate
PERM PERMIAN		ECCA	Tierberg	Pt	Pt	Grys tot swart skalie, ondergeskikte liggrys, fynkorrelrige sandsteen Grey to black shale, subordinate light-grey, fine-grained sandstone	
RANDIUM RANDIAN	VENTERSDORP	PLATBERG	Rietgat	Rri	Rri	Arkose; blougrys amandelhoudende andesiet Arkose; blue-grey amygdaloidal andesite	
			Makwassie	Rm	Rm	Kwartsporfier Quartz porphyry	
SWAZIUM SWAZIAN					ZA	ZA	Graniet Granite

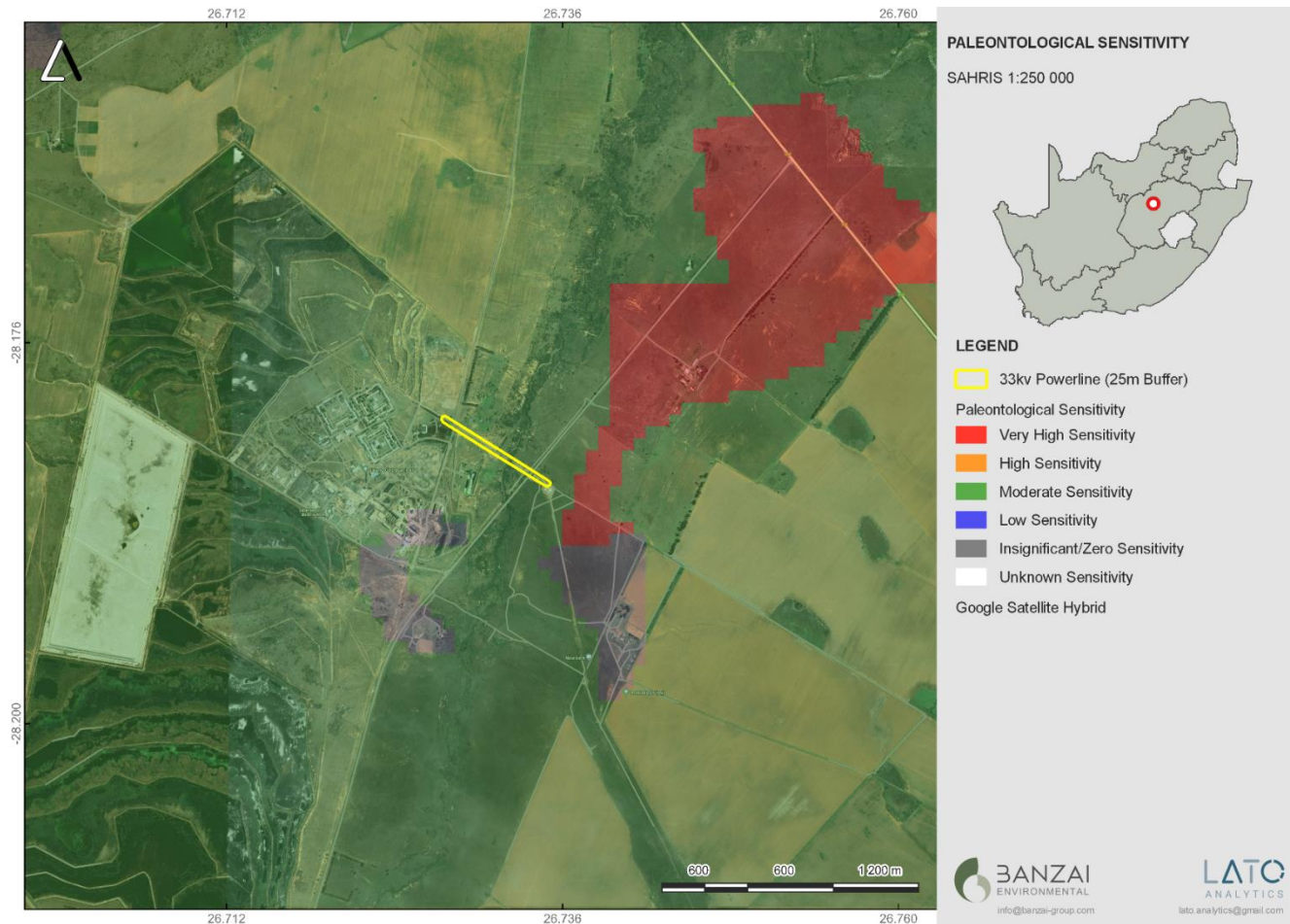


Figure 7: Extract of the SAHRIS PalaeoMap map (Council of Geosciences) indicating the Moderate (green) Palaeontological Sensitivity of the Tetra4 33KV power line.

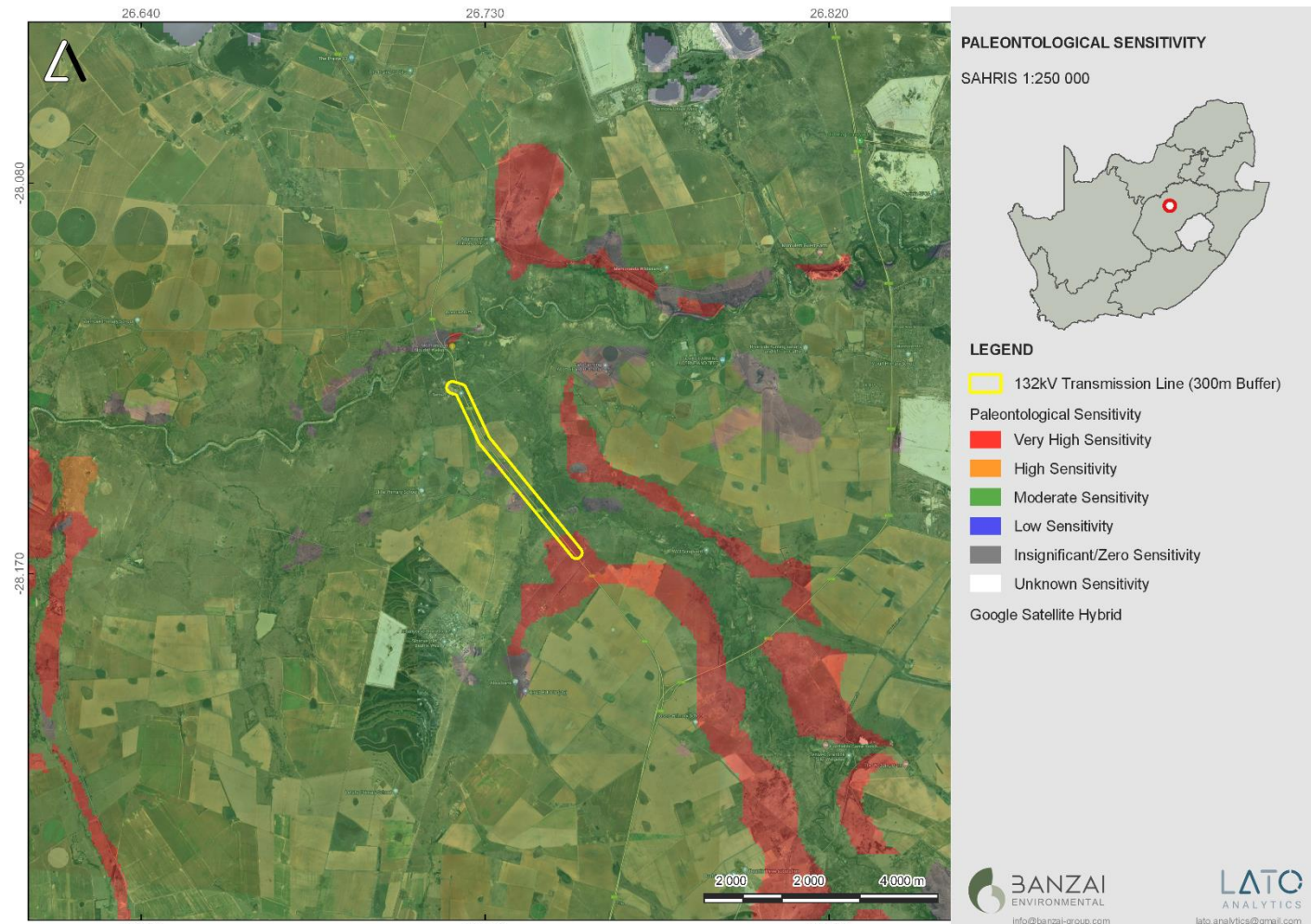


Figure 8: Extract of the SAHRIS PalaeoMap map (Council of Geosciences) indicating the Moderate (green) and Very High (red) Palaeontological Sensitivity of the Tetra4 132KV Transmission power line



The SAHRIS Palaeomap indicates that the Palaeontological Sensitivity of the approved development is underlain by sediments with a High (orange), Moderate (green) and Zero (grey) Palaeontological Sensitivity.

Colour	Sensitivity	Required Action
RED	VERY HIGH	Field assessment and protocol for finds is required
ORANGE/YELLOW	HIGH	Desktop study is required and based on the outcome of the desktop study; a field assessment is likely
GREEN	MODERATE	Desktop study is required
BLUE	LOW	No palaeontological studies are required however a protocol for finds is required
GREY	INSIGNIFICANT/ZERO	No palaeontological studies are required
WHITE/CLEAR	UNKNOWN	These areas will require a minimum of a desktop study. As more information comes to light, SAHRA will continue to populate the map.

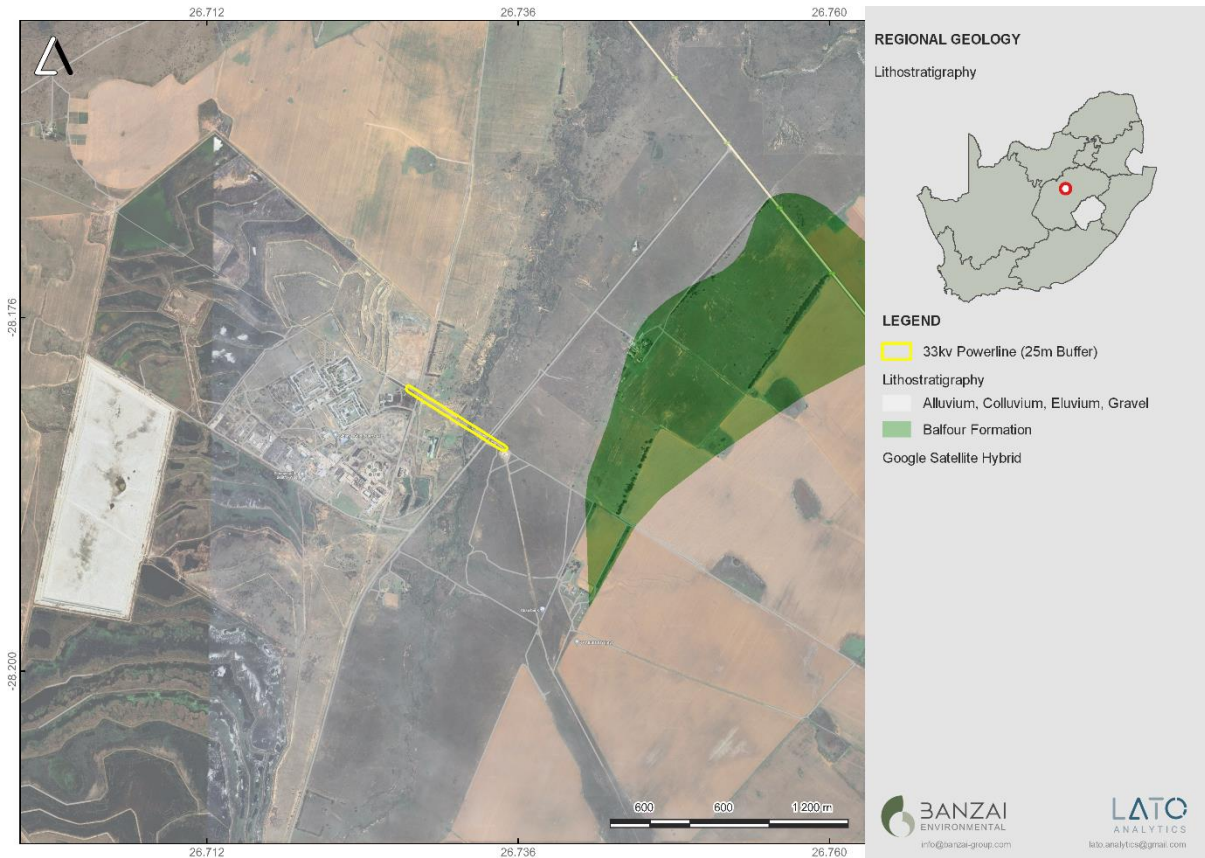


Figure 9: Updated Geology (Council of Geosciences, Pretoria) indicates that the *Tetra4* 33KV power line study area is underlain by alluvium, colluvium eluvium and gravel.

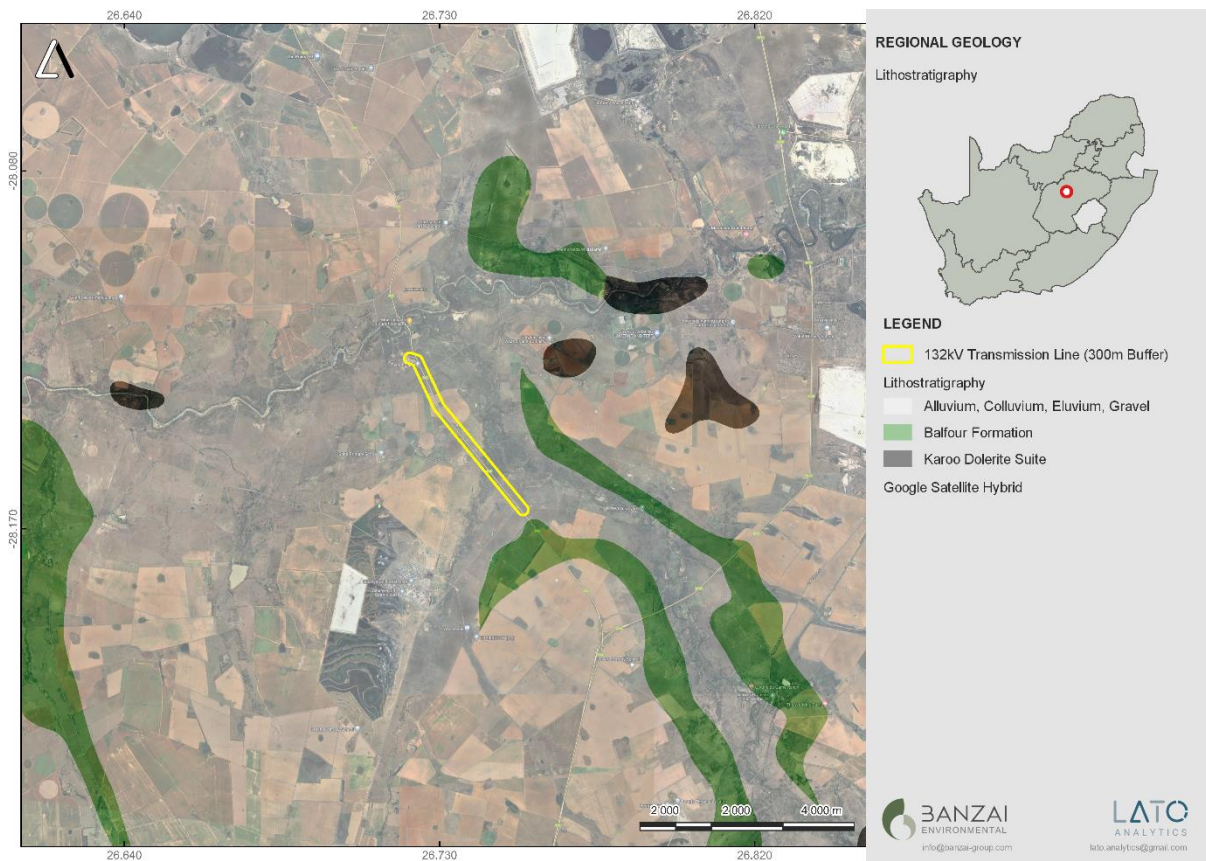
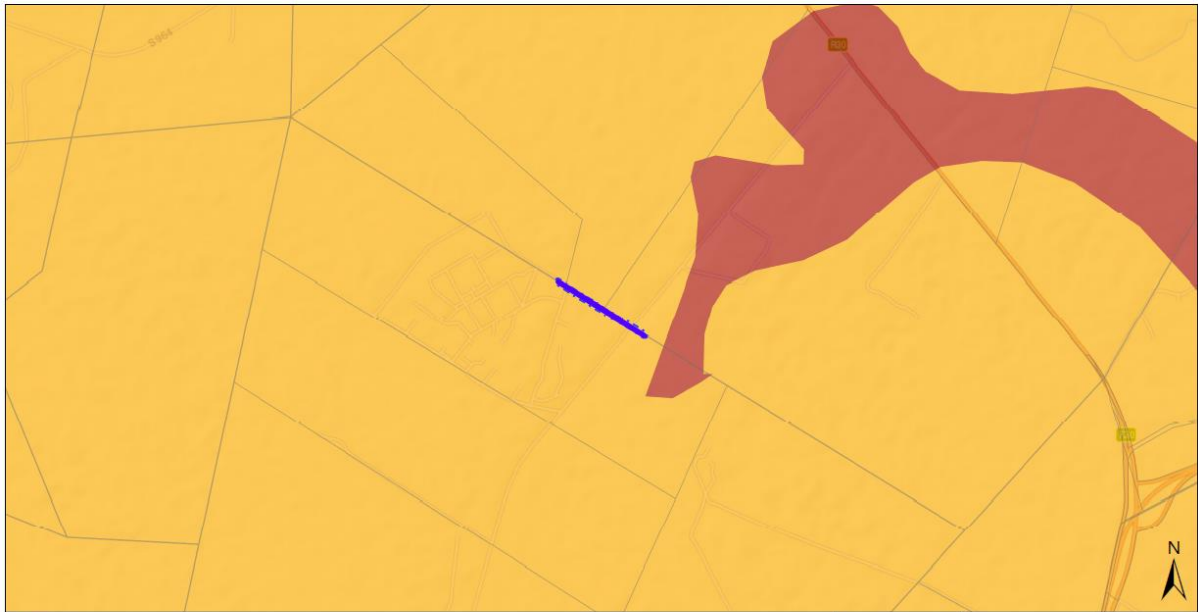


Figure 10: Updated Geology (Council of Geosciences, Pretoria) indicates that the Tetra4 132KV Transmission power line study area is underlain by alluvium, colluvium eluvium and gravel.



16 June 2023

Legend

- 33kv Buffer 25m
 - Site Area
 - EIA Application Development Footprint
 - EIA Application Site
 - National Jurisdiction Area
- | | |
|---|---|
| <ul style="list-style-type: none"> Erven Farm Portion Farm Agri Holding | <ul style="list-style-type: none"> Public Place <p>Paleontology Combined Sensitivity</p> <ul style="list-style-type: none"> Very High High Medium Low |
|---|---|

0 1.25 2.5 km
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, Swisstopo, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

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Figure 11: Palaeontological Sensitivity of the Tetra4 33KV power line in the Free State by the National Environmental Web-bases Screening Tool indicates that the Sensitivity of the development is Medium.

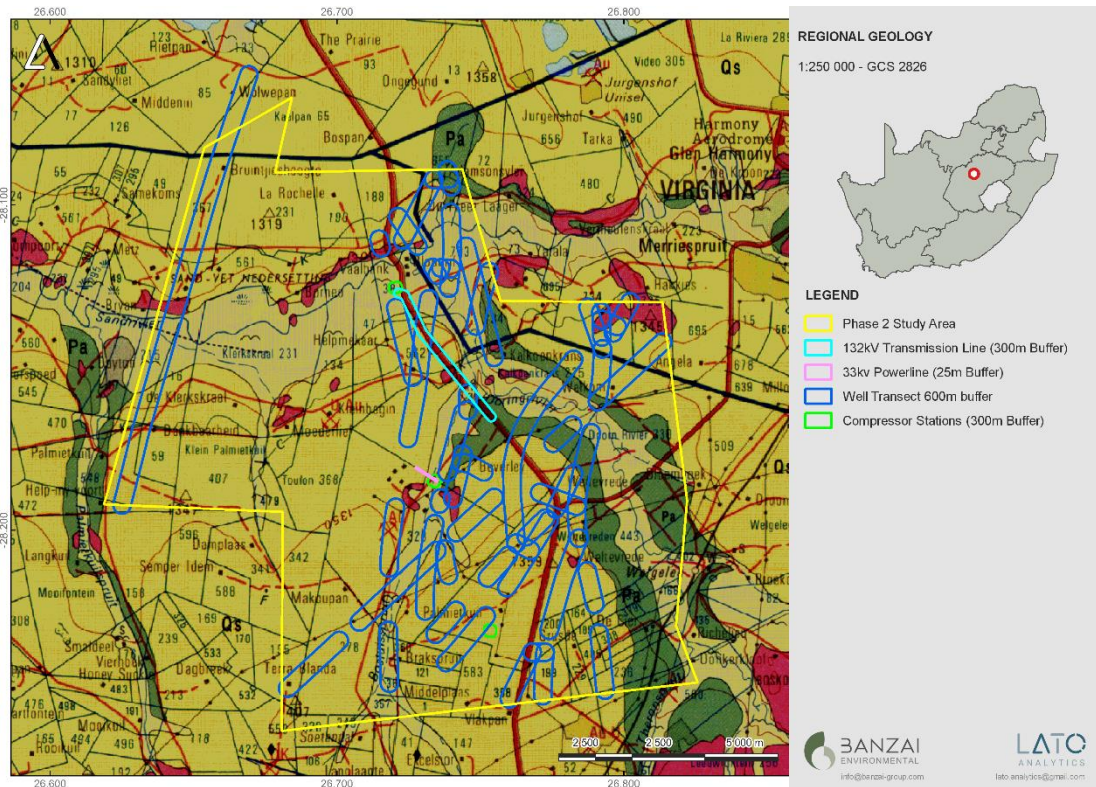


Figure 14: Geology of the power line development in relation to the 2022 Tetra4 development expansion.

6 FINDINGS AND RECOMMENDATIONS

An assessment of the original PIA conducted by Butler (2022) for the Tetra4 expansion project found that the proposed development is underlain by Quaternary sediments as well as Permian aged sandstone and shale of the Adelaide Subgroup (Beaufort Group, Karoo Supergroup). The PalaeoMap of the South African Heritage Resources Information System (SAHRIS) indicates that the Palaeontological Sensitivity of Quaternary sediments is Moderate, while that of the Adelaide Subgroup (Beaufort Group) is Very High (Almond and Pether, 2009; Almond *et al.*, 2013, Groenewald et al 2014). The updated geology of the area (Council for Geosciences) indicated that the development is underlain by Quaternary sediments while the Adelaide Subgroup is represented by the Balfour Formation. A two-day site-specific site investigation was conducted and found no visible evidence of fossiliferous outcrops in the development footprint. This could be attributed to the absence of outcrops, Low topography and lush vegetation in the area.

Our desktop assessment of the 33KV and 132KV Powerlines footprint concluded that the proposed Powerlines are underlain by Quaternary deposits as well as the Adelaide Subgroup, while the updated geology (Council for Geosciences) refined the counties geology and indicates that the development is



underlain by alluvium, colluvium eluvium and gravel. Our assessment thus concurs with the above-mentioned study of 2022.

Topographical as well as Google Earth images indicate that the relief of the proposed project is low, and outcrops in the area are rare. Therefore, the proposed power line development in the approved development will not lead to detrimental impacts on the palaeontological reserves of the area.

If Palaeontological Heritage is uncovered during surface clearing and excavations the **Chance find Protocol** attached should be implemented immediately. Fossil discoveries ought to be protected and the ECO/site manager must report to South African Heritage Resources Agency (SAHRA) (Contact details: SAHRA, 111 Harrington Street, Cape Town. PO Box 4637, Cape Town 8000, South Africa. Tel: 021 462 4502. Fax: +27 (0)21 462 4509. Web: www.sahra.org.za) so that mitigation (recording and collection) can be carried out.

Preceding any collection of fossil material, the specialist would need to apply for a collection permit from SAHRA. Fossil material must be curated in an accredited collection (museum or university collection), while all fieldwork and reports should meet the minimum standards for palaeontological impact studies suggested by SAHRA.

7 CHANCE FINDS PROTOCOL

The following procedure will only be followed if fossils are uncovered during the excavation phase of the development.

7.1 Legislation

Cultural Heritage in South Africa (includes all heritage resources) is protected by the **National Heritage Resources Act (Act No 25 of 1999) (NHRA)**. According to Section 3 of the Act, all Heritage resources 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 NHRA and are the property of the State. It is thus the responsibility of the State to manage and conserve fossils on behalf of the citizens of South Africa. Palaeontological resources may not be excavated, broken, moved, or destroyed by any development without prior assessment and without a permit from the relevant heritage resources authority as per section 35 of the NHRA.



A fossil is the naturally preserved remains (or traces thereof) of plants or animals embedded in rock. These organisms lived millions of years ago. Fossils are extremely rare and irreplaceable. By studying fossils, it is possible to determine the environmental conditions that existed in a specific geographical area millions of years ago.

This informational document is intended for workmen and foremen on construction sites. It describes the actions to be taken when mining or construction activities accidentally uncovers fossil material.

It is the responsibility of the Environmental Site Officer (ESO) or site manager of the project to train the workmen and foremen in the procedure to follow when a fossil is accidentally uncovered. In the absence of the ESO, a member of the staff must be appointed to be responsible for the proper implementation of the chance find protocol as not to compromise the conservation of fossil material.

7.2 Chance Find Procedure

- If a chance find is made the person responsible for the find must immediately **stop working** and all work that could impact that finding must cease in the immediate vicinity of the find.
- The person who made the find must immediately **report** the find to his/her direct supervisor which in turn must report the find to his/her manager and the ESO or site manager. The ESO or site manager must report the find to the relevant Heritage Agency (South African Heritage Research Agency, SAHRA). (Contact details: SAHRA, 111 Harrington Street, Cape Town. PO Box 4637, Cape Town 8000, South Africa. Tel: 021 462 4502. Fax: +27 (0)21 462 4509. Web: www.sahra.org.za). The information to the Heritage Agency must include photographs of the find, from various angles, as well as the GPS co-ordinates.
- A preliminary report must be submitted to the Heritage Agency within **24 hours** of the find and must include the following: 1) date of the find; 2) a description of the discovery and a 3) description of the fossil and its context (depth and position of the fossil), GPS co-ordinates.
- Photographs (the more the better) of the discovery must be of high quality, in focus, accompanied by a scale. It is also important to have photographs of the vertical section (side) where the fossil was found.
- Upon receipt of the preliminary report, the Heritage Agency will inform the ESO (or site manager) whether a rescue excavation or rescue collection by a palaeontologist is necessary.
- The site must be secured to protect it from any further damage. **No attempt** should be made to remove material from their environment. The exposed finds must be stabilized and covered by a plastic sheet or sand bags. The Heritage agency will also be able to advise on the most suitable method of protection of the find.



- If the fossil cannot be stabilized the fossil may be collected with extreme care by the ESO. Fossils finds must be stored in tissue paper and in an appropriate box while due care must be taken to remove all fossil material from the rescue site.
- Once the Heritage Agency has issued the written authorization, the developer may continue with the development on the affected area.