

## RECOMMENDED EXEMPTION FROM FURTHER PALAEOLOGICAL STUDIES:

# Prospecting Rights Application for a portion of Portion 16 of the Farm T'Keikams Poort 71, Prieska District, Northern Cape Province

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## EXECUTIVE SUMMARY

Tsebepix (Pty) Ltd., Kimberley, has applied for a mineral Prospecting Right over a portion of Portion 16 of the Farm T'Keikams Poort 71, situated c. 25 km SE of Prieska in the Prieska District, Northern Cape Province. The mineral prospecting rights study area to the northeast of the Doringberge is largely underlain by Permo-Carboniferous glacial sediments of the Dwyka Group (Karoo Supergroup) that are likely to be highly weathered near-surface and contain very few fossils (mainly sparse reworked blocks of stromatolitic carbonate). The overlying Late Caenozoic superficial sediments (alluvium, gravels, aeolian sands, calcretes, soils *etc*) are likewise of low palaeontological sensitivity, although Pleistocene mammalian remains (teeth, bones, horncores) might occur very sporadically here, for example in association with older consolidated alluvial and pan deposits. Within and southwest of the Doringberge Range and close to the Doringberg Fault the study area is underlain by small outcrop areas of Precambrian Transvaal Supergroup sediments (Schmidtsdrift, Campbell Rand and Asbestos Hills Subgroups). Well-preserved fossil stromatolite assemblages within shallow water carbonate horizons are possible, but unlikely to occur in this more offshore sector of the Griqualand West Basin (Prieska Subbasin). Given the small combined footprint of the proposed invasive prospecting activities, their impact significance on local fossil heritage resources is considered to be VERY LOW.

**It is therefore recommended that, pending the discovery of substantial new fossil remains during prospecting, exemption from further specialist palaeontological studies is granted for the proposed mineral prospecting on Portion 16 of Farm 71 T'Keikams Poort.**

A tabulated Chance Fossil Finds procedure for this project is appended to this report. Any substantial fossil remains (*e.g.* fossil shells, petrified wood or plant remains, vertebrate bones, teeth, stromatolites) encountered during excavation should be reported to SAHRA (P.O. Box 4637, Cape Town 8000. Contact: Dr Ragna Redelstorff. Tel: 021 202 8651. Email: rredelstorff@sahra.org.za or Ms Natasha Higgitt. Tel: 021 462 4502. Email: nhiggitt@sahra.org.za) for possible mitigation by a professional palaeontologist at the developers expense.

## 1. OUTLINE OF PROPOSED DEVELOPMENT

The company Tsebepix (Pty) Ltd., Kimberley, has applied for a Prospecting Right for Copper, Zinc, Lead, Gold, Silver, Diamond General, Sulphur, Pyrite, Molybdenum, Iron, Niobium, Phosphate, Salt, Rare Earths, Zirconium, Nickel Ore and Platinum Group Metals over a portion of Portion 16 of the Farm T'Keikams Poort 71, situated on the SW side of the N10 trunk road c. 25 km SE of Prieska in the Prieska District, Northern Cape Province (Figs. 1 & 2). The following invasive prospecting activities - *i.e.* those involving potential surface or bedrock disturbances that are relevant to the present palaeontological heritage assessment - are planned as part of five year-long phased prospecting programme, as outlined in the Background Information Document prepared by M&S Consulting, Kimberley (2018) (Fig. 3):

- **Percussion drilling**

Forty boreholes, on average 50 m deep each, are planned. All drilling will be short term and undertaken by a contractor using truck-mounted equipment. The position of the boreholes is dependent on the results of the review of historical activities, geological mapping, desktop study and geophysical survey. Each drill site will be rehabilitated. The boreholes will be filled with drill chips and covered with topsoil.

- **Core drilling**

Depending on the results from the non-invasive prospecting activities, further confirmation and exploratory drilling may be required. Core drilling will only be used if mineralization has been found. The position of the boreholes is dependent on the results of the non-invasive activities. Ten boreholes, at 50 m deep each, are planned for phase 6 and ten for phase 8. All drilling will be short term and undertaken by a contractor using skid-mounted equipment. Each drill site will be rehabilitated once completed. The boreholes will be covered with a metal plate and 1 m of previously stored topsoil. All drilling material, liquid spills and refuse will be cleared and transported to the relevant municipal landfill.

A temporary site will be established at each drilling site consisting of the following:

- Drill rig.
- Water tank for domestic use.
- Chemical toilets.

Each drilling site will be rehabilitated.

A Basic Assessment Report and Environmental Management Programme Report for the proposed Prospecting Rights application are being prepared by M and S Consulting (Pty) Ltd, Kimberley (Contact details: Ms. T. Jooste. P.O. Box 2473, Kimberley, 8300. Tel: 053 861 1765. Fax: 086 636 0731. E-Mail: ms.consulting@vodamail.co.za). Since the mineral prospecting area is underlain in part by potentially-fossiliferous bedrocks, the present palaeontological heritage assessment comment has been commissioned by Tsebepix (Pty) Ltd, Kimberley (Contact details: Mr. B. van Deventer (Director). Tsebepix (Pty) Ltd, 94 Central Road, Kimberley 8301. Cell: 083 297 6060. E-Mail: berend@inext.co.za).

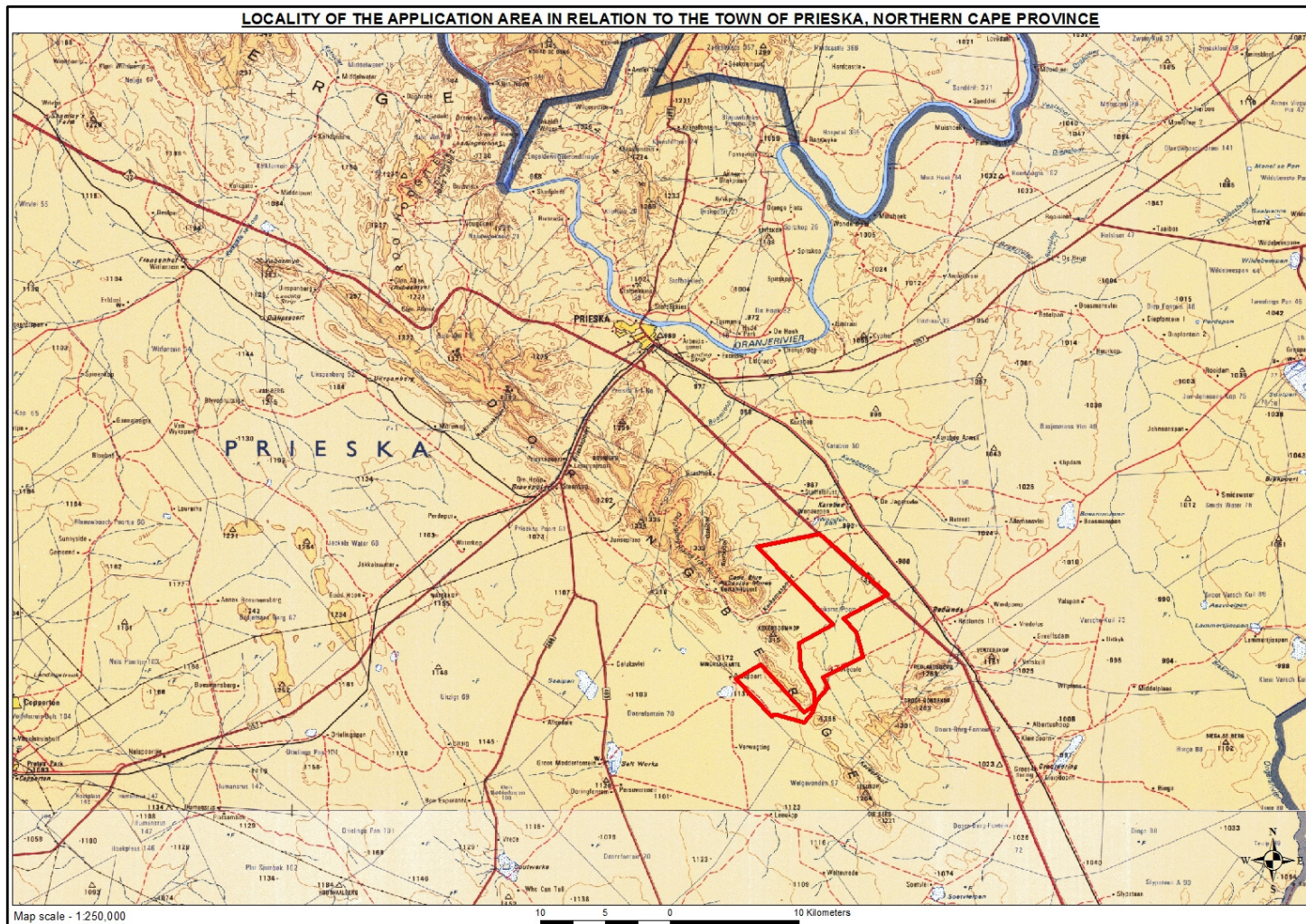


Figure 1: Map showing the location of the mineral prospecting right area (red polygon) on a portion of Portion 16 of the Farm T'Keikams Poort 71, situated c. 25 km SE of Prieska in the Prieska District, Northern Cape Province. (Map based on 1: 250 000 topographical sheet 2922 Prieska (Courtesy of the Chief Directorate: National Geospatial Information, Mowbray) and extracted from the 2018 BID prepared by M&S Consulting, Kimberley).

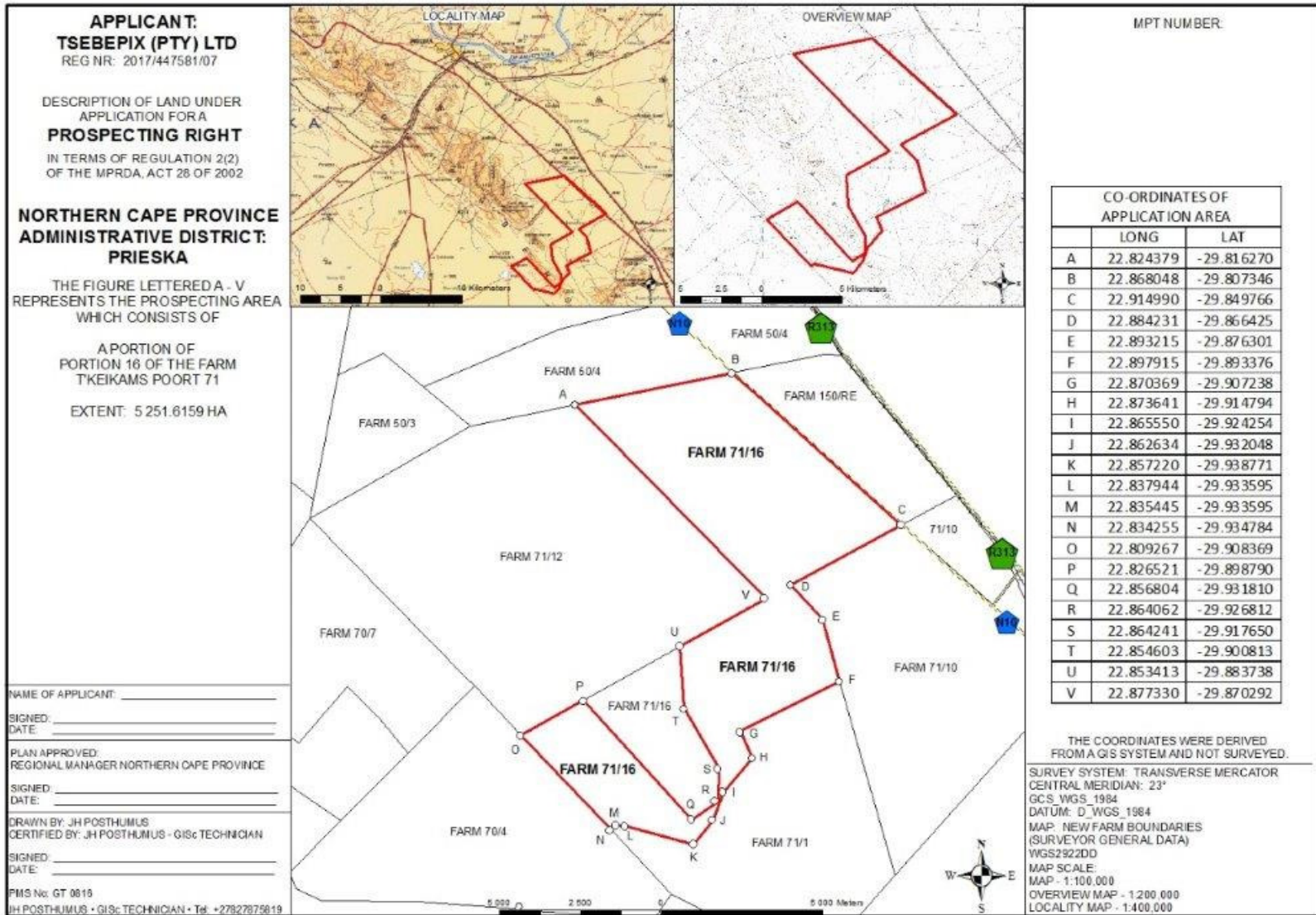


Figure 2: Map showing land portions concerned in the mineral prospecting right area (red polygon) on a portion of Portion 16 of the Farm T'Keikams Poort 71 (Image provided by M&S Consulting, Kimberley).

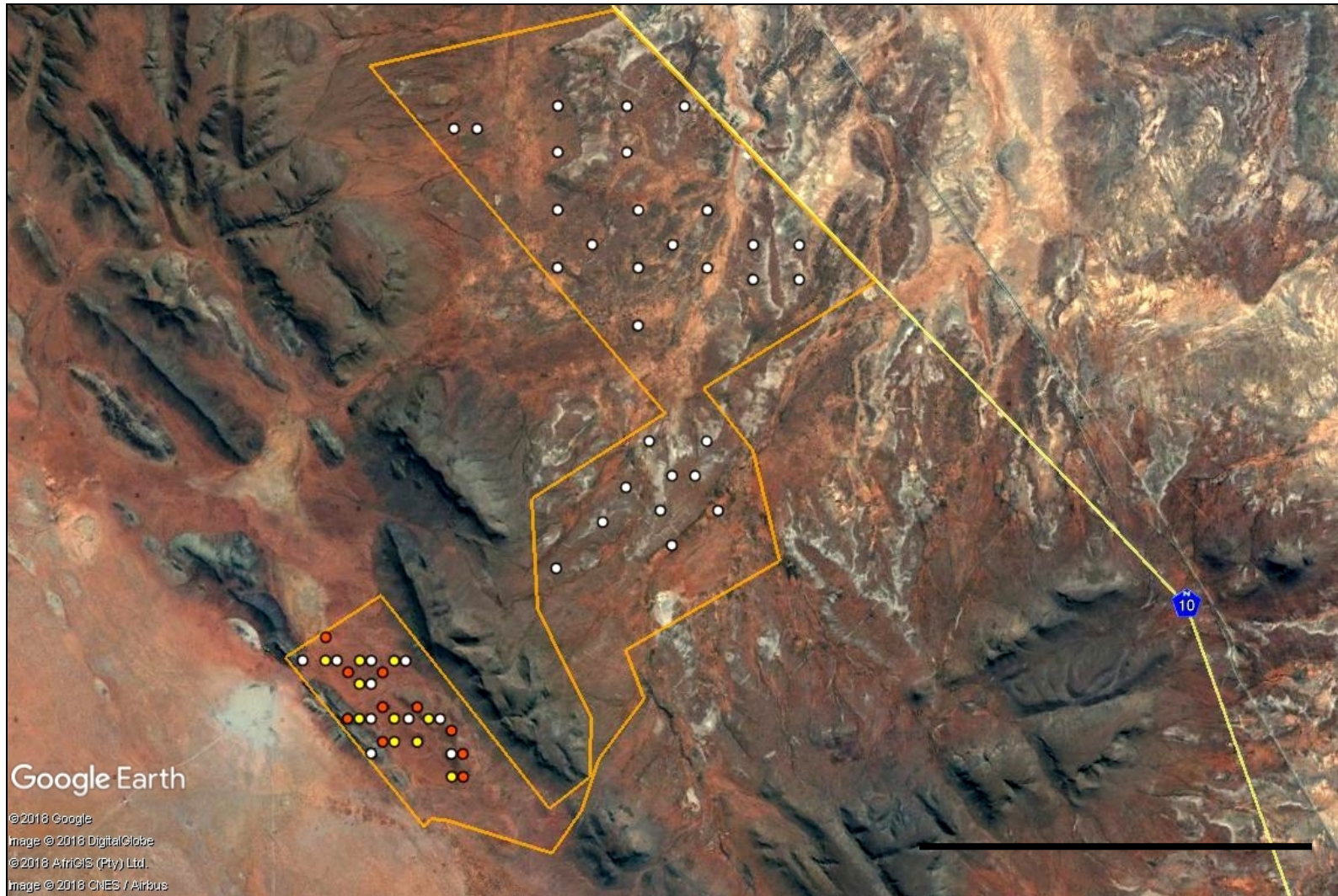


Figure 3: Google Earth© satellite image of the Tsebepix (Pty) Ltd mineral prospecting right area (yellow polygon) on a portion of Portion 16 of the Farm T'Keikams Poort 71 near Prieska. Potential sites for percussion boreholes (white dots) as well as core boreholes (yellow and orange dots) are indicated. N is towards the top of the image. Scale bar = 7 km.

## 2. GEOLOGICAL BACKGROUND

The Tsebepix (Pty) Ltd prospecting rights study area (c. 5251 ha) on a portion of Portion 16 of Farm 71 T'Keikams Poort spans the NW-SE trending Doringberge Range to the southeast of Prieska but is largely situated in fairly low-relief, semi-desert terrain at c. 1100-1170 m amsl. This region is referred to the Lower Vaal and Orange Valleys Geomorphic Province of Partridge *et al.* (2010) which borders on the Northern Cape Panveld Geomorphic Province of Bushmanland to the southwest. Local hills within the Doringberge Range reach elevations of c. 1300 m amsl (Kokerboomkop) while a narrow NW-SE trending ridge, the Mineraalrante, along the southwestern edge of the study area rises up to 1170 m amsl. The study area is drained by intermittently active, shallow streams that flow towards the north or northeast into the Karabeeloo drainage system, a south bank tributary of the Orange or Gariep River. Judging from satellite images (Fig. 3), bedrock exposure within the study area away from the Mineraalrante and Doringberge is very limited and patchy due to the extensive cover by superficial sediments.

The geology of the study area near Prieska is shown on 1: 250 000 geological map 2922 Prieska, for which a sheet explanation has yet to be published (Fig. 4). According to the map a large fraction of the study area, notably that lying north-eastwards to the Doringberge, is underlain by Permo-Carboniferous glacial sediments of the **Dwyka Group (Karoo Supergroup)**. The geology of the Dwyka Group has been summarized by Visser (1989), Visser *et al.* (1990) and Johnson *et al.* (2006), among others, and is summarized for the Prieska region by Almond (2013b 2017). According to maps in Visser *et al.* (1990) and Von Brunn and Visser (1999) the Dwyka rocks in the Prieska-Copperton area close to the northern edge of the Main Karoo Basin belong to the **Mbizane Formation**. This is equivalent to the Northern (valley and inlet) Facies of Visser *et al.* (1990). The Mbizane Formation, up to 190 m thick, is recognized across the entire northern margin of the Main Karoo Basin where it may variously form the whole or (as here) only the *upper* part of the Dwyka succession. It is characterized by its extremely heterolithic nature, with marked vertical and horizontal facies variation (Von Brunn & Visser 1999). The proportion of diamictite and mudrock is often low, the former often confined to basement depressions. Orange-tinted sandstones (often structureless or displaying extensive soft-sediment deformation, amalgamation and mass flow processes) may dominate the succession. The Mbizane-type heterolithic successions characterize the thicker Dwyka of the ancient palaeovalleys cutting back into the northern basement rocks.

In the southwestern sector of the study area, southwest of the Doringberge Range, several small outcrop areas of ancient Precambrian (late Archaean – early Proterozoic) sediments of the **Ghaap Group (Transvaal Supergroup)** are mapped in the vicinity of the major, NW-SE trending Doringberg Fault. These sediments were deposited on the Kaapvaal Craton within the Griqualand West Basin (Prieska Basin) some 2.6 to 2.5 Ga (billion years ago). They include representatives of the **Schmidtsdrift Subgroup, Campbell Rand Subgroup** and **Asbestos Hills Subgroup**, the last of which builds the Doringberge uplands as well. The Late Archaean Schmidtsdrift Subgroup – undifferentiated on the 1: 250 000 geological map – comprises shallow water platform carbonates and offshore shales with possible cherty banded iron formation and volcanogenic tuffites (Eriksson *et al.* 2006). The following Campbellrand Subgroup is dominated by stromatolitic carbonates (limestones, dolomites) and secondary cherts with subordinate carbonaceous shales and occasional tuffs (*ibid.*). The Early Proterozoic Asbestos Hills Subgroup is dominated by thinly-bedded, highly-tabular banded iron formation of the **Kuruman Formation** that is associated with an offshore, basinal depositional setting (*ibid.*). According to geological data provided by the applicant, a mineralised dyke-like intrusion of probable **carbonatite** composition and undefined age also occurs here within or adjacent to the Doringberg Fault zone.

Geological mapping as well as recent fieldwork in the Prieska region by the author (see References) indicate that the Dwyka Group and older Precambrian bedrocks in the study area are largely mantled by a range of **superficial sediments** of Late Caenozoic age (On the geological map Fig. 4 exposed Dwyka rocks are indicated in dark grey, for example along the River Orange, while subsurface occurrences away from the river are shown in pale grey). These varied superficial sediments are probably of Quaternary to Recent age for the most part and may be several meters thick. They are not mapped in detail at 1: 250 000 scale. Superficial sediments mapped in the study area to the southeast of Prieska include:

- **alluvial deposits** – probably sandy to gravelly in composition - associated with the shallow non-perennial drainage lines (pale yellow with “flying bird” symbol in Fig. 4).
- **aeolian (wind-blown) sands** normally assigned to the Gordonia Formation of the Kalahari Group that are mapped either side of the Doringberge Range (Qg, pale yellow with stipple in Fig. 4). The Gordonia Formation dune sands are considered to range in age from the Late Pliocene / Early Pleistocene, dated in part from enclosed Middle to Late Stone Age stone tools (Dingle *et al.*, 1983).

- pedocretes (ancient cemented soils) such as **calcrete hardpans** (T-Qc, dark yellow in Fig. 4) which are commonly associated with Dwyka bedrocks and ancient alluvial deposits to the NE of the Doringberge.

The superficial sediments in the study area also include colluvial deposits (*e.g.* the apron of BIF scree and sheetwash gravels extending downslope from the Doringberge) and downwasted surface gravels such as the polymict, cobbly to bouldery Obobogorop gravels commonly associated with the Dwyka outcrop area. Most of these younger deposits can be broadly assigned to the Late Cretaceous to Recent Kalahari Group, the geology of which is reviewed by Thomas (1981), Dingle *et al.* (1983), Thomas & Shaw 1991, Haddon (2000) and Partridge *et al.* (2006).

### 3. PALAEOLOGICAL HERITAGE

Detailed studies of the 2.6-2.5 Ga carbonate sediments of the Ghaap Group and their stromatolitic biotas have been presented by Young (1932 and several subsequent papers), Beukes (1980, 1983), Eriksson & Truswell (1974), Eriksson & Altermann (1998), Eriksson *et al.* (2006), Altermann and Herbig (1991), Altermann and Wotherspoon (1995), and Sumner (2002). The oldest, Archaean stromatolite occurrences from the Ghaap Group have been reviewed by Schopf (2006, with full references therein). The palaeontology of the undifferentiated **Schmidtsdrift Subgroup** in the Prieska area is poorly-known, however. Further to the northeast (Ghaap Plateau Subbasin) shallow marine carbonates (predominantly dolomites) and subordinate siliclastic sediments of the **Boomplaas Formation** are transitional between the predominantly continental Vryburg beds and the fully marine Campbell Rand platform carbonates of the Kaapvaal Craton. The Boomplaas beds include packages of oolitic and stromatolitic dolomite alternating with intervals of carbonaceous mudrocks (possibly lagoonal) containing interbeds of calcareous sandstone and mudclast breccias. Nearshore oolitic and stromatolitic facies with cherty layers and inclusions (probably secondary replacement of carbonate) predominate in the northern outcrop area of the Boomplaas Formation, as at Vryburg, while offshore mudrock facies are found towards the south - as expected in the Schmidtsdrift succession near Prieska, for example. The Boomplaas beds are overlain by the grey- to khaki-hued mudrocks and interbedded dolomites, flagstones, tuffites and BIF-like cherts of the **Clearwater Formation**, the uppermost subunit of the Schmidtsdrift Subgroup. The finer mudrocks are pitch black and locally pyritic and calcitic while the carbonates may show crinkly stromatolitic textures. On balance, it is unlikely that well-preserved, richly-stromatolitic carbonate beds are present in the - very limited, poorly-exposed and faulted - Schmidtsdrift Subgroup outcrops within the present study area that lies within the offshore, deeper-water Prieska Subbasin. Satellite images suggest that potentially fossiliferous exposures of the **Campbell Rand Subgroup** - which elsewhere is well-known for its rich stromatolitic assemblages - are unlikely to be directly impacted by the proposed prospecting work.

The deep water BIF facies of the **Asbestos Hills Subgroup (Kuruman Formation)** have not yielded stromatolites which are normally restricted to the shallow water photic zone (< 200 m) since they are constructed primarily by photosynthetic microbes. No convincing trace fossils, attributable to sizeable metazoans (multi-cellular animals), have been reported from BIF facies. However, there are several reports of microfossils from cherty sediments within the Kuruman Formation according to MacRae (1999) and Tankard *et al.* (1982). The supposed fossil medusoid or jellyfish *Gakarusia* reported from the Asbestos Hills Subgroup by Haughton (1963) ("Griquatown Beds" at Gakarusa, between Daniels Kuil and Kuruman) is almost certainly a pseudofossil (*cf* Haughton 1969, Haentzschel 1975).

The possible **carbonatite dyke** in the southwestern sector of the prospecting area is igneous in origin and of no palaeontological heritage significance.

The fossil record of the Permo-Carboniferous **Dwyka Group** is generally poor, as expected for a glacial sedimentary succession (McLachlan & Anderson 1973, Anderson & McLachlan 1976, Visser 1989, Visser *et al.*, 1990, MacRae 1999, Visser 2003, Almond 2008, 2009, Almond & Pether 2008). A wide range of fossil groups is recorded from the **Dwyka Group** of the Northern Cape but recent field studies suggest that the glacially-related sediments are generally highly weathered and calcretised near-surface in the Prieska - Copperton region while well-preserved, potentially fossiliferous interglacial beds are not well-represented at surface in the area (*e.g.* Almond 2013a, 2013b). The only fossils recorded from the Dwyka rocks in the general region are small domical to columnar stromatolites preserved within bouldery erratics of grey carbonate (probably dolomite) have been reported from the farm Klipgats Pan by Almond (2013b). These erratics have probably been transported by ice movement from the Campbell Rand Subgroup (Ghaap Group) that crops out in the Ghaap Plateau to the north of Prieska. These reworked fossils are not of great palaeontological significance.

The fossil record of the **Kalahari Group** is also generally sparse and low in diversity. The **Gordonia Formation** dune sands were mainly active during cold, drier intervals of the Pleistocene Epoch that were inimical to most forms of life, apart from hardy, desert-adapted species. Porous dune sands are not generally conducive to fossil preservation. However, mummification of soft tissues may play a role here and migrating lime-rich groundwaters derived from the underlying bedrocks (including, for example, dolerite) may lead to the rapid calcretisation of organic structures such as burrows and root casts. Occasional terrestrial fossil remains that might be expected within this unit include calcretized rhizoliths (root casts) and termitaria (e.g. *Hodotermes*, the harvester termite), ostrich egg shells (*Struthio*) and shells of land snails (e.g. *Trigonephrus*) (Almond 2008, Almond & Pether 2008). Other fossil groups such as freshwater bivalves and gastropods (e.g. *Corbula*, *Unio*) and snails, ostracods (seed shrimps), charophytes (stonewort algae), diatoms (microscopic algae within siliceous shells) and stromatolites (laminated microbial limestones) are associated with local watercourses and pans. Microfossils such as diatoms may be blown by wind into nearby dune sands. These Kalahari fossils (or subfossils) can be expected to occur sporadically but widely, and the overall palaeontological sensitivity of the Gordonia Formation is therefore considered to be low. Underlying calcretes of the **Mokolanen Formation** as well as younger calcretes associated with modern pans and drainage lines might also contain trace fossils such as rhizoliths, termite and other insect burrows, or even mammalian trackways.

Mammalian bones, teeth and horn cores (also tortoise remains, and fish, amphibian or even crocodiles in wetter depositional settings such as pans) may be expected occasionally expected within Kalahari Group sediments and calcretes, notably those associated with ancient, Plio-Pleistocene alluvial gravels. Important fossil mammalian remains assigned to the Florisian Mammal Age (c. 300 000 – 12 000 BP; MacRae 1999) have recently been documented from calcrete hardpans and underlying sediments at Bundu Pan, some 22 km northwest of Copperton (Kiberd 2006 and refs. therein). However, such fossil sites are likely to be sparsely distributed and their locations difficult to predict, given the extensive younger sedimentary cover.

It is concluded that the mineral prospecting study area on Portion 16 of Farm 71 T'Keikams Poort is generally of LOW palaeontological sensitivity. Sparse occurrences of Plio-Pleistocene mammal remains might occur here in association with older, consolidated alluvial and pan deposits, while stromatolitic assemblages might be associated with any shallow water carbonate facies in the Schmidtsdrift Subgroup outcrop area, if any such are indeed present here.

#### **4. CONCLUSIONS & RECOMMENDATIONS**

The mineral prospecting rights study area on Portion 16 of Farm 71 T'Keikams Poort to the northeast of the Doringberge is largely underlain by Permo-Carboniferous glacial sediments of the Dwyka Group (Karoo Supergroup) that are likely to be highly weathered near-surface and contain very few fossils (mainly sparse reworked blocks of stromatolitic carbonate). The overlying Late Caenozoic superficial sediments (alluvium, gravels, aeolian sands, calcretes, soils *etc*) are likewise of low palaeontological sensitivity, although Pleistocene mammalian remains (teeth, bones, horncores) might occur very sporadically here, for example in association with older consolidated alluvial and pan deposits. Within and southwest of the Doringberge Range and close to the Doringberg Fault the study area is underlain by small outcrop areas of Precambrian Transvaal Supergroup sediments (Schmidtsdrift, Campbell Rand and Asbestos Hills Subgroups). Well-preserved fossil stromatolite assemblages within shallow water carbonate horizons are possible but unlikely to occur in this more offshore sector of the Griqualand West Basin (Prieska Subbasin). Given the small combined footprint of the proposed invasive prospecting activities, their impact significance on potential local fossil heritage resources is considered to be VERY LOW.

**It is therefore recommended that, pending the discovery of substantial new fossil remains during prospecting, exemption from further specialist palaeontological studies is granted for the proposed mineral prospecting on Portion 16 of Farm 71 T'Keikams Poort.**

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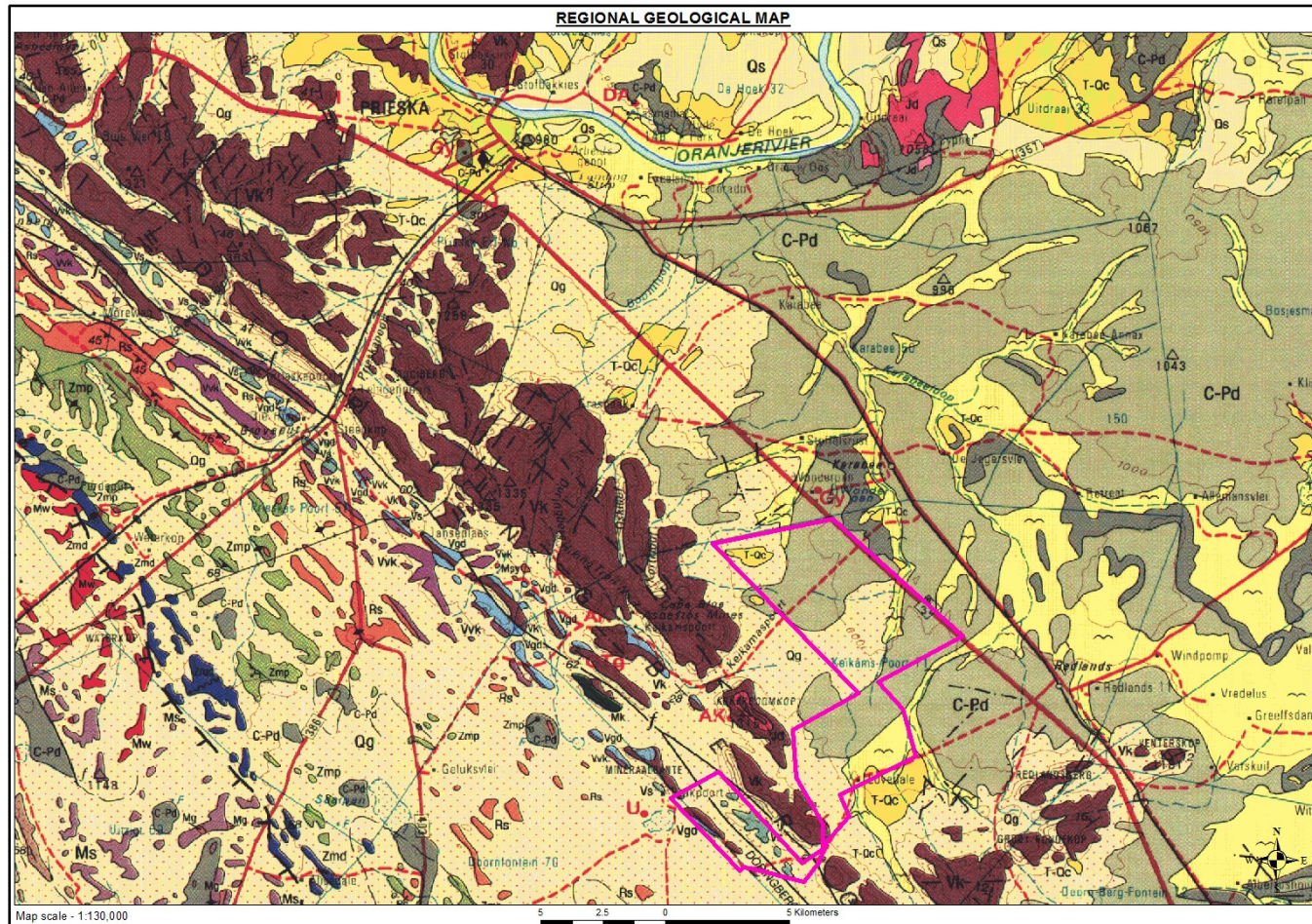


Figure 4: Extract from 1: 250 000 geology map 2922 Prieska (Council for Geoscience, Pretoria) showing the main geological units mapped within the prospecting study area on Portion 16 of Farm 71 T'Keikams Poort spanning the Doringberge Range up to the Doringberg Fault in the southwest (pink polygon) (Map provided by M&S Consulting). These rock units include:

1. Late Archaean – Early Proterozoic sediments of the Transvaal Supergroup (Ghaap Group) including small outcrop areas of the Schmidtsdrift Subgroup (Vs, middle grey), Campbell Rand Subgroup (Vgd, pale blue) and Asbestos Hills Subgroup (Kuruman Formation, Vk, brown).
2. Karoo Supergroup sediments: grey (C-Pd) = Mbizane Formation (Dwyka Group)
3. Late Caenozoic (Quaternary to Recent) superficial deposits: dark yellow (T-Qc) = calcrete hardpans; pale yellow with stipple (Qg) = Gordonia Formation (Kalahari Group); pale yellow with flying bird symbol = alluvium.

## 5. KEY REFERENCES

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## **6. QUALIFICATIONS & EXPERIENCE OF THE AUTHOR**

Dr John Almond has an Honours Degree in Natural Sciences (Zoology) as well as a PhD in Palaeontology from the University of Cambridge, UK. He has been awarded post-doctoral research fellowships at Cambridge University and in Germany, and has carried out palaeontological research in Europe, North America, the Middle East as well as North and South Africa. For eight years he was a scientific officer (palaeontologist) for the Geological Survey / Council for Geoscience in the RSA. His current palaeontological research focuses on fossil record of the Precambrian - Cambrian boundary and the Cape Supergroup of South Africa. He has recently written palaeontological reviews for several 1: 250 000 geological maps published by the Council for Geoscience and has contributed educational material on fossils and evolution for new school textbooks in the RSA.

Since 2002 Dr Almond has also carried out palaeontological impact assessments for developments and conservation areas in the Western, Eastern and Northern Cape, Limpopo, Northwest, Mpumalanga,

KwaZulu-Natal and the Free State under the aegis of his Cape Town-based company *Natura Viva* cc. He has served as a long-standing member of the Archaeology, Palaeontology and Meteorites Committee for Heritage Western Cape (HWC) and an advisor on palaeontological conservation and management issues for the Palaeontological Society of South Africa (PSSA), HWC and SAHRA. He is currently compiling technical reports on the provincial palaeontological heritage of Western, Northern and Eastern Cape for SAHRA and HWC. Dr Almond is an accredited member of PSSA and APHP (Association of Professional Heritage Practitioners – Western Cape).

### **Declaration of Independence**

I, John E. Almond, declare that I am an independent consultant and have no business, financial, personal or other interest in the proposed project, application or appeal in respect of which I was appointed other than fair remuneration for work performed in connection with the activity, application or appeal. There are no circumstances that compromise the objectivity of my performing such work.



**Dr John E. Almond**  
**Palaeontologist**  
***Natura Viva* cc**

<b>CHANCE FOSSIL FINDS PROCEDURE: Mineral prospecting on Portion 16 of Farm 71 T'Keikams Poort</b>		
<b>Province &amp; region:</b>	<b>NORTHERN CAPE, Prieska District</b>	
<b>Responsible Heritage Resources Authority</b>	SAHRA, P.O. Box 4637, Cape Town 8000. Contact: Dr Ragna Redelstorff. Tel: 021 202 8651. Email: rredelstorff@sahra.org.za or Ms Natasha Higgitt. Tel: 021 462 4502. Email: nhiggitt@sahra.org.za	
<b>Rock unit(s)</b>	Late Caenozoic alluvium and calcretes including sands and gravels Possible carbonate units within the Ghaap Group (Schmidtsdrift & Campbell Rand Subgroups)	
<b>Potential fossils</b>	Vertebrate bones, teeth and horn cores, mollusc and crustacean remains or plant material such as subfossil wood within Late Caenozoic alluvium, pan sediments & calcretes. Possible stromatolites within Ghaap Group carbonate rocks.	
<b>ECO protocol</b>	1. Once alerted to fossil occurrence(s): alert site foreman, stop work in area immediately ( <i>N.B.</i> safety first!), safeguard site with security tape / fence / sand bags if necessary.	
	2. Record key data while fossil remains are still <i>in situ</i> : <ul style="list-style-type: none"> <li>• Accurate geographic location – describe and mark on site map / 1: 50 000 map / satellite image / aerial photo</li> <li>• Context – describe position of fossils within stratigraphy (rock layering), depth below surface</li> <li>• Photograph fossil(s) <i>in situ</i> with scale, from different angles, including images showing context (<i>e.g.</i> rock layering)</li> </ul>	
	3. If feasible to leave fossils <i>in situ</i> : Alert Heritage Resources Authority and project palaeontologist (if any) who will advise on any necessary mitigation Ensure fossil site remains safeguarded until clearance is given by the Heritage Resources Authority for work to resume.	3. If <i>not</i> feasible to leave fossils <i>in situ</i> (emergency procedure only):  <i>Carefully</i> remove fossils, as far as possible still enclosed within the original sedimentary matrix ( <i>e.g.</i> entire block of fossiliferous rock) Photograph fossils against a plain, level background, with scale Carefully wrap fossils in several layers of newspaper / tissue paper / plastic bags Safeguard fossils together with locality and collection data (including collector and date) in a box in a safe place for examination by a palaeontologist Alert Heritage Resources Authority and project palaeontologist (if any) who will advise on any necessary mitigation
	4. If required by Heritage Resources Authority, ensure that a suitably-qualified specialist palaeontologist is appointed as soon as possible by the developer.	
	5. Implement any further mitigation measures proposed by the palaeontologist and Heritage Resources Authority	
<b>Specialist palaeontologist</b>	Record, describe and judiciously sample fossil remains together with relevant contextual data (stratigraphy / sedimentology / taphonomy). Ensure that fossils are curated in an approved repository ( <i>e.g.</i> museum / university / Council for Geoscience collection) together with full collection data. Submit Palaeontological Mitigation report to Heritage Resources Authority. Adhere to best international practice for palaeontological fieldwork and Heritage Resources Authority minimum standards.	