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**A PHASE 1 HERITAGE IMPACT ASSESSMENT & REPORT FOR THE
VANADIUM RESOURCES SALT ROAST LEACH PLANT
ON A PORTION OF PORTIONS 3 & 13 OF THE FARM TWEEFONTEIN 360KT
NEAR STEELPOORT IN THE LIMPOPO PROVINCE**

For:

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REPORT: **APAC022/37**

by:

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April 2022

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A handwritten signature in black ink, appearing to be 'A. Pelser', is centered below the text.

SUMMARY

APelser Archaeological Consulting (APAC) was appointed by Red Kite Environmental Solutions (Pty) Ltd to conduct a Phase 1 Heritage Impact Assessment for the proposed Vanadium Resources Salt Roast Leach Plant Development. The proposed development & study area is located on a portion of Portions 3 & 13 of the farm Tweefontein 360KT, near Steelpoort in the Limpopo Province.

Background research indicates that there are some cultural heritage (archaeological & historical) sites and features in the larger geographical area within which the study area falls, while a number of sites and features of archaeological origin & significance were identified and recorded in the study area and proposed development boundaries during the April 2022 field assessment. This report discusses the results of both the background research and physical assessment and provides recommendations on the way forward at the end.

From a Cultural Heritage point of view it can be concluded that the proposed Vanadium Resources Salt Roast Leach Plant development can be allowed to continue, once the recommendations on required mitigation measures put forward at the end of the report has been implemented.

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1. INTRODUCTION

APelser Archaeological Consulting (APAC) was appointed by Red Kite Environmental Solutions (Pty) Ltd to conduct a Phase 1 Heritage Impact Assessment for the proposed Vanadium Resources Salt Roast Leach Plant Development. The proposed development & study area is located on a portion of Portions 3 & 13 of the farm Tweefontein 360KT, near Steelpoort in the Limpopo Province.

Background research indicates that there are some cultural heritage (archaeological & historical) sites and features in the larger geographical area within which the study area falls, while a number of sites and features of archaeological origin & significance were identified and recorded in the study area and proposed development boundaries during the April 2022 field assessment.

The client indicated the location and boundaries of the study area and the assessment focused on this portion.

2. TERMS OF REFERENCE

The Terms of Reference for the study was to:

1. Identify all objects, sites, occurrences and structures of an archaeological or historical nature (cultural heritage sites) located on the portion of land that will be impacted upon by the proposed development;
2. Assess the significance of the cultural resources in terms of their archaeological, historical, scientific, social, religious, aesthetic and tourism value;
3. Describe the possible impact of the proposed development on these cultural remains, according to a standard set of conventions;
4. Propose suitable mitigation measures to minimize possible negative impacts on the cultural resources;
5. Review applicable legislative requirements;

3. LEGISLATIVE REQUIREMENTS

Aspects concerning the conservation of cultural resources are dealt with mainly in two Acts. These are the National Heritage Resources Act (Act 25 of 1999) and the National Environmental Management Act (Act 107 of 1998).

3.1. The National Heritage Resources Act

According to the Act the following is protected as cultural heritage resources:

- a. **Archaeological artifacts, structures and sites older than 100 years**
- b. Ethnographic art objects (e.g. prehistoric rock art) and ethnography
- c. Objects of decorative and visual arts
- d. Military objects, structures and sites older than 75 years
- e. Historical objects, structures and sites older than 60 years
- f. Proclaimed heritage sites
- g. Grave yards and graves older than 60 years
- h. Meteorites and fossils
- i. Objects, structures and sites of scientific or technological value.

The National Estate includes the following:

- a. Places, buildings, structures and equipment of cultural significance
- b. Places to which oral traditions are attached or which are associated with living heritage
- c. Historical settlements and townscapes
- d. Landscapes and features of cultural significance
- e. Geological sites of scientific or cultural importance
- f. **Sites of Archaeological and paleontological importance**
- g. Graves and burial grounds
- h. Sites of significance relating to the history of slavery
- i. **Movable objects (e.g. archaeological, paleontological, meteorites, geological specimens, military, ethnographic, books etc.)**

A Heritage Impact Assessment (HIA) is the process to be followed in order to determine whether any heritage resources are located within the area to be developed as well as the possible impact of the proposed development thereon. An Archaeological Impact Assessment (AIA) only looks at archaeological resources. A HIA must be done under the following circumstances:

- a. The construction of a linear development (road, wall, power line, canal etc.) exceeding 300m in length
- b. The construction of a bridge or similar structure exceeding 50m in length
- c. Any development or other activity that will change the character of a site and exceed 5 000m² or involve three or more existing erven or subdivisions thereof
- d. Re-zoning of a site exceeding 10 000m²
- e. Any other category provided for in the regulations of SAHRA or a provincial heritage authority

Structures

Section 34(1) of the Act state that no person may demolish any structure or part thereof that is older than 60 years without a permit issued by the relevant provincial heritage resources authority.

A structure means any building, works, device or other facility made by people and which is fixed to land, and includes any fixtures, fittings and equipment associated therewith.

Alter means any action affecting the structure, appearance or physical properties of a place or object, whether by way of structural or other works, by painting, plastering or the decoration or any other means.

Archaeology, palaeontology and meteorites

Section 35(4) of the Act deals with archaeology, palaeontology and meteorites. The Act states that no person may, without a permit issued by the responsible heritage resources authority (national or provincial)

- a. destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or paleontological site or any meteorite;
- b. destroy, damage, excavate, remove from its original position, collect or own any archaeological or paleontological 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 paleontological material or object, or any meteorite; or
- d. bring onto or use at an archaeological or paleontological site any excavation equipment or any equipment that assists in the detection or recovery of metals or archaeological and paleontological material or objects, or use such equipment for the recovery of meteorites.
- e. alter or demolish any structure or part of a structure which is older than 60 years as protected.

The above mentioned may only be disturbed or moved by an archaeologist, after receiving a permit from the South African Heritage Resources Agency (SAHRA). In order to demolish such a site or structure, a destruction permit from SAHRA will also be needed.

Human remains

Graves and burial grounds are divided into the following:

- a. ancestral graves
- b. royal graves and graves of traditional leaders
- c. graves of victims of conflict
- d. graves designated by the Minister
- e. historical graves and cemeteries
- f. human remains

In terms of Section 36(3) of the National Heritage Resources Act, no person may, without a permit issued by the relevant heritage resources authority:

- a. destroy, damage, alter, exhume or remove from its original position of otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;
- b. destroy, damage, alter, exhume or remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or
- c. bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation, or any equipment which assists in the detection or recovery of metals.

Human remains that are less than 60 years old are subject to provisions of the Human Tissue Act (Act 65 of 1983) and to local regulations. Exhumation of graves must conform to the standards set out in the **Ordinance on Excavations (Ordinance no. 12 of 1980)** (replacing the old Transvaal Ordinance no. 7 of 1925).

Permission must also be gained from the descendants (where known), the National Department of Health, Provincial Department of Health, Premier of the Province and local police. Furthermore, permission must also be gained from the various landowners (i.e. where the graves are located and where they are to be relocated to) before exhumation can take place.

Human remains can only be handled by a registered undertaker or an institution declared under the **Human Tissues Act (Act 65 of 1983 as amended)**.

3.2. The National Environmental Management Act

This Act states that a survey and evaluation of cultural resources must be done in areas where development projects, that will change the face of the environment, will be undertaken. The impact of the development on these resources should be determined and proposals for the mitigation thereof are made.

Environmental management should also take the cultural and social needs of people into account. Any disturbance of landscapes and sites that constitute the nation's cultural heritage should be avoided as far as possible and where this is not possible the disturbance should be minimized and remedied.

4. METHODOLOGY

4.1. Survey of literature

A survey of available literature was undertaken in order to place the development area in an archaeological and historical context. The sources utilized in this regard are indicated in the bibliography.

4.2. Field survey

The field assessment section of the study was conducted according to generally accepted HIA practices and aimed at locating all possible objects, sites and features of heritage significance in the area of the proposed development. The location/position of all sites, features and objects is determined by means of a Global Positioning System (GPS) where possible, while detail photographs are also taken where needed.

4.3. Oral histories

People from local communities are sometimes interviewed in order to obtain information relating to the surveyed area. It needs to be stated that this is not applicable under all circumstances. When applicable, the information is included in the text and referred to in the bibliography.

4.4. Documentation

All sites, objects, features and structures identified are documented according to a general set of minimum standards. Co-ordinates of individual localities are determined by means of the Global Positioning System (GPS). The information is added to the description in order to facilitate the identification of each locality.

5. DESCRIPTION OF THE AREA

Vanadium Resources proposes to construct and operate a Salt Roast Leach (SRL) plant on a portion of Portions 13 and 3 of the farm Tweefontein 360 KT. The study & proposed development area is located close to Steelpoort in the Limpopo Province.

Vanadium containing titaniferous magnetite from the SPD Mine concentrator plant will be transported to the SRL Plant via truck. Refer to the SRL Plant Process for details of the plant process. The salt roasting process or roast-leach process is the direct extraction of Vanadium from titaniferous magnetite ore. It is a multi-step process of crushing-milling-roasting-leaching-precipitation and calcination to produce only Vanadium in the form of Vanadium Pentoxide (V₂O₅) flakes. Ore is finely crushed and milled to micron size, then roasted in a kiln with added sodium salt to form water-soluble sodium vanadate. It is then leached using water, and the pregnant solution is precipitated by adding Ammonium Chloride and forming Ammonium Metavanadate (AMV). The AMV is further calcined (heated up) to form high purity V₂O₅ material.

The proposed project will include the following infrastructure and activities:

- SRL Plant
- Tailings Storage Facility
- Raw water storage tank/s
- Return water tanks
- Storm water management infrastructure, including PCD/s

- Plant feed and product stockpiling
- Offices and ablution facilities
- Access and haul roads
- Security and fencing of operational areas
- Boreholes for groundwater abstraction and groundwater monitoring

The topography of the study & proposed development area is for the most part relatively flat and open, although some prominent hills and mountainous areas are located in the larger region and bordering the specific study portion. During the field assessment the vegetation (tree/shrubs/bush and grass cover) was very dense in some sections, hampering visibility and access. There are some patches of open ground (erosion) where most of the archaeological sites and material were identified. Some dirt roads had limited impacts on the area. The area would have been utilized in the past for agricultural purposes (mostly livestock grazing/keeping), with the larger area around the proposed development site heavily impacted by past and ongoing mining activities (e.g. Sylvania Tweefontein).



Figure 1: General location of study & proposed development area (Google Earth).

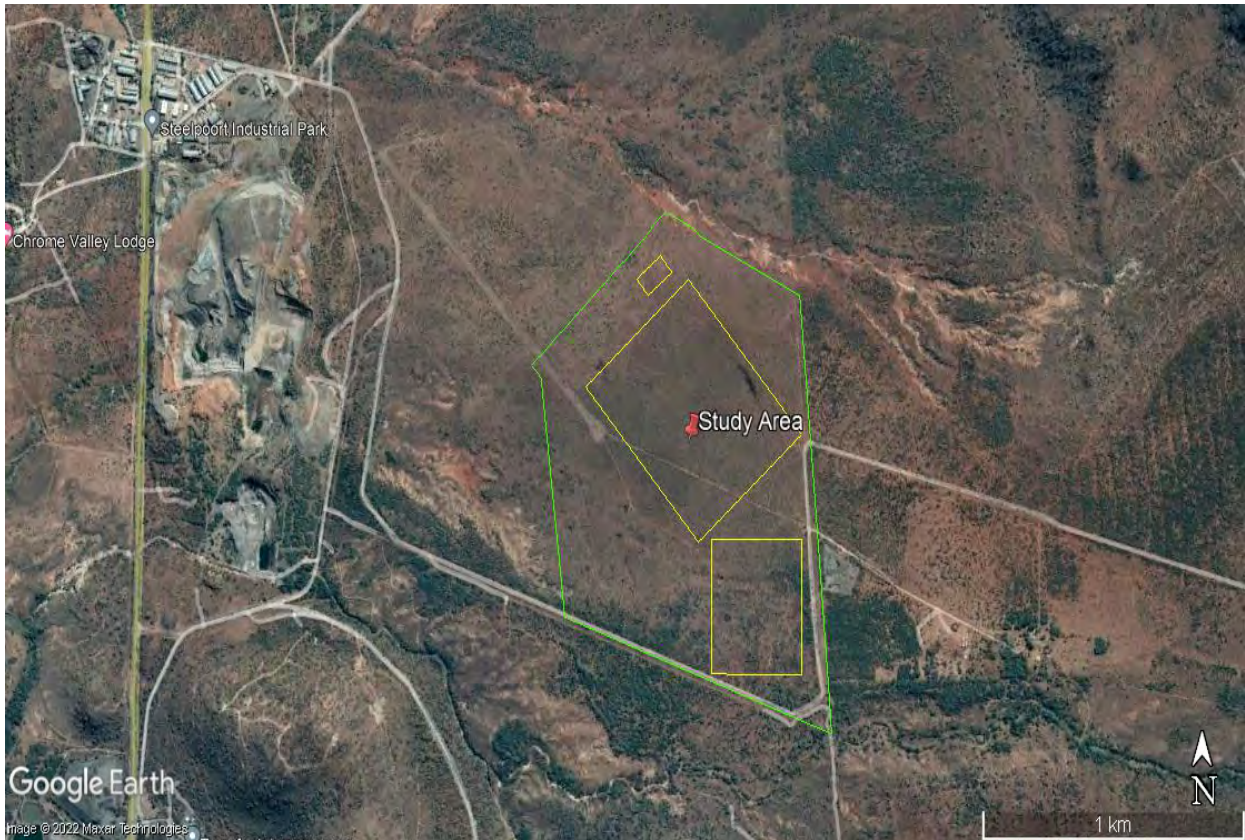


Figure 2: Closer view of study & proposed development area footprint (Google Earth 2022).

6. DISCUSSION

The Stone Age is the period in human history when lithic (stone) material was mainly used to produce tools. In South Africa the Stone Age can be divided in basically into three periods. It is however important to note that dates are relative and only provide a broad framework for interpretation. A basic sequence for the South African Stone Age (Lombard et.al 2012) is as follows:

Earlier Stone Age (ESA) up to 2 million – more than 200 000 years ago

Middle Stone Age (MSA) less than 300 000 – 20 000 years ago

Later Stone Age (LSA) 40 000 years ago – 2000 years ago

It should also be noted that these dates are not a neat fit because of variability and overlapping ages between sites (Lombard et.al 2012: 125).

Some Stone Age sites and artifacts are known to exist in the larger geographical area, and were identified and studied by the author during previous assessments and archaeological mitigation at the Sylvania Lannex section (Pelser et.al 2010). These sites are open-air surface sites located in and around erosion dongas.

No Stone Age sites or material were identified in the proposed SRL area during the April 2022, although some were recorded during a recent study by Pelsler in the Sylvania Tweefontein Section (Pelsler 2020: 14-15).

The Iron Age is the name given to the period of human history when metal was mainly used to produce metal artifacts. In South Africa it can be divided in two separate phases (Bergh 1999: 96-98), namely:

Early Iron Age (EIA) 200 – 1000 A.D

Late Iron Age (LIA) 1000 – 1850 A.D.

Huffman (2007: xiii) however indicates that a Middle Iron Age should be included. His dates, which now seem to be widely accepted in archaeological circles, are:

Early Iron Age (EIA) 250 – 900 A.D.

Middle Iron Age (MIA) 900 – 1300 A.D.

Late Iron Age (LIA) 1300 – 1840 A.D.

Early Iron Age sites are known to exist in the larger Steelpoort Valley area (Pistorius 2006), while Later Iron Age stone-walled sites are also known and have been archaeologically studied in the larger geographical area in the past (Van Schalkwyk 2013; Pelsler 2013). The origins of the first Bantu-Negroid farming communities who practiced agriculture, live-stock herding and metal working can be traced to the Steelpoort Valley. These Early Iron Age farming communities, whose settlements have been recorded on amongst others Hendriksplaats 281 and Derde Gelid 278, were related to Early Iron Age communities who, contemporaneously, from AD500 to AD900, settled further towards the east in the Lydenburg Valley. One of the settlements belonging to the Early Iron Age Lydenburg culture won international acclaim as the so-called Lydenburg Heads (clay masks) were discovered at this site near the Sterkspruit, south of Lydenburg (Pistorius 2013: 18).

All the sites and material identified in the SRL area during the April 2022 assessment dates to the (Early) Iron Age and is similar to sites recorded by the author in the Sylvania Tweefontein Section in 2020 (Pelsler 2020: 14-15).

The historical age started with the first recorded oral histories in the area. It includes the moving into the area of people that were able to read and write. The first Europeans to travel close to this area were the group of Scoon in 1836 (Bergh 1999: 13).

The historical period in the Steelpoort Valley is associated with the second millennium AD when a predominantly Northern Sotho-speaking population occupied the Steelpoort. These people are part of a larger Northern Sotho-speaking community who occupy a vast area between the Limpopo River in the north, the Drakensberg in the east and the Sekhukhune Mountains in the west. Numerous divisions and groups or clans occupied this vast region. The history of the people of this area can be divided into several periods:

The earliest period of settlement is characterized by small groups of Bantu speaking people who started to drive the San and Khoi from the area and who are difficult to identify. From approximately AD1700 ancestral groupings of the present inhabitants of the land began to arrive in the area. Groups that can be distinguished include:

1. A large group of Sotho who came from the north-eastern parts of the Lowveld and who settled on the plateau to the north and to the south of the Strydpoortberge.
2. Small groups of Kgatla and Huruthshe-Kwena origin moved from the Tswana area (Brits and Rustenburg) into the territory. Amongst them were the present Pedi (or Rota) who moved into what is now Sekhukhuneland, where they subjected the Sotho already living there.
3. During these times Sekhukhuneland was also penetrated by Sotho arriving from the south-east.
4. After AD1600 the Northern Ndebele arrived from the south-east and settled in what is now the Mokerong district (Pistorius 2013: 19).

It is assumed that during the period from AD1700 to AD1826 the Pedi took political control over the territory previously known as Lebowa, but to the south of the Strydpoortberge. The Pedi chiefdom reached its zenith during the reign of Thulare who died in 1824. During the disruption of the difaqane (AD1822 to AD1828) Mzilikazi attacked the Pedi from the south-east in 1826 and in 1827/1828. This caused large-scale depopulation of the southern part of the Northern-Sotho territory. The Pedi sought refuge in the Soutpansberg in 1822 and only returned in 1828. After the wars with Mzilikazi there were wars with the Swazi. The Voortrekkers arrived in the Steelpoort area in the late 1840's. Several armed struggles between the Voortrekkers and the Pedi ensued (Pistorius 2013: 19-20).

After the British annexed the Transvaal (AD1877 to AD1881) the Pedi was subjugated by the British who were supported by the Swazi during the war of Sekhukhune in 1879. In 1842 Andries Hendrik Potgieter wished to move from the British sphere of influence and to establish trade relations with Delagoa Bay. He moved with his followers from Potchefstroom to the Eastern Transvaal and founded Andries Ohrigstad (named after himself and Gergios Gerhardus Ohrig, a merchant from Amsterdam who was well disposed towards the Voortrekkers). The name was later abbreviated to Ohrigstad. The town also served as the seat of the Volksraad. During 1848 to 1849 Ohrigstad was abandoned when many people died of malaria. The town of Lydenburg was founded further to the south near the confluence of the Sterkspruit and the Spekboom River. This area was located on higher ground and was therefore healthier than Ohrigstad. The railway line between Steelpoort and Lydenburg was constructed in 1924 due to an increase in the mining of chrome and magnetite. The name Steelpoort is derived from a hunting expedition that took place either in the late 19th century or the early 20th century. When a group of Voortrekkers from Natal under Frans Joubert had settled there, a man called Scholtz shot an elephant at dusk and on returning next morning found that the tusks had been removed. When the wagons were searched, the tusks were found in the possession of a man called Botha, after which the

farm Bothashoek was named. Because an elephant had been killed there, the Poort was named Olifantspoort. The river flowing through the Poort was called Steelpoort River [„steel“ meaning steal] (Pistorius 2013: 20).

The Pedi were governed by Thulware until his death in 1824. His main village was Monganeng on the banks of the Tubatse River. His son, Sekwati, fled to the Soutpansberg in the north during the raids of Mzilikazi in 1822. He returned in 1828 and occupied the mountain fortress Phiring, his capital from where he united the Pedi. The Pedi initially maintained good relations with the Voortrekkers who arrived in Ohrigstad from 1845. However, after a clash with Andries Hendrik Potgieter in 1852 Sekwati moved his capital to Thaba Mosego. Border disputes with the Zuid-Afrikaansche Republiek (ZAR) were settled in 1857 with an accord that stated that the Steelpoort River served as the border between Pedi land and the Lydenburg Republic. Sekwati gave the Berlin Missionary Society permission to establish the Maandagshoek missionary station in Pedi territory. After Sekwati's death in 1861, his son Sekhukhune succeeded his father and also established his village at Thaba Mosego. He ordered the Berlin Missionary Society to discontinue their work and the mission station was burn down. Alexander Merensky, one of the missionaries, thereafter established the well-known Botšabelo missionary station at Middelburg (Pistorius 2013: 21).

The good relationship between the ZAR and the Pedi was gradually weakened. The period from 1876 to 1879 was one of conflict and war, first with the ZAR and then with the British who annexed the Transvaal in 1877. During the First Sekhukhune War in August 1876, the Voortrekkers attacked Thaba Mosego and partly destroyed the settlement. The Second Sekhukhune War followed in November 1879 during which Sekhukhune was captured in the Mamatamageng cave and sent to prison in Pretoria. Two divisions attacked the Pedi. The main division, comprised of 3 000 whites and 2 500 black allies, attacked from the north-east. The Lydenburg division consist of 5 000 to 8 000 Swazi Impi, 400 other black allies and 400 white soldiers who attacked from Burgersfort in the south. The Second Sekhukhune War is associated with the settlements of Thaba Mosego and Tšate, a new village established by Sekhukhune close to Thaba Mosego (Pistorius 2013: 21-22).

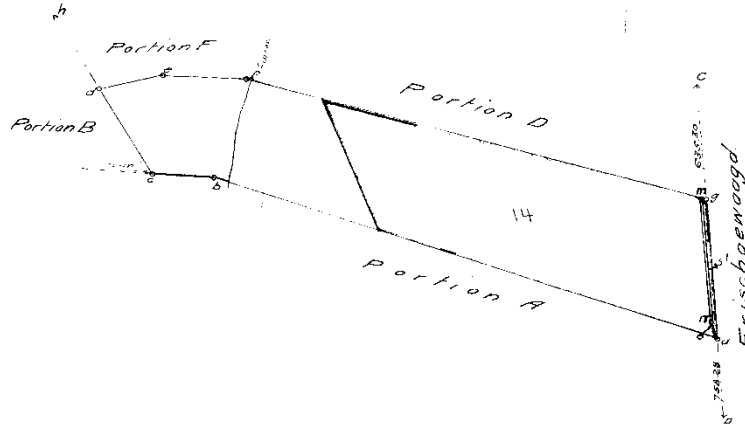
No historical sites, features or material were identified in the study area during the April 2022 assessment.

The oldest map obtained from the Chief Surveyor General Database (www.csg.dla.gov.za) for Portion 3 of the farm Tweefontein dates to 1919 (**CSG Document 1005WD01**). It shows that the farm was then numbered as No.36 and was situated in the District of Lydenburg, Ward of Steelpoort, Province of Transvaal. The portion was framed by surveyor in October 1893 and relates to a Deed of Transfer made in favour of ne G.C. Schoeman On 21/11/1964. Portion 3 was formally surveyed in November 1919. For Portion 13 the map dates to 2007 (**CSG Document 10158323**). It indicates that the portion was surveyed for a Powerline Servitude in November 2007.

S.G. No. A. 4457/19

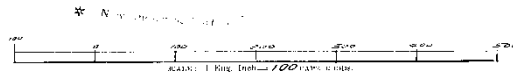
Form B2.—Diagram Form for a Sub-Division of a Farm or portion of a Farm.

| SIDES. | ANGLES. | (Y) CO-ORDINATES (X) |
|-----------|-------------|---------------------------|
| ab 530.25 | a 45.21.40 | a + 5657.622 + 457.75.000 |
| bc 78.50 | b 123.43.40 | b + 8919.470 + 4835.000 |
| cd 128.47 | c 128.38.10 | c + 8929.000 + 6737.000 |
| de 31.25 | d 71.38.10 | d + 8935.300 + 6591.570 |
| ef 103.24 | e 161.58.20 | e + 9057.110 + 4728.520 |
| fg 537.40 | f 108.0.40 | f + 9048.670 + 4319.220 |
| ga 181.33 | g 111.39.20 | g + 8878.260 + 3748.770 |
| | | C + 8811.15 + 4800.00 |
| | | D + 7342.22 + 5237.36 |
| | | h + 9142.31 + 6563.84 |



For Servitudes Deductions and Endorsements See Over

(S)



The above Figure lettered *abcdefg* represents of the Farm *Portion C*

18.5 Morgen *12.4* Square Hoods of land, being *12* *Twefontein No 360 36*

as appears on Diagram S.G. No. A. *324/19* framed by Surveyor *G.C. Brand* in *October 1893*

relating to Deed of Transfer No. *124* dated *29/10/1919* made in favour of *G.C. Schoeman*

situate in the District of *Lydenburg* Ward *Stadspoord* Province of Transvaal. Bounded as indicated Above.

The Beacons were pointed out by *D.J. Schoeman* and have been properly erected according to law.

Surveyed in *November 1919* by me *[Signature]* Land Surveyor.

| | | |
|---|---|--|
| <p>No. <i>A 4457</i> Examined. The numerical data of this diagram are sufficiently consistent.</p> <p><i>[Signature]</i> Examiner of Diagrams</p> | <p>Approved</p> <p><i>[Signature]</i> Surveyor-General.</p> | <p>This diagram belongs to Deed of Transfer No. <i>124</i> made this day in favour of</p> <p>Deeds Office, Pretoria.</p> |
|---|---|--|

Printed by authority—Grucci & Sherry, P.O. Box 2404, Johannesburg—26/7/18

Figure 3: 1919 map of Portion 3 of Twefontein 360KT (www.csg.dla.gov.za).

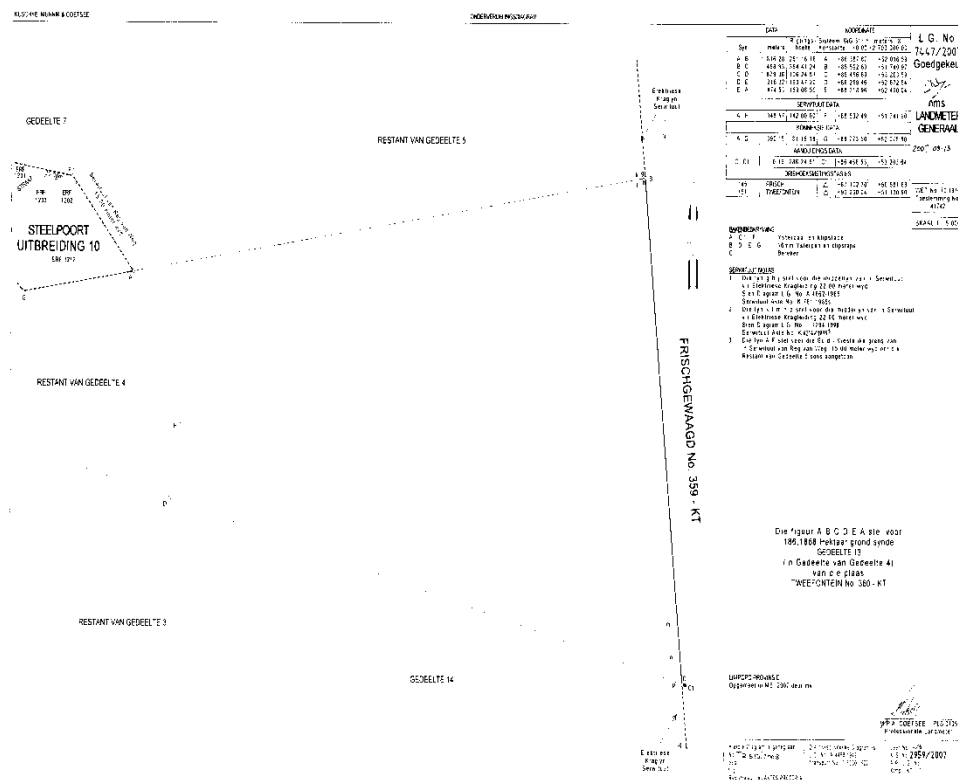


Figure 4: 2007 map for Portion 13 of the farm Tweefontein 360KT (www.csg.dla.gov.za).

Results of the April 2022 Field Assessment

A number of sites of archaeological origin and significance was identified and recorded in the area during the field assessment. Most of these were located in open patches and eroded areas, with some found in the scraped dirt roads found in the area. It has to be mentioned here that dense vegetation (grass and bush cover) hampered visibility and that all sections of the study & proposed development area could not be covered in fine detail. It is therefore very possible that many more similar sites could still be located in the area. However, the sites positively identified would be representative of the archaeological heritage of the area and the implementation of the recommended mitigation measures that will be provided at the end will limit the negative impacts of the proposed development.

A total of 9 sites were identified and recorded during the assessment. Most of these are represented by scatters of pottery of varying density and extent (from a few individual pieces to large amounts) only, and includes both undecorated and decorated pieces. The decorations seem to indicate that the sites date to the Early/Middle Iron Age and most likely to between AD750 & AD1200. The pottery decorations place them and the sites into the so-called Kalundu Iron Age Tradition and the Doornkop and/or Klingbeil facies of this tradition (Huffman 2007: 274-277; 296-299). Another aspect that places these artifacts and sites most

likely into the Early/Middle Iron Age is the fact that they are not found in association with stone walling – a characteristic of the Later Iron Age settlements.

Although most of the sites are only represented by surface scatters of pottery, two of the sites provide more tangible evidence of settlement sites. One of these (Site 8) is represented by the remains of burnt/baked hut clay, while at Site 9 (not far from Site 8) an upper grinding stone was also found. Finds such as these dating to the Early/Middle Iron Age in this and the larger area are relatively scarce and unique and give these sites a High Significance Rating from an archaeological perspective. Any negative impacts to these sites by any development actions should therefore be avoided if possible and if it can't be then suitable mitigation measures will have to be implemented to limit or negate these impacts. The mostly subterranean nature of these earlier Iron Age sites and features makes this all the more important as any development actions could expose unknown features, material deposits and even unmarked burials related to these settlement sites. The following is therefore recommended:

1. The sampling of representative surface material (decorated pottery) dating to the Iron Age. This will assist in providing a relative date for the Iron Age occupation of and settlement in the area. For this an archaeological permit will be required from SAHRA
2. The excavation of surface features dating to the Iron Age (Sites 8 & 9) in order to determine the age of and extent of the Iron Age in the study area. A permit from SAHRA will have to be obtained for this purpose as well.
3. The implementation of an Archaeological Watching Brief and Monitoring Program for the duration of the development and construction activities associated with the Vanadium SRL Plant and related to the Plant. This will ensure that if any unknown and significant material deposits, features and possible burials are exposed during these actions that they are identified, recorded and properly investigated and recovered.

GPS Location of Sites: S24 53 02.50 E30 08 06.60 (Site 1); S24 53 01.20 E30 08 08.10 (Site 2); S24 53 00.90 E30 08 08.30 (Site 3); S24 53 00.20 E30 08 12.70 (Site 4); S24 52 08.10 E30 08 13.10 (Site 5); S24 52 54.20 E30 08 14.20 (Site 6); S24 52 56.20 E30 08 23.20 (Site 7); S24 52 58.40 E30 08 26.30 (Site 8) and S24 53 00.00 E30 08 27.20 (Site 9)

Cultural Significance: Medium - High

Heritage Significance: Grade III: Other heritage resources of local importance and therefore worthy of conservation.

Field Ratings: General protection A (IV A): Site should be mitigated before destruction (High/Medium Significance)

Mitigation: See Above



Figure 5: General view of a part of the area. The dense vegetation is found throughout.



Figure 6: Some areas are slightly more open and visibility in these sections was less hampered.



Figure 7: Another general view.



Figure 8: Some erosion occurs in the area.



Figure 9: A number of dirt roads cover the area as well.



Figure 10: General view showing some of the hills and mountains in the general area as well as the impact of existing mining activities.



Figure 11: Another view of the general area showing the dense grass and vegetation cover.



Figure 12: Decorated & undecorated pottery from Site 1.



Figure 13: Site 13 pottery.



Figure 14: A view of the Site 3 location. Most of the sites and scatters of material were identified in open patches/eroded areas.



Figure 15: Decorated and undecorated pottery from Site 5.



Figure 16: Some of the pottery from Site 6.



Figure 17: A view of the location of Site 6.



Figure 18: Decorated and undecorated pottery from Site 7.



Figure 19: Burnt/baked clay remnants of an Iron Age hut at Site 8.

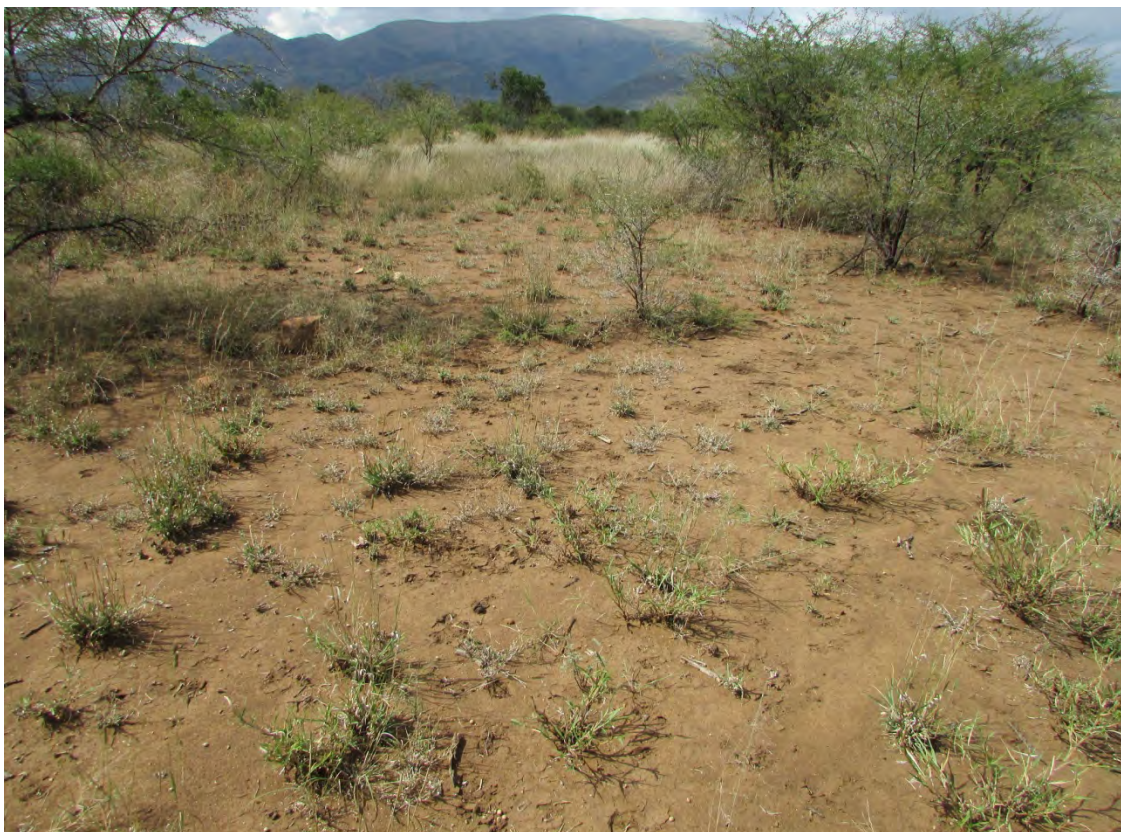


Figure 20: A view of the location of Site 9.



Figure 21: Pottery and an upper grinding stone at Site 9.



Figure 22: More decorated pottery from Site 9.

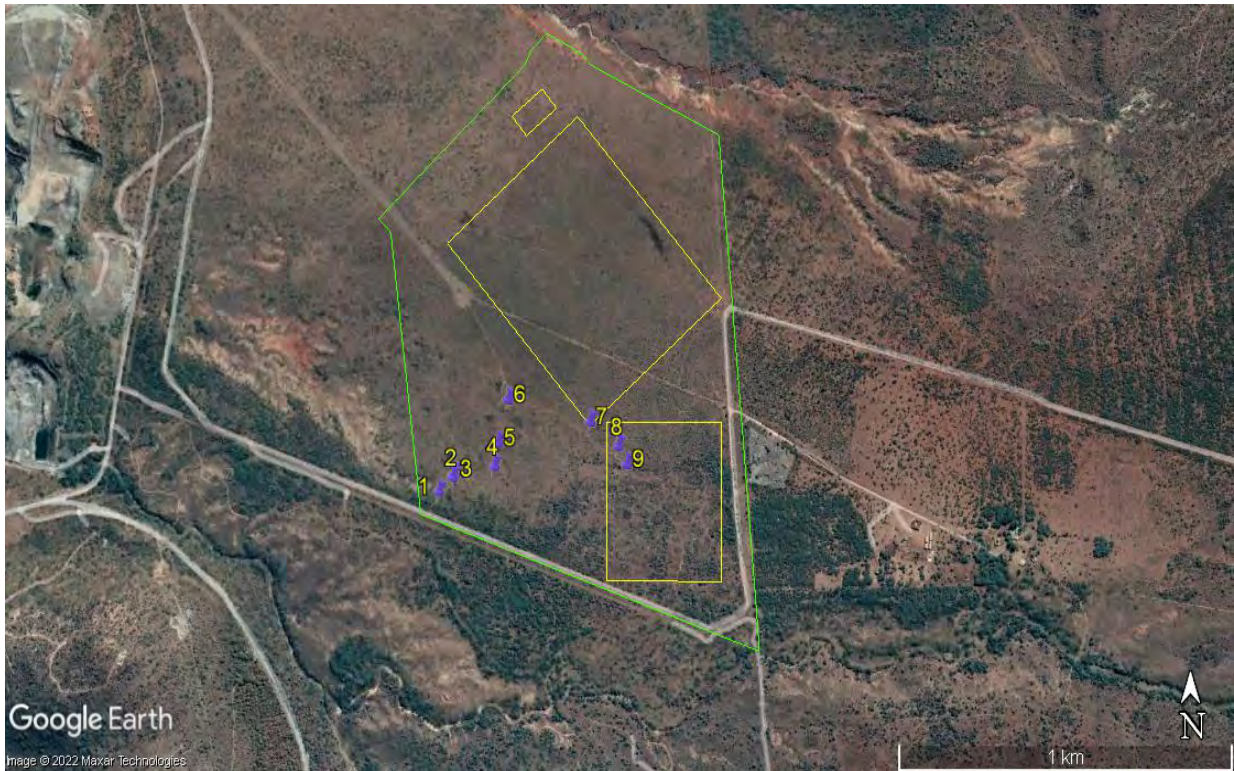


Figure 23: Aerial map showing the location of archaeological sites recorded during the April 2022 field assessment (Google Earth 2022).

Based on the desktop research and April 2022 field assessment is clear that there are a number of cultural heritage sites and features present in the area. Some of these are of High Significance and care should be taken to avoid any possible negative impacts on them. However, if this is not possible a number of measures can be implemented to mitigate the potential impacts. If these are implemented then there should be no reason why the proposed Vanadium Resources Salt Roast Plant development should not be allowed to continue.

7. CONCLUSIONS AND RECOMMENDATIONS

APelser Archaeological Consulting (APAC) was appointed by Red Kite Environmental Solutions (Pty) Ltd to conduct a Phase 1 Heritage Impact Assessment for the proposed Vanadium Resources Salt Roast Leach Plant Development. The proposed development & study area is located on a portion of Portions 3 & 13 of the farm Tweefontein 360KT, near Steelpoort in the Limpopo Province.

A number of sites of archaeological origin and significance was identified and recorded in the area during the field assessment. Most of these were located in open patches and eroded areas, with some found in the scraped dirt roads found in the area. That dense vegetation hampered visibility and all sections of the study & proposed development area could not be covered in fine detail. It is therefore possible that many more similar sites could still be located in the area. However, the sites positively identified would be representative of the archaeological heritage of the area and the implementation of the

recommended mitigation measures that will be provided at the end will limit the negative impacts of the proposed development.

A total of 9 sites were identified and recorded during the assessment. Most of these are represented by scatters of pottery of varying density and extent and includes both undecorated and decorated pieces. The decorations seem to indicate that the sites date to the Early/Middle Iron Age and most likely to between AD750 & AD1200. The pottery decorations place them and the sites into the so-called Kalundu Iron Age Tradition and the Doornkop and/or Klingbeil facies of this tradition.

Most of the sites are only represented by surface scatters of pottery, but two of the sites provide more tangible evidence of settlement sites. Site 8 is represented by the remains of burnt/baked hut clay, while at Site 9 an upper grinding stone was also found. Finds such as these are relatively scarce and unique and the sites are given a High Significance Rating from an archaeological perspective. Any negative impacts to these sites by any development actions should therefore be avoided if possible and if it can't be then suitable mitigation measures will have to be implemented to limit or negate these impacts. The mostly subterranean nature of these earlier Iron Age sites and features makes this all the more important as any development actions could expose unknown features, material deposits and even unmarked burials related to these settlement sites. The following is therefore recommended:

1. The sampling of representative surface material (decorated pottery) dating to the Iron Age. This will assist in providing a relative date for the Iron Age occupation of and settlement in the area. For this an archaeological permit will be required from SAHRA
2. The excavation of surface features dating to the Iron Age (Sites 8 & 9) in order to determine the age of and extent of the Iron Age in the study area. A permit from SAHRA will have to be obtained for this purpose as well.
3. The implementation of an Archaeological Watching Brief and Monitoring Program for the duration of the development and construction activities associated with the Vanadium SRL Plant and related to the Plant. This will ensure that if any unknown and significant material deposits, features and possible burials are exposed during these actions that they are identified, recorded and properly investigated and recovered.

Although all efforts are made to locate, identify and record all possible cultural heritage sites and features (including archaeological remains) there is always a possibility that some might have been missed as a result of grass cover and other factors. The subterranean nature of these resources (including low stone-packed or unmarked graves) should also be taken into consideration. Should any previously unknown or invisible sites, features or material be uncovered during any development actions then an expert should be contacted to investigate and provide recommendations on the way forward.

Finally, it can be concluded that some of the sites found during the April 2022 field assessment are of High Significance and care should be taken to avoid any possible negative impacts on them. However, if this is not possible a number of measures can be implemented to mitigate the potential impacts. If these are implemented then there should be no reason why the proposed Vanadium Resources Salt Roast Plant development should not be allowed to continue.

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APPENDIX A: DEFINITION OF TERMS:

Site: A large place with extensive structures and related cultural objects. It can also be a large assemblage of cultural artifacts, found on a single location.

Structure: A permanent building found in isolation or which forms a site in conjunction with other structures.

Feature: A coincidental find of movable cultural objects.

Object: Artifact (cultural object).

(Also see Knudson 1978: 20).

APPENDIX B: DEFINITION/ STATEMENT OF HERITAGE SIGNIFICANCE

Historic value: Important in the community or pattern of history or has an association with the life or work of a person, group or organization of importance in history.

Aesthetic value: Important in exhibiting particular aesthetic characteristics valued by a community or cultural group.

Scientific value: Potential to yield information that will contribute to an understanding of natural or cultural history or is important in demonstrating a high degree of creative or technical achievement of a particular period

Social value: Have a strong or special association with a particular community or cultural group for social, cultural or spiritual reasons.

Rarity: Does it possess uncommon, rare or endangered aspects of natural or cultural heritage.

Representivity: Important in demonstrating the principal characteristics of a particular class of natural or cultural places or object or a range of landscapes or environments characteristic of its class or of human activities (including way of life, philosophy, custom, process, land-use, function, design or technique) in the environment of the nation, province region or locality.

APPENDIX C: SIGNIFICANCE AND FIELD RATING:

Cultural significance:

- Low: A cultural object being found out of context, not being part of a site or without any related feature/structure in its surroundings.
- Medium: Any site, structure or feature being regarded less important due to a number of factors, such as date and frequency. Also any important object found out of context.
- High: Any site, structure or feature regarded as important because of its age or uniqueness. Graves are always categorized as of a high importance. Also any important object found within a specific context.

Heritage significance:

- Grade I: Heritage resources with exceptional qualities to the extent that they are of national significance
- Grade II: Heritage resources with qualities giving it provincial or regional importance although it may form part of the national estate
- Grade III: Other heritage resources of local importance and therefore worthy of conservation

Field ratings:

- i. National Grade I significance: should be managed as part of the national estate
- ii. Provincial Grade II significance: should be managed as part of the provincial estate
- iii. Local Grade IIIA: should be included in the heritage register and not be mitigated (high significance)
- iv. Local Grade IIIB: should be included in the heritage register and may be mitigated (high/medium significance)
- v. General protection A (IV A): site should be mitigated before destruction (high/medium significance)
- vi. General protection B (IV B): site should be recorded before destruction (medium significance)
- vii. General protection C (IV C): phase 1 is seen as sufficient recording and it may be demolished (low significance)

APPENDIX D: PROTECTION OF HERITAGE RESOURCES:

Formal protection:

National heritage sites and Provincial heritage sites – Grade I and II

Protected areas - An area surrounding a heritage site

Provisional protection – For a maximum period of two years

Heritage registers – Listing Grades II and III

Heritage areas – Areas with more than one heritage site included

Heritage objects – e.g. Archaeological, palaeontological, meteorites, geological specimens, visual art, military, numismatic, books, etc.

General protection:

Objects protected by the laws of foreign states

Structures – Older than 60 years

Archaeology, palaeontology and meteorites

Burial grounds and graves

Public monuments and memorials

APPENDIX E: HERITAGE IMPACT ASSESSMENT PHASES

1. Pre-assessment or Scoping Phase – Establishment of the scope of the project and terms of reference.
2. Baseline Assessment – Establishment of a broad framework of the potential heritage of an area.
3. Phase I Impact Assessment – Identifying sites, assess their significance, make comments on the impact of the development and makes recommendations for mitigation or conservation.
4. Letter of recommendation for exemption – If there is no likelihood that any sites will be impacted.
5. Phase II Mitigation or Rescue – Planning for the protection of significant sites or sampling through excavation or collection (after receiving a permit) of sites that may be lost.
6. Phase III Management Plan – For rare cases where sites are so important that development cannot be allowed.