HERITAGE SCOPING REPORT

GRUISFONTEIN COAL MINING PROJECT
WATERBERG DISTRICT MUNICIPALITY
LIMPOPO PROVINCE

FOR: Jacana Environmental cc
P O Box 31675
Superbia, 0759

Frans Roodt
April 2019

Cell: 083 770 2131
E-Mail: fransroodt2454@gmail.com

CULTURAL RESOURCE CONSULTANTS

PostNet Suite 139
P/Bag X9700
POLOKWANE
0 7 0 0

EXECUTIVE SUMMARY

The Farm Gruisfontein 230 LQ was examined for heritage remains. Numerous surveys for other projects surrounding the Gruisfontein project have identified ceramics from the Letsibogo facies in their project areas. These projects include the Resgen Boikarabelo Coal Mine, Namane IPP and Transmission Line, Anglo American Dalyshope Project, Sasol Limpopo West Project, Temo Coal Project and Eyesizwe Coal Project. Although no concrete evidence for Iron Age remains were recorded, unnoticed remains may exist. The Gruisfontein Project may impact on subterranean Middle Stone Age material. The stone flakes are only exposed by erosion or surface disturbances. However, in our opinion there exists no heritage sites of outstanding significance within the project area.

CONTENTS

LIST OF FIGURES

1. INTRODUCTION

The Gruisfontein Project falls within the Lephalale Local Municipality of the Waterberg District. The farm lies within the Waterberg Coal Field. It is located approximately 50 km north-west-west of Lephalale and 20 km south-south-west of Stockpoort borderpost.

1.1 Project Description

1.1.1 Mining Method Selection

The selected mining method for this project is an open pit truck and shovel operation. This mining method has been employed extensively in numerous similar deposits globally and in SA. The selection of this mining method is based on the following four key criteria:

- Production targets - required Coal and Waste tonnes to be excavated;
- Geometry of the deposit;
- Anticipated in-pit mining conditions;
- Flexibility within the defined open pit operation;

Overburden and Carbonaceous Material Handling

The approach to the handling of the overburden and carbonaceous material is described below:

For the 1st Three Years

- Discard, soft overburden, hard overburden and carbonaceous material will be stockpile separately although the commencement of the construction of the long-term discard/carbonaceous dumps will take place in terms of the construction of the paddocks using hard and soft overburden. This methodology was developed by Grootegeluk Colliery to deal with the prevention of spontaneous combustion particularly the carbonaceous material and discard.
- A short-term discard dump will be constructed to the West of the plant.

From Year 4 Onwards

- All the waste material from the open-pit, including the plant discard will be stockpiled on the long-term dump. Topsoil will be stockpiled separately.
- Once sufficient room has been established in the open-pit, in pit stockpiling of carbonaceous material and discard will take place. For the purpose of this study it is assumed that all material over the 16 LoM will be stockpiled on surface. This worst-case scenario. Backfilling will only start after year 16.
- During the next study phase an optimised mine plan will be developed to create sufficient space for in-pit back filling as soon as practically possible. The size of the current dumps should therefore reduce substantially in size.

Discard Handling

During the first three years of operation the plant discard will be placed on a temporary discard dump located in close proximity to the coal processing plant. A filter press at the plant has been provided in order to conserve water. This eliminates the need of a co-disposal system. The long-term carbonaceous (discard) dump will be compartmentalised with soft overburden to eliminate the risk of spontaneous combustion.

Final Open-pit Rehabilitation

The overall LOM of Gruisfontein is at yet to be determined but it will be in excess of 16 years. Once the LOM has reached sixteen years backfilling of the open-pit will commence using the surface method model described above whereby paddocks will be constructed with soft and hard overburden and the paddocks filled with carbonaceous material and discard.

This operation will advance in the direction of mining until the open-pit has exhausted its reserve base. Once mining operations have ceased, the surface stockpiles comprising of soft and hard overburden, carbonaceous material and discard will be transported back into the pit and levelled. Thereafter, the soft overburden and top soils used to construct the surface berms will be used to cover the material transported back into the pit as final layer works.

1.1.2 Processing

Processing Strategy

Given a feed of RoM coal, there are several general processing strategies that can be applied, depending on several factors. These factors include, but are not limited to the following:

Feed quality – what the quality of the expected RoM coal is in relation to what the required product specifications are;
Product designation – what the final product will be sold as; thermal, export, coking, Independent Power Producer (IPP);
Contamination – if there is expected contamination what form the contamination is expected as; sandstone, shale, siltstone;
Contamination Location – where the contamination is expected to be found in and around the seam; in the floor, in the roof or within the seam.

The basic processing strategies that can be applied range from no beneficiation to complete beneficiation. They are listed as follows:

Stage 1 – Crush and Screen – the RoM material is passed through various levels of crusher and then directed straight to product. No material is removed, only sized;
Stage 2 – De-stoning – the RoM material is passed through a primary crusher. It is then passed through a portion, or portions, of equipment that both reduces the size further and removes (some) contamination;
Stage 3 – Partial beneficiation – the RoM material is crushed and then screened. The split of material over and under the screen determines what percentage will be fed to a beneficiation process. The lower size limit for this depends on the technology employed;
Stage 4 – Fines beneficiation –applicable to the -1 mm +0.2 mm size fraction. The technologies commonly used are either spirals or reflux classifiers;
Stage 5 – Ultra fines beneficiation – applicable to the -0.2 mm +0 mm size fraction. The technologies commonly used are flotation cells.

1.1.3 Infrastructure

Height (of Plant) of individual infrastructure components: 25m

Activities associated with infrastructure components

- Maintenance of haul road
- Servicing of major equipment of mining equipment

1.1.4 Bulk Resources

Water Requirements

- Ledjadja Coal to determine whether Nozala can participate in the Maropong Treatment Plant Water Off Take Agreement.
- A nearby project has developed a well field which is capable of a sustainable yield of 7,000 M^3/day. An assumption has been made that a similar well field developed on the Gruisfontein project area will be able to generate sufficient water to support the requirements listed above.
- Water from the open pit dewatering process has been excluded as a potential additional supply. Bulk water supply is considered to be a major project risk and will be addressed in the next phase of the study.
- NC to enter into discussion with Ledjadja Coal regarding the use of their pipe line (construction in progress i.e. ± 12 km) to transport water from Boikarabelo to Gruisfontein.
- Ledjadja has got an arrangement with Municipality to obtain water from Paarl Water Station.
- NC will have to construct a pipe line from Boikarabelo to Gruisfontein – this is ± 14km.

Power Requirements

The proposed Gruisfontein Coal Mine has an estimated forecast maximum demand of between 3 and 4 MVA, excluding the provision of the power factor correction. This estimated power requirement will be firmed up in the next study phase.

- EHL has servitude rights and there is spare capacity of ± 50 MVA
- With reference to the Gruisfontein Scoping Study and in specific the estimated power requirements for a 6Mtpa operation. Eskom has sufficient generation capacity to supply the required electrical energy for the project. Capacity can be made available directly from Eskom or via a connection on the Ledjadja Coal (Pty) Ltd 132kV Distribution Network. Each of the previous option has its own merits and needs to be evaluated against cost, time and regulatory requirements.
- The following salient points support the above statements:
  - Electrical consumers have the right to power at the least cost of supply option. Based on a notified maximum demand of 4MVA and having a point of supply of 10 MVA at either 11, 22 or 132kV to cater for growth and expansion.
  - Formal process has to be followed and these amongst other are: power supply application to Eskom and other Distribution Facility Licensee's, landowners and other interested and affected parties.
  - 1MVA construction power can be made available within 6 months from a construction and securing power perspective. Bulk supply within 24-36 months. Timelines will be a function of cost, voltage and the method of and supply option opted for by the owner.
- The way forward is to commence with a study to evaluate the best techno-economical option available.

Size & Route of Power & Water Pipeline

Water Pipeline

- Pipeline size still to be confirmed.
- Route co-ordinates outstanding.

Power Source

An Eskom sub-station, Theunispan, is located in proximity to the town of Steenbokpan and for the purpose of this Study, it is assumed that Gruisfontein will be able to source power form this substation. For capital budget estimating purposes, it is assumed that Eskom will provide the following infrastructure to support the mine:

- A 22 kV overhead line from the sub-station to the mine
- A 22 kV / 0.55 kV /10 MVA sub-station located on the mine.
- Route co-ordinates outstanding.

2. TERMS OF REFERENCE

- Review baseline information;
- Impact assessment – identify and assess potential impacts and determine cumulative impacts relating to the project;
- Identify mitigation measures;
- Provide guidance with regard to additional information, if applicable; and
- Provide project recommendations.

3. LEGAL REQUIREMENTS

3.1 The National Heritage Resources Act (25 of 1999) (NHRA)

This Act established the South African Heritage Resources Agency (SAHRA) and makes provision for the establishment of Provincial Heritage Resources Authorities (PHRA). The Act makes provision for the undertaking of heritage resources impact assessments for various categories of development as determined by Section 38. It also provides for the grading of heritage resources (Section 7) and the implementation of a three-tier level of responsibilities and functions for heritage resources to be undertaken by the State, Provincial authorities and Local authorities, depending on the grade of the Heritage resources (Section 8).

In terms of the National Heritage Resources Act (1999) the following is of relevance:

Historical remains

Section 34(1) No person may alter or demolish any structure or part of a structure, which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.

Archaeological remains

Section 35(3) Any person who discovers archaeological or palaeontological objects or material or a meteorite in the course of development or agricultural activity must immediately report the find to the responsible heritage resources authority or to the nearest local authority or museum, which must immediately notify such heritage resources authority.

Subsection 35(4) No person may, without a permit issued by the responsible heritage resources authority-

(a) destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;
(b) destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;
(c) trade in, sell for private gain, export or attempt to export from the republic any category of archaeological or palaeontological material or object, or any meteorite; or
(d) bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assist with the detection or recovery of metals or archaeological material or objects, or use such equipment for the recovery of meteorites.

Subsection 35(5) When the responsible heritage resources authority has reasonable cause to believe that any activity or development which will destroy, damage or alter any archaeological or palaeontological site is under way, and where no application for a permit has been submitted and no heritage resources management procedures in terms of section 38 has been followed, it may-

(a) serve on the owner or occupier of the site or on the person undertaking such development an order for the development to cease immediately for such period as is specified in the order;
(b) carry out an investigation for the purpose of obtaining information on whether or not an archaeological or palaeontological site exists and whether mitigation is necessary;
(c) if mitigation is deemed by the heritage resources authority to be necessary, assist the person on whom the order has been served under paragraph (a) to apply for a permit as required in subsection (4); and
(d) recover the costs of such investigation form the owner or occupier of the land on which it is believed an archaeological or palaeontological site is located or from the person proposing to undertake the development if no application for a permit is received within two weeks of the order being served.

Subsection 35(6) The responsible heritage resources authority may, after consultation with the owner of the land on which an archaeological or palaeontological site or meteorite is situated; serve a notice on the owner or any other controlling authority, to prevent activities within a specified distance from such site or meteorite.

Burial grounds and graves

Subsection 36(3)

(a) No person may, without a permit issued by SAHRA or a provincial heritage resources authority-

(c) destroy, damage, alter, exhume, 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

(d) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation equipment, or any equipment which assists in detection or recovery of metals.

Subsection 36(6) Subject to the provision of any law, any person who in the course of development or any other activity discovers the location of a grave, the existence of which was previously unknown, must immediately cease such activity and report the discovery to the responsible heritage resources authority which must, in co-operation with the South African Police Service and in accordance with regulations of the responsible heritage resources authority-

(a) carry out an investigation for the purpose of obtaining information on whether or not such grave is protected in terms of this Act or is of significance to any community; and

(b)if such grave is protected or is of significance, assist any person who or community which is a direct descendant to make arrangements for the exhumation and re-interment of the content of such grave or, in the absence of such person or community, make any such arrangement as it deems fit.

Culture Resource Management

Subsection 38(1) Subject to the provisions of subsection (7), (8) and (9), any person who intends to undertake a development***** …

must at the very earliest stages of initiating such development notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

***'development'** means any physical intervention, excavation, or action, other than those caused by natural forces, which may in the opinion of the heritage authority in any way result in a change to the nature, appearance or physical nature of a place, or influence its stability and future well-being, including-

(a) construction, alteration, demolition, removal or change of use of a place or a structure at a place;

(b) carry out any works on or over or under a place*****;

(e) any change to the natural or existing condition or topography of land, and

(f) any removal or destruction of trees, or removal of vegetation or topsoil;

"place** means a site, area or region, a building or other structure** ..."

***"structure** means any building, works, device or other facility made by people and which is fixed to the ground …"

3.2 The Human Tissues Act (65 of 1983) and Ordinance on the Removal of Graves and Dead Bodies (Ordinance 7 of 1925)

This Act and Ordinance protects graves younger than 60 years. These fall under the jurisdiction of the National Department of Health and the Provincial Health Departments. Approval for the exhumation and re-burial must be obtained from the relevant Provincial MEC as well as the relevant Local Authorities.

4. METHODOLOGY

4.1 Sources of information

The project area was examined on foot and by vehicle by means of random walks and spot surveys. Standard archaeological practices for observation were followed. As most archaeological material occurs in single or multiple stratified layers beneath the soil surface, special attention was given to disturbances, both man-made such as roads and clearings, as well as those made by natural agents such as burrowing animals and erosion. Locations were recorded by means of a handheld GPS. In addition, the Google earth and the Topocadastral map 2327CB was studied.

4.2 Limitations

A more intensive search may be required for the final report. No limitations were experienced but it must be noted that archaeological remains are generally subterranean and may have been missed. Such remains may only become visible during disturbances.

4.3 Categories of significance

The significance of heritage sites is ranked into the following categories.

No significance: sites that do not require mitigation.
Low significance: sites, which *may* require mitigation.
Medium significance: sites, which require mitigation.
High significance: sites, which must not be disturbed at all.

The significance of specifically an archaeological site is based on the amount of deposit, the integrity of the context, the kind of deposit and the potential to help answer present research questions. Historical structures are defined by Section 34 of the National Heritage Resources Act, 1999, while other historical and cultural significant sites, places and features, are generally determined by community preferences.

4.4 Terminology

Early Stone Age: Predominantly the Oldowan artefacts and Acheulian hand axe industry complex dating to + 1Myr yrs – 250 000 yrs. before present.

Middle Stone Age: Various lithic industries in SA dating from ± 250 000 yrs. - 22 000 yrs. before present.

Late Stone Age: The period from ± 22 000-yrs. to contact period with either Iron Age farmers or European colonists.

Early Iron Age:	Most of the first millennium AD
Middle Iron Age:	10th to 13th centuries AD
Late Iron Age:	14th century to colonial period. *The entire Iron Age represents the spread of Bantu speaking peoples.*
Phase 1 assessments:	Scoping surveys to establish the presence of and to evaluate heritage resources in a given area
Phase 2 assessments:	In depth culture resources management studies which could include major archaeological excavations, detailed site surveys and mapping / plans of sites, including historical / architectural structures and features. Alternatively, the sampling of sites by collecting material, small test pit excavations or auger sampling could be undertaken.
Sensitive:	Often refers to graves and burial sites, as well as ideologically significant sites such as ritual / religious places. *Sensitive* may also refer to an entire landscape / area known for its significant heritage remains.

5. BASELINE INFORMATION

5.1 The Stone Age

The Stone Age covers most of southern Africa and the earliest consist of the Oldowan and Acheul artefacts assemblages. Oldowan tools are regularly referred to as “choppers”. Oldowan artefacts are associated with Homo *habilis*, the first true humans. In South Africa definite occurrences have been found at the sites of Sterkfontein and Swartkrans. Here they are dated to between 1.7 and 2 million years old. Bearing in mind the proximity of the Makapans Valley palaeontological site about 30km south-east of the project area it is possible that they may occur here. This was followed by the Acheulian technology from about 1.4 million years ago which introduced a new level of complexity. The large tools that dominate the Acheulian artefact assemblages range in length from 100 to 200 mm or more. Collectively they are called bifaces because they are normally shaped by flaking on both faces. In plan view they tend to be pear-shape and are broad relative to their thickness. Most bifaces are pointed and are classified as handaxes, but others have a wide cutting end and are termed cleavers. The Acheulian design persisted for more than a million years and only disappeared about 250 000 years ago. Here, the Makapans Valley Site is referenced; especially the Cave of Hearths.

The change from Acheulian with their characteristic bifaces, handaxes and cleavers to Middle Stone Age (MSA), which are characterized by flake industries, occurred about 250 000 years ago and ended about 30 000 – 22 000 years ago. For the most part the MSA is associated with modern humans; Homo sapiens. MSA remains are found in open spaces where they are regularly exposed by erosion as well as in caves. Characteristics of the MSA are flake blanks in the 40 – 100 mm size range struck from prepared cores, the striking platforms of the flakes reveal one or more facets, indicating the preparation of the platform before flake removal (the prepared core technique), flakes show dorsal preparation – one or more ridges or arise down the length of the flake – as a result of previous removals from the core, flakes with convergent sides (laterals) and a pointed shape, and flakes with parallel laterals and a rectangular or quadrilateral shape: these can be termed pointed and flake blades respectively. Other flakes in MSA assemblages are irregular in form. In this pustular project area, the erosion of the

Waterberg sandstone over 200 000 years ago introduced quartzite pebbles and other raw material suitable for making stone tools. These pebbles are cemented in the fericrete that in turn marks the locations of the ancient drainage channels. MSA people appear to have sampled this resource wherever the channels were exposed at the time. Today, windblown sands cover much of the project area.

The change from Middle Stone Age to Later Stone Age (LSA) took place in most parts of southern Africa little more than about 20 000 years ago. It is marked by a series of technological innovations or new tools that, initially at least, were used to do much the same jobs as had been done before, but in a different way. Their introduction was associated with changes in the nature of hunter-gatherer material culture. The innovations associated with the Later Stone Age "package" of tools include rock art – both paintings and engravings, smaller stone tools, so small that the formal tools less that 25mm long are called microliths (sometimes found in the final MSA) and Bows and arrows. Rock art is an important feature of the LSA and is abundant in the Waterberg and the Makgabeng areas.

5.2 The Iron Age

According to the most recent archaeological cultural distribution sequences by Huffman (2007), this area falls within the distribution area of various cultural groupings originating out of both the Urewe Tradition (eastern stream of migration) and the Kalundu Tradition (western stream of migration). The facies that may be present are:

Urewe Tradition:	Moloko branch	Letsibogo facies AD 1550 – 1750 (Late Iron Age) The Letsibogo facies is associated with the Sotho-Tswana speakers of the area.
Kalundu Tradition:	Benfica sub-branch Happy Rest sub-branch	Bambata facies Diamand facies AD 750 - 1000 (Early Iron Age) Eiland facies AD 1000 – 1300 (Middle Iron Age)

Numerous surveys for other projects surrounding the Gruisfontein project have identified ceramics from the Letsibogo facies in their project areas. These projects include the Resgen Boikarabelo Coal Mine, Namane IPP and Transmission Line, Anglo American Dalyshope Project, Sasol Limpopo West Project, Temo Coal Project and Eyesizwe Coal Project.

5.3 The historical landscape

The Historic Period in this area is relatively recent. Tsetse fly made the area unsuitable at first, and so European settlement only began at the beginning of the 20th century. Some of the first settlers, D.P. van der Westhuizen and C. Ricks, both arrived in about 1901. The main ox-cart route to Botswana, crossing the Limpopo a few kilometres upstream from the modern border post, passes through the area. Some pans were used as outspans along this route; a pan on the farm Groenfontein is one example (Huffman & van der Walt 2013).

6. RESULTS OF THE SURVEY

6.1 Geological and Palaeontological review of the farm Gruisfontein 230LQ

The farm is underlain by mudstones, sandstones and coals of the Karoo Supergroup. These rocks do not outcrop, and although this study does not have access to the geological data of the proposed mining operation, coal seams of the Grootegeluk Formation are deemed to lie sufficiently close to the surface to warrant mining by opencast methods.

The rocks of the Karoo Supergroup are internationally renowned for their rich diverse fauna and flora, documenting the early evolution of reptiles, dinosaurs, mammal-like reptiles and mammals, thus forming an important part of South Africa's palaeontological heritage.

The coal seams to be exploited lie within the Grootegeluk Formation, up to 70m thick in places, which is correlated with the Ecca Group of the main Karoo Basin. These sediments are known to be associated with a rich *Glossopteris* flora. A monitoring and fossil find protocol will be included in the final report.

6.2 Stone Age remains

Surveys of adjacent areas determined that Middle Stone Age remains are present at pans, usually where the calcrete base was exposed as well as in isolated settings. This calcrete formed during a cold period with alternating wet and dry episodes that allowed calcium carbonate to precipitate on to the land surface. Some Middle Stone Age (MSA) artefacts occurred in the calcrete, and so they predate this geo-morphological formation. These artefact assemblages typically include radial cores, triangular points, convergent scrapers and flakes. They represent what is called a Post Howieson's Poort Industry and thus date to between 60,000 and 40,000 years ago (see Deacon and Deacon 1999: 96-98). These Post Howieson's Poort artefacts were made from quartz and quartzite pebbles that formed part of the fericrete horizon found underneath the calcrete. This fericrete is an iron-rich formation derived from the Waterberg sandstones to the south. The stones and iron-rich soil must have first washed down during a high-rainfall period and then formed under arid conditions, perhaps about 200,000 years ago. If Early Stone Age artefacts occur in the study area, they will lie under this fericrete horizon (Huffman & van der Walt 2013).

6.3 Iron Age

Although no Iron Age sites were observed in the project area, previous surveys surrounding Gruisfontein indicate that the area contains cattle outposts of farming communities living in the Limpopo valley. During a survey in 2011, Nel (Anon 2013) recorded an isolated potshard at coordinates -23.582486° 27.265748° (Site RSV689/004) and this find place is mentioned in the Nozala Fatal Flaw Analysis Report. This find is on the western border fence between Verloren Valey and Gruisfontein (Verloren Valey side) - incorrectly described it as being on the 'eastern' side of Gruisfontein in the above mentioned report. However, during the site visit, I was unable to find any pottery on the Gruisfontein side of the border (Figure 3).

6.4 Graves and burials

No graves or burial sites were recorded in the Gruisfontein project area. According to the African farm-caretaker, no people were buried on the farm because their homes were somewhere else.

6.5 The built environment

The farm contains structures such as cattle kraals, cattle loading platform, concrete reservoirs, sheds, water troughs, etc. No of these features are regarded as older than 60 years and none contain any intrinsic design, architecture or pioneer building material and methods that require further assessment.

7. EVALUATION AND STATEMENT OF SIGNIFICANCE

The Gruisfontein Project may impact on subterranean Middle Stone Age material. Stone flakes are only exposed by erosion or surface disturbances. However, in our opinion there exists no heritage sites of outstanding significance within the project area.

7.1 Significance criteria in terms of Section 3(3) of the National Heritage Resources Act.

Significance		Rating
1.	The importance of the cultural heritage in the community or pattern of South Africa's history (Historic and political significance)	Low
2.	Possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage (Scientific significance).	Low
3.	Potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage (Research/scientific significance)	Low: Stone Age
4.	Importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects (Scientific significance)	Low: utilisation by hunter-gathers, Iron Age farming communities and historic period travelers
5.	Importance in exhibiting particular aesthetic characteristics valued by a community or cultural group (Aesthetic significance)	None
6.	Importance in demonstrating a high degree of creative or technical achievement at a particular period (Scientific significance)	None
7.	Strong or special association with a particular community or cultural group for social, cultural or spiritual reasons (Social significance)	Low
8.	Strong or special association with the life and work of a person, group or organization of importance in the history of South Africa (Historic significance)	None
9.	The significance of the site relating to the history of slavery in South Africa.	None

7.2 Section 38(3) (c) An assessment of the impact of the development on such heritage resources.

The development will have a negligible effect on heritage remains.

7.3 *Section 38(3) (d) An evaluation of the impact of the development on heritage resources relative to the sustainable economic benefits to be derived from the development*.

None of the recorded heritage remains within the direct mining area are uncommon, rare or unique. The sustainable economic benefits outweigh the conservation benefits.

7.4 ***Section 38(3) (e) The results of consultation with the communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources***.
Social consultative process is ongoing.

7.5 ***Section 38(3)(f) If heritage resources will be adversely affected by the proposed development the consideration of alternatives.***
No viable alternatives exist.

7.6 ***Section 38(3)(g) Plans for mitigation of any adverse effects during and after the completion of the proposed development.***
SAHRA may require monitoring of initial excavations for the presence of Stone Age material.

8. CONCLUSION

The Gruisfontein Project area probably contains subterranean Middle Stone Age (MSA) deposits and possibly Letsibogo facies pottery. The MSA is regarded as of low significance.

From a heritage management perspective there is no fatal flaw and no reason why the proposed development may not continue subject to the recommended mitigation measures.

9. RECOMMENDATIONS

In view of the above it is recommended that;

A final Heritage Impact Assessment report consisting of an Archaeological Impact Assessment and a Palaeontological Impact Assessment be submitted as part of the EIA process. This report will provide the necessary recommendations for mitigation procedures.

10. REFERENCES

Deacon, HJ and Deacon, J. 1999. Human Beginnings in South Africa. *Uncovering the Secrets of the Stone Age*. David Philip Publishers. Cape Town & Johannesburg.

Huffman, TN. 2007. *Handbook to the Iron Age. The archaeology of Pre-colonial Farming Societies in Southern Africa.* University of KwaZulu-Natal Press.

Huffman, T. & van der Walt, J. 2013. Sasol Limpopo West Heritage Report. A Field Study Prepared for SRK Consulting. Johannesburg: Archaeological Resources Management.

Nel, J., 2011a. Phase 1 Archaeological Impact Assessment for the Proposed Temo Coal Mine, Lephalale Local Municipality, Waterberg District, Limpopo Province, Randburg: Digby Wells Environmental. Johannesburg.

Nel, J., 2011b. Addendum to the Phase 1 AIA for the Boikarabelo Coal Mine, Randburg: Digby Wells Environmental. Johannesburg.

Nel, J. & du Piesanie, J., 2012. Phase 2 Archaeological Impact Assessment Mitigation for

the Boikarabelo Coal Mine (SAHRA PERMIT NO 80/11/07/015/51), Randburg: Digby Wells Environmental. Johannesburg.

Nel, J. 2013. Heritage Statement for the Vedanta IPP Project, Lephalale, Limpopo Province. Prepared for Vedanta Resources PLC. Digby Wells and Associates, Johannesburg.

Figure 1. General view of vegetation at Gruisfontein.

Figure 2. View of an aardvark burrow – an example of a disturbance inspected to observe the subterranean deposit.

Figure 3. View of the area at Site RSV689/004 inside the Gruisfontein farm – no heritage remains were noted along this part of the fence.

Figure 4. Some of the infrastructure at the farmyard.

Figure 5. An old reservoir on the farmyard.

Figure 6. A cattle loading facility and kraal.

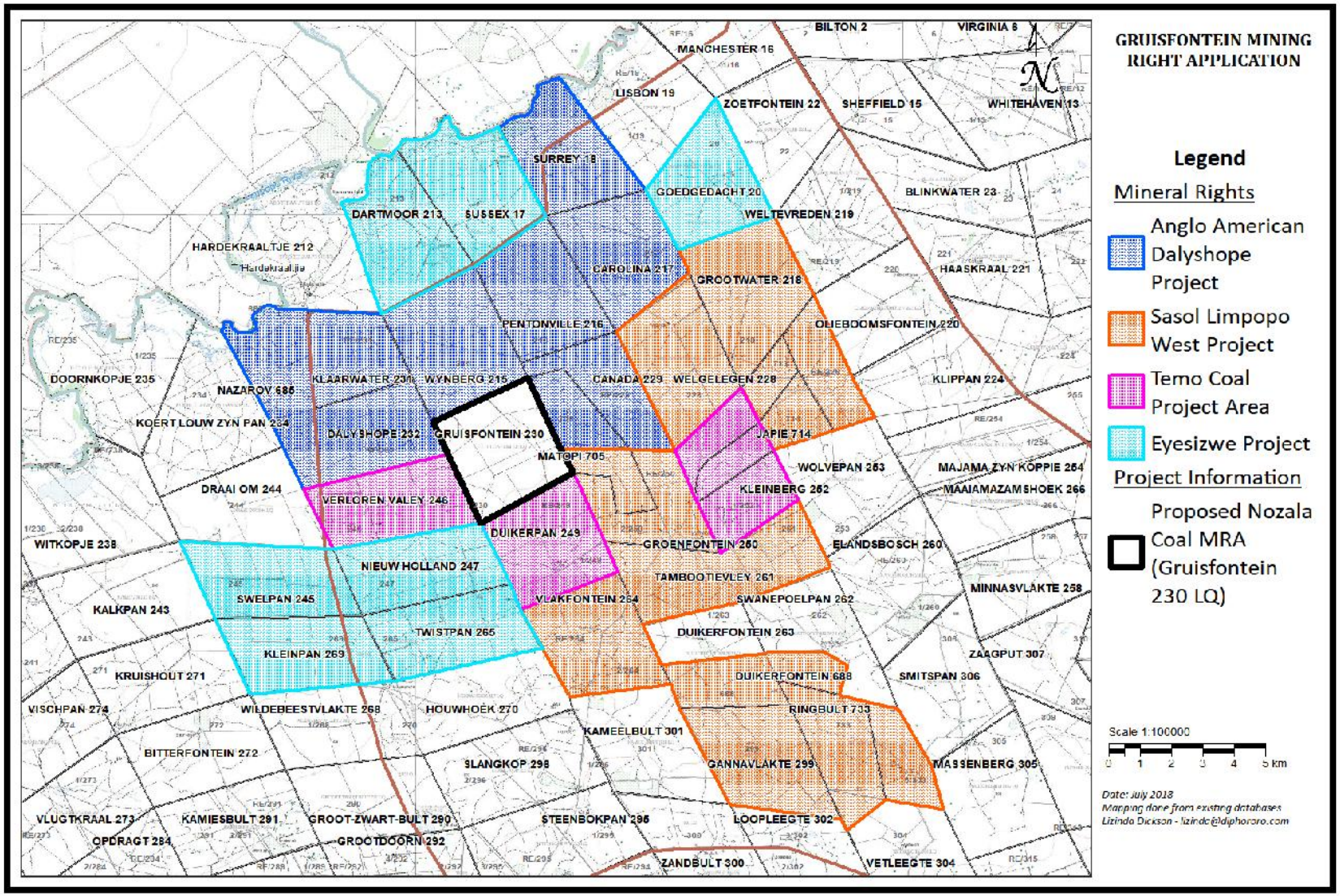

Figure 7. Locality map of the project.

Figure 8. Google earth image indicating project area (by arrow) in relation to Lephalale.

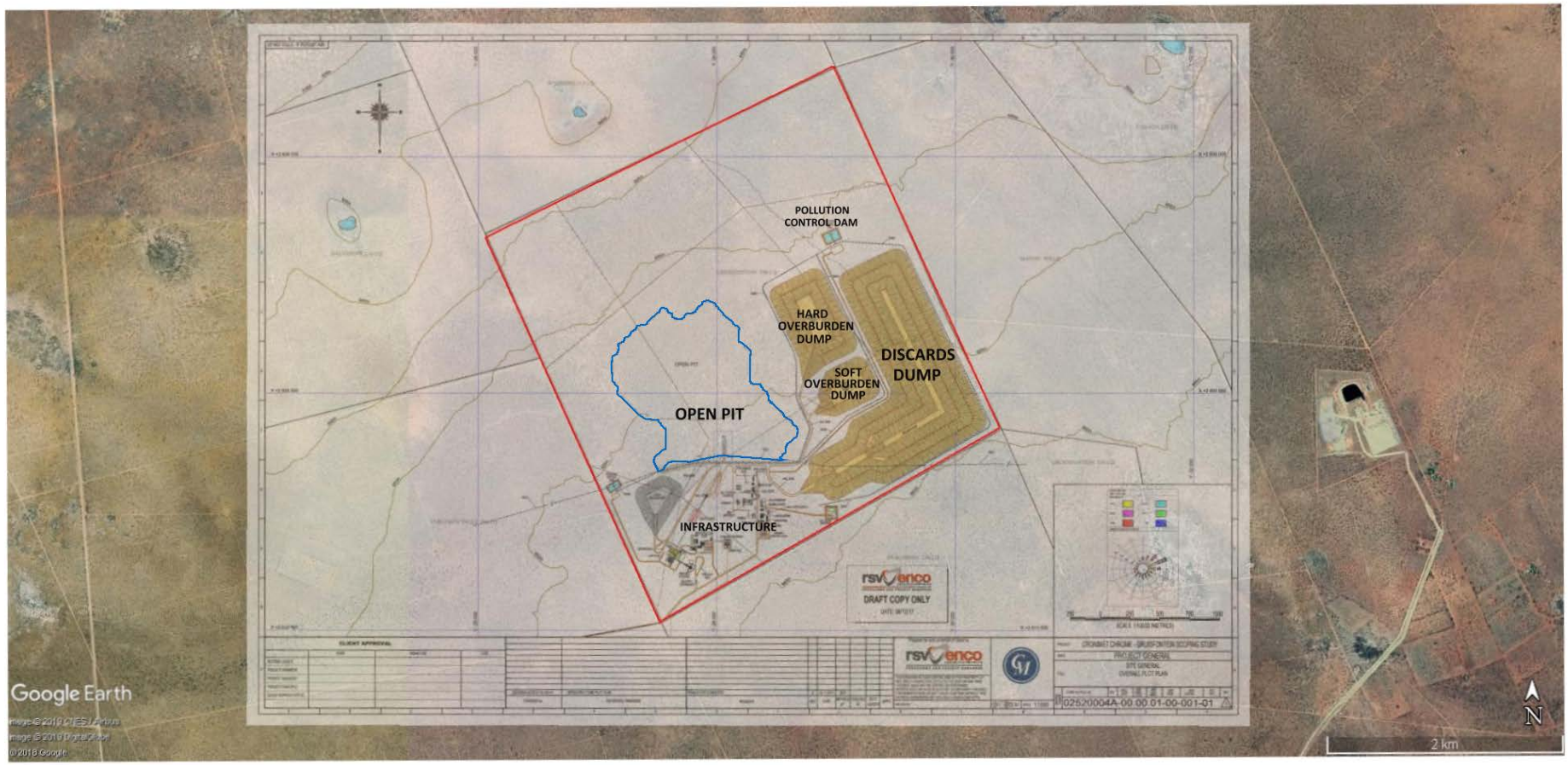

Figure 9. Project layout plan superimposed on Google Earth image.