APAC
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PHASE 1 HIA REPORT FOR THE BLACK MOUNTAIN GAMSBERG BASIC ASSESSMENT LOCATED IN THE KHAI-MA LOCAL MUNICIPALITY, NAMAKWA DISTRICT MUNICIPALITY, NAMAQUALAND MAGISTERIAL DISTRICT NORTHERN CAPE PROVINCE

For:
Golder Associates Africa (Pty) Ltd
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REPORT: **APAC022/27**

Project No.: 21466019

by:

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APRIL 2022

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DISCLAIMER:

Although all efforts are made to identify all sites of cultural heritage (archaeological and historical) significance during an assessment of study areas, the nature of archaeological and historical sites are as such that it is always possible that hidden or subterranean sites, features or objects could be overlooked during the study. APELSER Archaeological Consulting can't be held liable for such oversights or for costs incurred as a result thereof.

Clients & Developers should not continue with any development actions until SAHRA or one of its subsidiary bodies has provided final comments on this report. Submitting the report to SAHRA is the responsibility of the Client unless required of the Heritage Specialist as part of their appointment and Terms of Reference

SUMMARY

APelser Archaeological Consulting (APAC) was appointed by Golder Associates Africa (Pty) Ltd to conduct a Phase 1 HIA for the Black Mountain Gamsberg Mine Basic Assessment process as part of Gamsberg Mine's mining expansion project. The study & development area is located near Aggeneys in the Northern Cape Province.

As part of the Heritage Impact Assessment work, a basic desktop assessment was undertaken (**See Report APAC021/104**). This Final Phase 1 HIA report is the result of the physical field assessment that was conducted in March 2022. Previous heritage work in the larger geographical area as well as the Gamsberg Mine provided the necessary background information on the cultural heritage resources that could potentially be located in the study area and that could possibly be negatively impacted by the proposed mining developments.

Background research indicates that there are a number of cultural heritage (archaeological & historical) sites and features in the larger geographical area within which the study area falls, as well as the specific development location. The physical assessment of the study area identified some sites, features or material of cultural heritage (archaeological and/or historical) origin or significance located here. This report discusses the results of the background research and provides recommendations regarding the way forward.

It is recommended that the proposed development activities should be allowed to continue taking into consideration the recommendations provided at the end.

CONTENTS

1. INTRODUCTION

APelser Archaeological Consulting (APAC) was appointed by Golder Associates Africa (Pty) Ltd to conduct a Phase 1 HIA for the Black Mountain Gamsberg Mine Basic Assessment process as part of Gamsberg Mine's mining expansion project. The study & development area is located near Aggeneys in the Northern Cape Province.

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The client indicated the location and boundaries of the study area and the assessment focused on this portion. The Heritage Specialist was accompanied to the study area & proposed development area footprints by representatives of Vedanta Resources.

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. An 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 000m^2 or involve three or more existing erven or subdivisions thereof.
d. Re-zoning of a site exceeding 10 000 m^2.
e. Any other category provided for in the regulations of SAHRA or a provincial heritage authority.

Structures

Section 34 (1) of the Act states that no person may demolish any structure or part thereof which 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.
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 is 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

The study area is located at the Black Mountain Gamsberg Mine, approximately 12km east of Aggeneys in the Northern Cape Province. Gamsberg Mine is situated in the Khâi-Ma Local Municipality, Namakwa District Municipality, Namaqualand Magisterial District of the Northern Cape Province.

Black Mountain Mining (Pty) Ltd. (BMM), a subsidiary of Vedanta Zinc International (VZI), operates the Black Mountain Complex cluster consisting of the underground Black Mountain Mine operations, Deeps and Swartberg, and the opencast Gamsberg Zinc Mine. The Black

Mountain Mine complex mines zinc, lead, silver and copper and hoists 1.7 million tonnes (mt) of ore a year with a current production capacity of 90 000 tonnes per annum (tpa) metal-in-concentrate.

The Gamsberg Zinc Mine came into operation in June 2016 and mines approximately 4 million tonnes per annum (mta) and produces 250-300 tpa of zinc concentrate per annum.
The mine is situated in the Namakwa District, Northern Cape and is approximately 120 km east of Springbok and approximately 270 km from Upington, between the towns of Aggeneys and Pofadder. The Gamsberg Zinc Mine is located over three properties namely Portion 1 of the farm Bloemhoek 61, Portion 1 of the farm Gams 60 and the remainder of farm Aroams 57.

It is clear from aerial images of the area and information obtained from reports on earlier work done here, that the topography of the area is relatively flat & open in parts, but characterized by hilly terrain, rocky ridges and outcrops present in others. Vegetation cover (trees, shrubs and grass) is very sparse and visibility would therefore be very good. Dry stream beds & erosion dongas is also present. Although recent related mining actions would have impacted on the area, these impacts would be largely concentrated around the Gamsberg, with the areas around it not impacted to such a large degree. There are various known archaeological sites and archaeological sensitive areas - found during previous assessments around Gamsberg - and it is possible that many of these and similar unknown sites and material would still be undisturbed in situ in the study area. The physical assessment will focus on these areas, as well as the areas earmarked for new mining development, and try to determine if there are any possible cultural heritage sites or material located here that could be potentially be negatively impacted as a result.

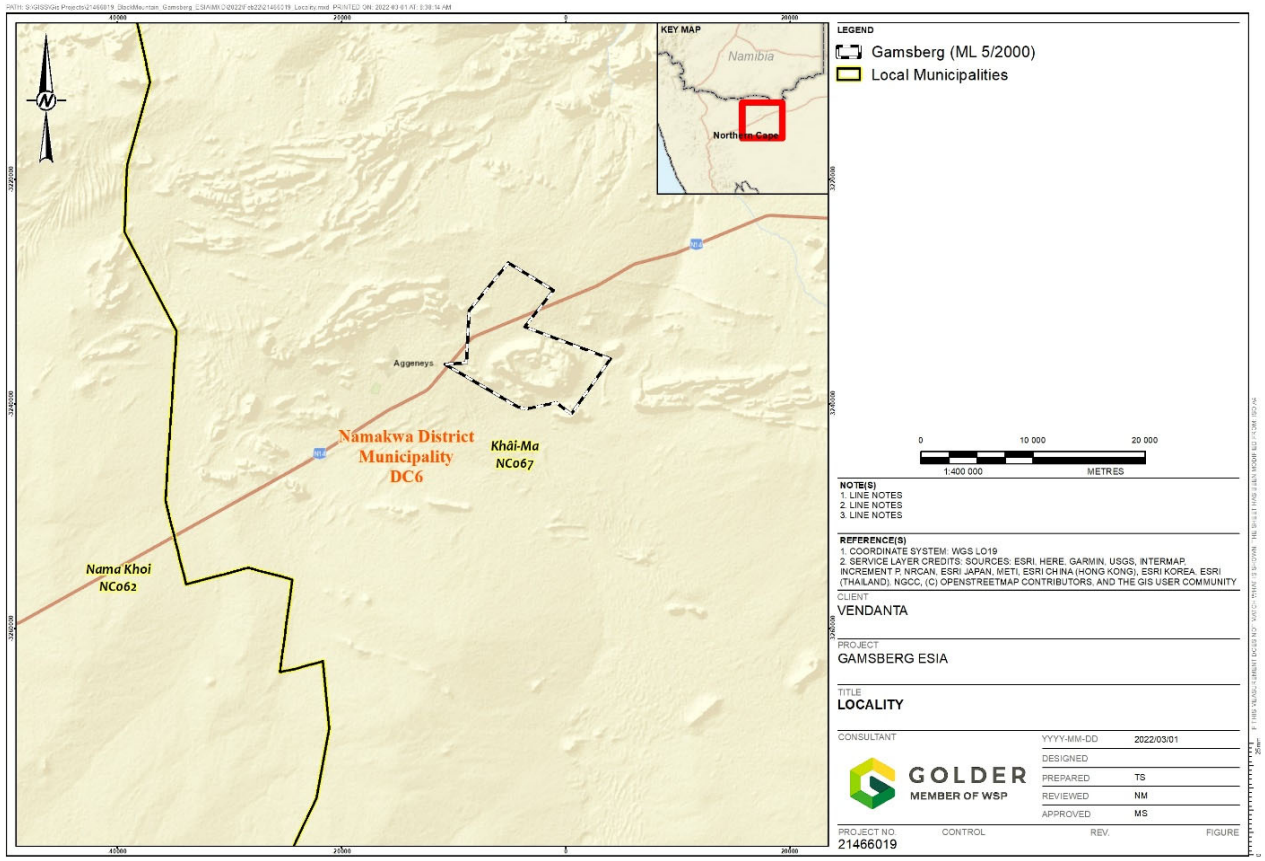

Figure 1: Location of study area (courtesy Golder).

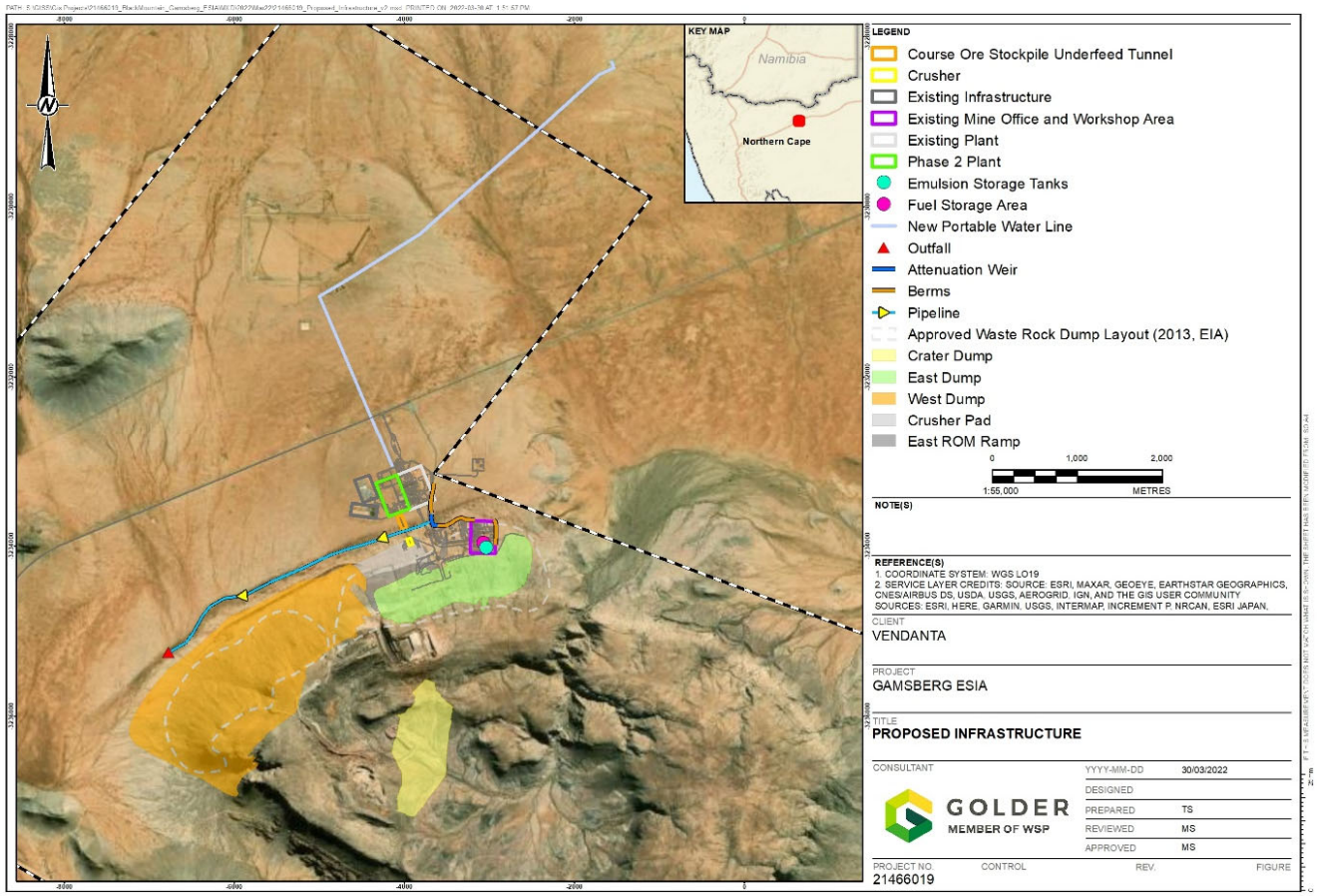

Figure 2: Proposed Infrastructure Map (courtesy Golder).

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).

According to Morris (2006), the archaeology of the Northern Cape is rich and varied, covering long spans of human history. The Karoo is particularly bountiful. Some areas are richer than others, and not all sites are equally significant. The significance of sites encountered in the study area may be assessed against previous research in the region and subcontinent. The regions remoteness from research institutions accounts for a relative lack of archaeological research in the area. The area has probably been relatively marginal to human settlement for most of its history, yet it is in fact exceptionally rich in terms of Stone Age sites and rock art, as a relatively few but important studies have shown (Morris, 2006).

Some information on the Stone Age of the area could be found in a report on a HIA conducted by Morris for the Black Mountain Concentrated Solar Power Facility development at Aggeneys in the Northern Cape. No substantial MSA (or ESA) sites have been found previously in the survey area. Only very sparse localized scatters of stone tools have been seen in places, with limited traces in the hills (e.g. an MSA site at the top of Gamsberg) or at the bases of hills (Morris 2011: 10).

Late Holocene Later Stone Age (LSA) sites dominate the archaeological trace noted in past surveys in the Aggeneys-Pofadder region. Researchers such as Beaumont and Morris have shown that virtually all the Bushmanland sites so far located, appear to be ephemeral occupations by small groups in the hinterland on both sides of the Orange River. The appearance of herders in the Orange River Basin, Beaumont et al. argue, led to competition over resources and ultimately to marginalization of hunter-gatherers, some of whom then occupied Bushmanland, probably mainly in the last millennium, and focused their hunting and gathering activities around the limited number of water sources in the region. Surveys have located signs of human occupation mainly in the shelter of granite inselbergs, on red dunes which provided clean sand for sleeping, or around the seasonal pans. Possibly following good rains, herders moved into the Orange River hinterland, as attested archaeologically at sites with ample pottery near Aggeneys and, east of Pofadder, at Schuitdrift South. However, Thompson (1824) refers to herder groups settled at the stronger springs such as Pella dispersing during periods of drought to smaller springs in the region, which could equally well

account for the traces referred to here. At such times competition between groups over resources and stress within an already marginalized hunter-gatherer society, must have intensified (Morris 2011: 9-10). Recent surveys by the author of this report for the Konkoonsies Solar PV Plant, between Pofadder and Onseepkans, also recorded a number of Later Stone Age sites (Pelser 2011).

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.

The expansion of early farmers, who, among other things, cultivated crops, raised livestock, made ceramic containers (pots), mined ore and smelted metals, occurred in this area between AD 400 and AD 1100 and brought the Early Iron Age (EIA) to South Africa. They settled in semi-permanent villages (De Jong, 2010: 35).

While there is some evidence that the EIA continued into the 15th century in the South African Lowveld, on the escarpment it had ended by AD1100. The Highveld became active again from the 15th century onwards due to a gradually warmer and wetter climate. From here communities spread to other parts of the interior. This later phase, termed the Late Iron Age (LIA), was accompanied by extensive stonewalled settlements, such as the Thlaping capital Dithakong, 40 km north of Kuruman (De Jong, 2010: 35-36).

Sotho-Tswana and Nguni societies, the descendants of the LIA mixed farming communities, found the region already sparsely inhabited by the Late Stone Age (LSA) Khoisan groups, the so-called “first people”. Most of them were eventually assimilated by LIA communities and only a few managed to survive, such as the Korana and Griqua. This period of contact is sometimes known as the Ceramic Late Stone Age and is represented by sites such as the Blinkklipkop specularite mine near Postmasburg and finds at the Kathu Pan (De Jong 2010: 36).

Factors such as population expansion, increasing pressure on natural resources, the emergence of power blocs, attempts to control trade and penetration by Griquas, Korana and white communities from the south-west resulted in a period of instability in Southern Africa that began in the late 18th century and effectively ended with the settlement of white farmers in the interior. This period, known as the difaqane or Mfecane, also affected the Northern

Cape Province, although at a relatively late stage compared to the rest of Southern Africa. Here, the period of instability, beginning in the mid-1820s, was triggered by the incursion of displaced refugees associated with the Tlokwa, Fokeng, Hlakwana and Phuting tribal groups.

The difaqane coincided with the penetration of the interior of South Africa by white traders, hunters, explorers and missionaries. The first was P.J. Truter's and William Somerville's journey of 1801, which reached Dithakong at Kuruman. They were followed by Cowan, Donovan, Burchell and Campbell and resulted in the establishment of a London Mission Society station near Kuruman in 1817 by James Read.

The Great Trek of the Boers from the Cape in 1836 brought large numbers of Voortrekkers up to the borders of large regions known as Bechuanaland and Griqualand West, thereby coming into conflict with many Tswana groups and also the missionaries of the London Mission Society. The conflict between Boer and Tswana communities escalated in the 1860s and 1870s when the Korana and Griqua communities became involved and later also the British government. The conflict mainly centered on land claims by various communities. For decades the western border of the Transvaal Boer republic was not fixed. Only through arbitration (the Keate Arbitration), triggered by the discovery of gold at Tati (1866) and diamonds at Hopetown (1867) was part of the western border finally determined in 1871. Ten years later, the Pretoria Convention fixed the entire western border, thereby finally excluding Bechuanaland and Griqualand West from Boer domination (De Jong 2010: 36).

A 2013 report by David Morris (on an Archaeological and Cultural Heritage Investigation for the Environmental and Social Impact Assessment (ESIA) for the Gamsberg Zinc Mine and Associated Infrastructure) provides detailed information on the number, type, significance and location of pre-colonial (Stone Age) and Colonial (recent historical) sites in the study and development area. Earlier surveys in this and the larger area by him and others are also referenced.

Morris indicates in his 2013 report that previous work had established that regionally important archaeological occurrences existed in the study area. One of these is on the northern rim of the inselberg with others in the basin. No traces from the colonial frontier era were found in areas expected to be impacted. Twentieth century remains of prospecting and mining activity included a campsite and tins dating from the 1970s. Previous work had also examined the wider spatial context in order to evaluate observations made on and immediately adjacent to the Gamsberg inselberg. The 2013 study additionally assessed the evidence of place names and historical accounts as documentation of the more recent proto-colonial and colonial history which, it had been noted, included episodes of considerable conflict locally, associated with what historians now characterize as the genocide against the San. Recommendations were also made at the time for mitigation, namely phase 2 archaeological salvage at selected sites (Morris, 2013: 8)

An initial survey (in 2013) of the literature on the Pofadder-Aggeneys area showed that minimal work had been undertaken in the region prior to the project, although in the 1990s, a few specialist inspections were carried out for Eskom and Black Mountain Mine. While by

no means in-depth, these latter surveys together with the work of Morris & Beaumont (1991), Beaumont et al (1995) and Smith (1995) provided some regional context to the (2013) study and an indication of what to expect from an archaeological perspective in the study area. Cultural Resources Management reports from the surrounding region referred to Later and Middle Stone Age sites occurring. These studies gave the idea that archaeological sites in the area are markedly more dispersed than in areas in the Karoo and eastern Bushmanland, to the south east, and along the Orange River. A rock painting site is described from Black Mountain Mine, nearby, while reference is made to a rock engraving seen in this landscape in the 1870s which has yet to be relocated (Morris, 2013: 12).

Between 1999 and 2012 a number of field surveys were undertaken at Gamsberg. For the 2013 assessment Morris divided the study area into three zones for the tabulation of results: North of Gamsberg); South of Gamsberg and Inselberg and Basin. Survey of land surfaces north of Gamsberg and on the northern slope of the inselberg itself on the farms Gams and Aroam revealed extremely minimal archaeological traces, namely a very few isolated stone flakes. Where erosion had cut into the surface there was no indication of any artefacts below the surface there either. Compared with the northern side of Gamsberg, the survey revealed that the south western and southern side is richer in sites and is consequently more sensitive. Higher sensitivity stems further from evidence that the southern/south eastern side of Gamsberg was the site of an incident in which a group of San were cornered and shot – part of what historians now characterize as a genocide against the indigenous people of the region. Some evidence suggests that this most likely took place in the kloof indicated as SG 7, known as 'Inkruip' ('Creep in'). The occurrence of sites is focused on features such as watercourses and waterholes that would be activated by rain, and sheltered places. Colonial era stone-walling, as dwelling space and kraals, is evident at various sites (Morris, 2013: 13-17).

The 2013 survey revealed a remarkable paucity of tangible archaeological or heritage traces on the inselberg itself and within the basin. The terrain is, in general, highly eroded: it is extremely rocky, often with minimal or no topsoil, making it a hostile environment for preservation of archaeological traces, and indeed for human occupation in the first instance. The outer rim of the Gamsberg and the broader eastern plateau was found on the whole to have extremely minimal archaeological traces, with occurrences being mostly in the form of occasional isolated flakes. Attention was focused on several parts of the broad eastern rim and within valleys and kloofs sloping eastwards off the Gamsberg and westwards into the basin. The kloof areas, settings of high energy run off during heavier rains, were found to be largely devoid of artefacts. Small shelters/overhangs at various places in the sides of the basin and kloofs were examined for evidence of possible Later Stone Age occupation within the Gamsberg basin, eg. stone tool scatters in driplines or on a shelter talus, or where finger paintings or engravings might feature on rocks or shelter walls. Again, evidence was generally lacking. Finds of varying significance were made, however, at five locales on the western side of the inselberg, i.e. on its north western rim and within the Gamsberg basin (Morris, 2013: 18).

A number of mitigation measures were recommended by Morris in 2013, including Phase 2 archaeological sampling of material and salvaging of sites that would be negatively impacted upon by the proposed developments (Morris, 2013: 32-33).

The map below shows the location of sites recorded in the 2013 report by Morris, on the recent kml of the study area & proposed development footprint provided to Pelser for the current Phase 1 HIA. It is clear that there are a number of cultural heritage (archaeological and historical) sites, features and material in the larger study area and development footprint.

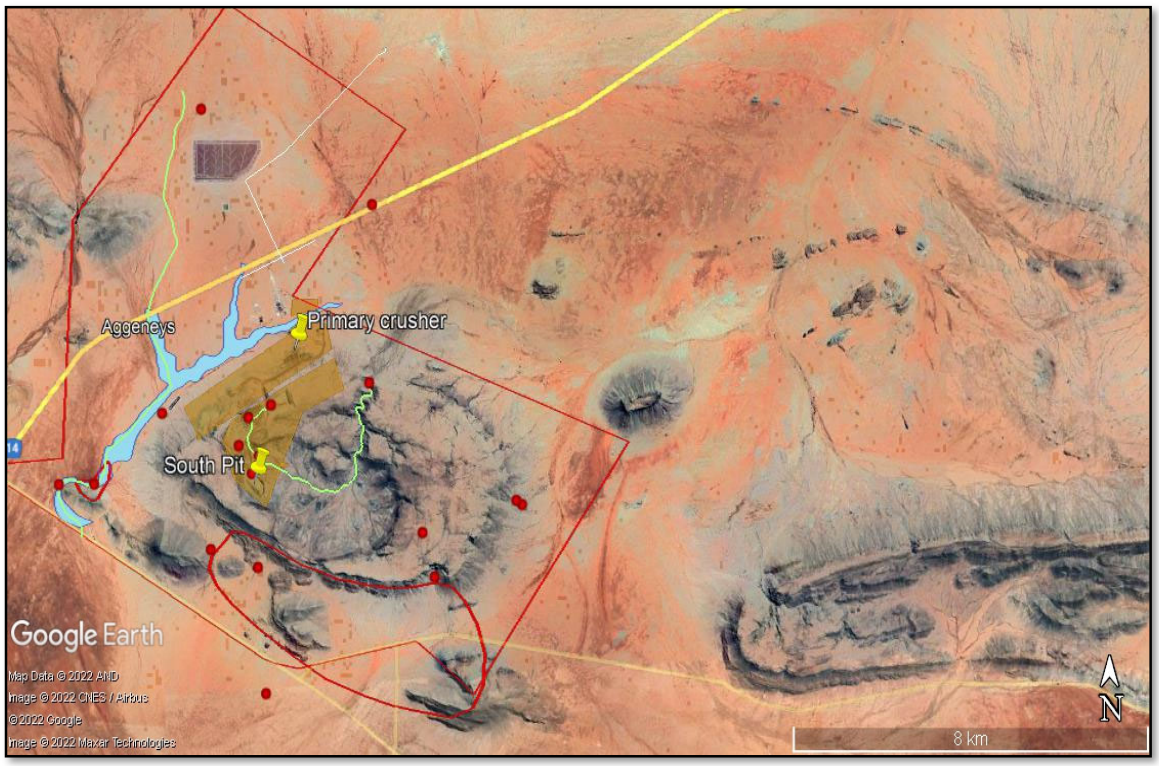

Figure 3: Distribution of known sites in the study area (from Morris 2013). Some of these are in the direct mining area and already have been disturbed (Google Earth, 2022).

Based on the background research and information obtained from it, it is clear that there are a number and range of archaeological and historical sites, features and material in the larger geographical as well as specific study area that forms part of the current study.

However, as observed during the 2013 assessment by Morris, there was a clear lack of archaeological material (surface scatters) in the areas assessed during March 2022. The areas are characterized by sheet erosion in sections and are also fairly rocky with little topsoil. Large parts have already been fairly extensively impacted by earlier and ongoing mining activities and if any significant sites, features or material did exist here in the past it would have been severely disturbed or destroyed as a result. No structural remains (associated with historical farming in the area) were visible as well. However, some material (in the form of single or small scatters of archaeological artefacts) were identified and recorded during the recent

assessment. It is also evident that some of the sites identified by Morris in 2013 have already probably been destroyed by recent ongoing mining activities.

Results of the March 2022 field assessment

It needs to be noted that the March 2022 field assessment focused on the Waste Rock Dump area as well as the pit area. These areas were surveyed on foot where possible, while areas where mining and associated activities were ongoing were not studied in any detail. The foot survey included areas that were outside of the actual footprints of the proposed expansion areas.

The 1st site identified is represented by a single MSA/LSA flake tool (scraper) in the area of the pit. No other tools were observed in the area. This includes small scatters of tools that are fairly characteristic of other similar areas in the larger Northern Cape and areas in close regional proximity to the current study area recorded by Pelser and others in recent years. It is however possible that other archaeological material could have been missed during the current assessment, but if any are to be present it is highly likely that these will be single or small scatters of stone tools that are not in a primary context and of low significance.

The 2nd site (find) is located outside of the direct development footprint of the Waste Rock Dump area. The site is represented by a small scatter of ostrich egg shell (OES) fragments. Although these OES pieces could just be a natural occurrence (ostriches are known in the area) it also possible that they are the result of San hunter-gatherer utilization of ostrich eggs as water flasks or for the manufacturing of beads. Although this could make the find fairly more significant if true, the out of context location and the fact that it is outside of the direct area of impact gives the find a low heritage significance.

The 3rd site is represented by a single piece of undecorated ceramic (pottery). This find is also outside of the footprint of the Waste Rock Dump area and will therefore not be impacted. Finds such as these are scarce in the Northern Cape region and makes it fairly significant. It is possible that the pottery could be associated with San hunter-gatherers as well, who appropriated the use of ceramic vessels from Khoi agro-pastoralists. However, with no other associated material found here this is difficult to ascertain without a doubt. This, coupled with the fact that the site is only represented by a single piece of pottery and is located outside of the area of direct impact, gives the find a low heritage significance rating.

All three sites/finds therefore have a Low Heritage Significance rating and it is believed that the Phase 1 HIA documentation can be seen as sufficient documentation. No further mitigation is therefore required.

GPS Location of Sites: S29 14 35.80 E18 57 37.90 (MSA/LSA Stone tool); S29 13 13.30 E18 58 33.20 (OES); S29 13 18.40 E18 58 25.70 (Pottery)

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.

Heritage Significance: Low
Field Ratings: General protection C (IV C): Phase 1 is seen as sufficient recording and it may be demolished (Low significance)
Mitigation: See Above

Figure 4: General view of area of Waste Rock Dump area.

Figure 5: Another view of the area.

Figure 6: Another general view of the area.

Figure 7: General view of a section of the area.

Figure 8: View of mountain on the northern side of the pit.

Figure 9: View of the pit.

Figure 10: View of the general area in the southern section of the pit. The current South Pit area is visible.

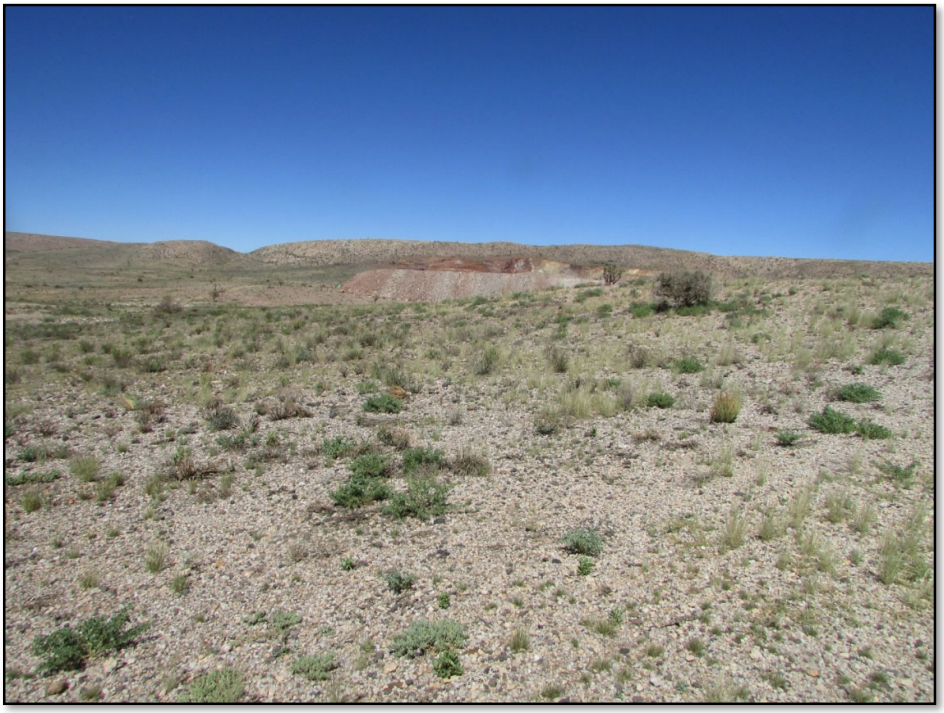

Figure 11: Another general view of the area.

Figure 12: Note the rocky nature of the area as well as the lack of top soil as a result of erosion.

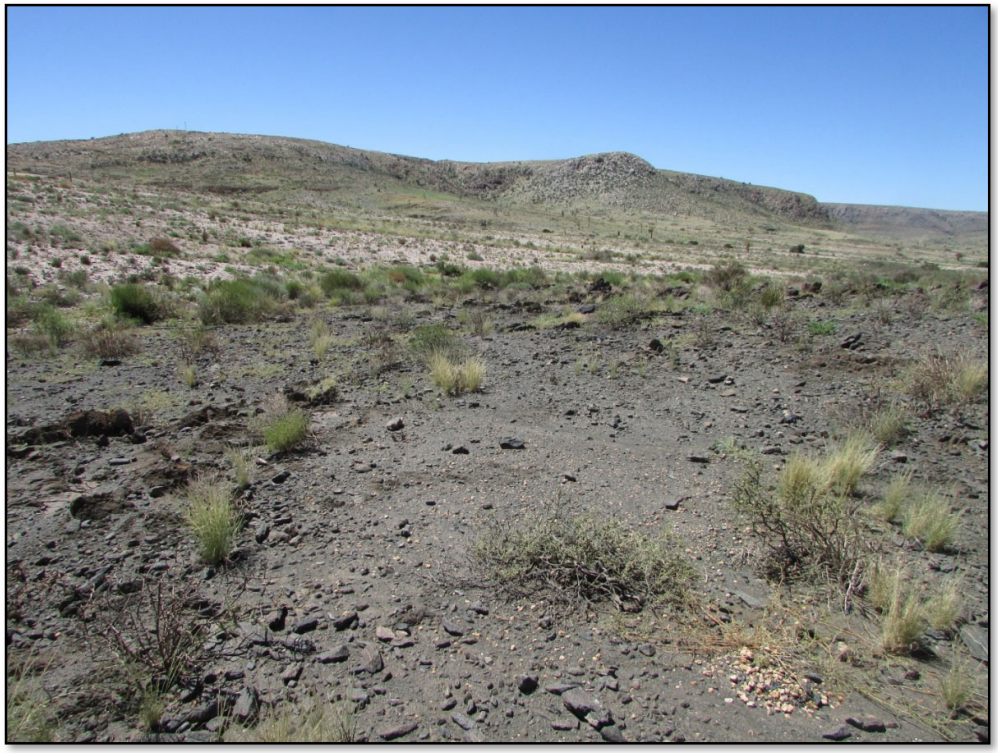

Figure 13: Another general view of the area.

Figure 14: The single MSA/LSA stone tool identified in the pit area.

Figure 15: Scatter of Ostrich Egg Shell fragments in the area outside of the Waste Rock Dump area.

Figure 16: Piece of undecorated pottery found in the area.

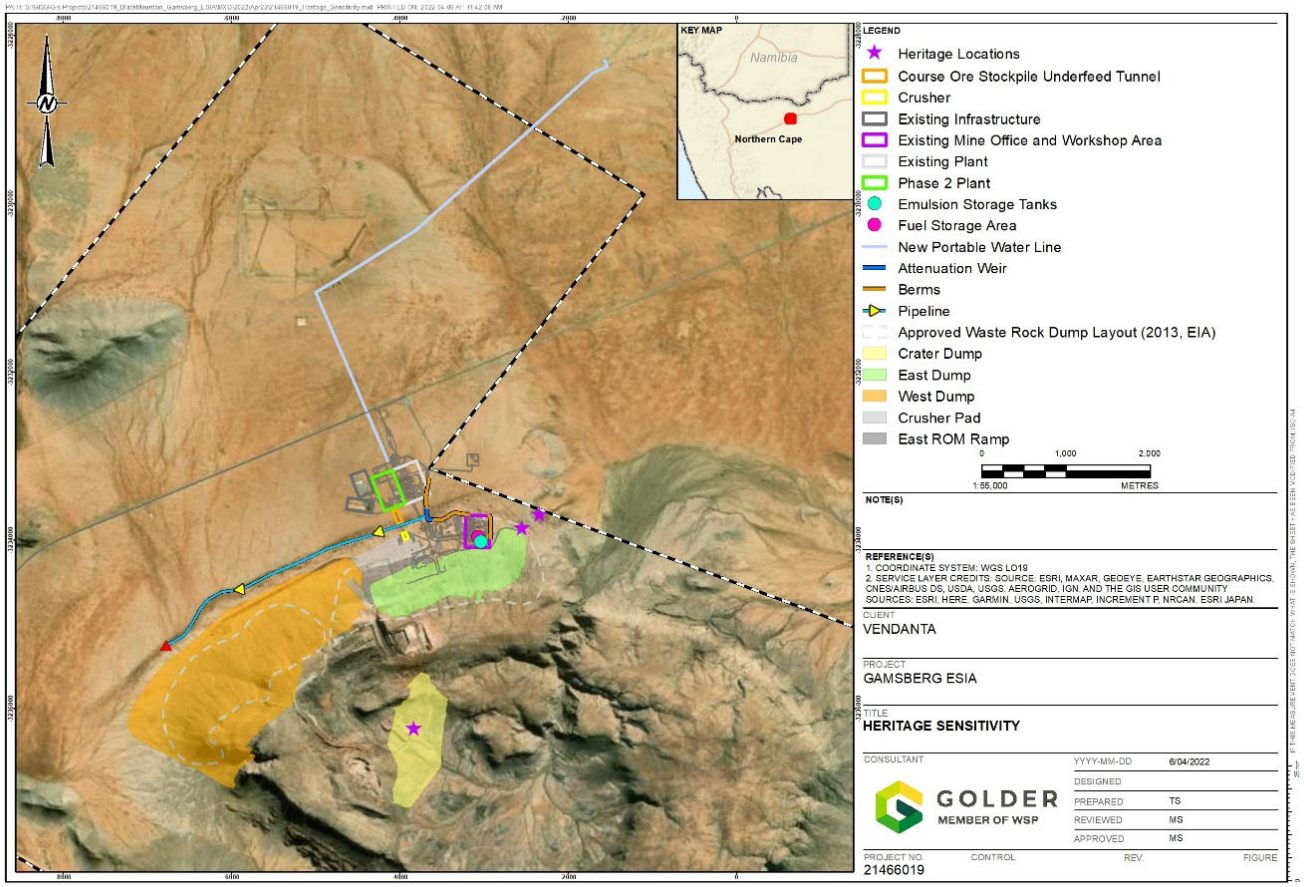

Figure 17: A closer view of the study areas with the location of the sites/material found shown (courtesy Golder).

7. CONCLUSIONS AND RECOMMENDATIONS

APelser Archaeological Consulting (APAC) was appointed by Golder Associates Africa (Pty) Ltd to conduct a Phase 1 HIA for the Black Mountain Gamsberg Mine Basic Assessment as part of Gamsberg Mine's mining expansion project. The study & development area is located near Aggeneys in the Northern Cape Province.

As part of the Heritage Impact Assessment work, a basic desktop assessment was undertaken. Previous heritage work in the larger geographical area as well as the Gamsberg Mine provided the necessary background information on the cultural heritage resources that could potentially be located in the study area and that could possibly be negatively impacted by the proposed mining developments.

Background research indicates that there are a number of cultural heritage (archaeological & historical) sites and features in the larger geographical area within which the study area falls, as well as the specific development location.

As observed during the 2013 assessment by Morris, there was a clear lack of archaeological material (surface scatters) in the areas assessed. The areas are characterized by sheet erosion in sections and are also fairly rocky with little topsoil. Large parts have already been fairly extensively impacted by earlier and ongoing mining activities and if any significant sites, features or material did exist here in the past it would have been severely disturbed or destroyed as a result. No structural remains (associated with historical farming in the area) were visible as well.

The 1st site identified is represented by a single MSA/LSA flake tool (scraper) in the area of the pit. It is however possible that other archaeological material could have been missed during the, but if any are to be present it is highly likely that these will be single or small scatters of stone tools that are not in a primary context and of low significance. The 2nd site located outside of the direct development footprint of the Waste Rock Dump area and is represented by a small scatter of ostrich egg shell (OES) fragments. Although these OES pieces could just be a natural occurrence it is also possible that they are the result of San hunter-gatherer utilization of ostrich eggs as water flasks or for the manufacturing of beads. Although this could make the find fairly more significant if true, the out of context location and the fact that it is outside of the direct area of impact gives the find a low heritage significance. The 3rd site is represented by a single piece of undecorated ceramic (pottery). This find is also outside of the footprint of the Waste Rock Dump area and will therefore not be impacted. Finds such as these are scarce in the Northern Cape region and makes it fairly significant. It is possible that the pottery could be associated with San hunter-gatherers as well, who appropriated the use of ceramic vessels from Khoi agro-pastoralists. However, with no other associated material found here this is difficult to ascertain without a doubt. Coupled with the fact that the site is only represented by a single piece of pottery and is located outside of the area of direct impact, gives the find a low heritage significance rating.

All three sites/finds therefore have a Low Heritage Significance rating and it is believed that the Phase 1 HIA documentation can be seen as sufficient documentation. No further mitigation is therefore required. It is therefore recommended that the proposed additional infrastructure and associated activities be allowed to continue from a Cultural Heritage perspective.

Finally, it should be noted that 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.

8. REFERENCES

General, closer views of study area location and development footprints as well as sites identified: Google Earth 2022.

Infrastructure Map: Courtesy Golder Associates Africa (Pty) Ltd

Known Archaeological Site Distribution Map: Google Earth 2022 (based on Morris 2013).

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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, paleontology 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.