Phase 1 Archaeological Impact Assessment of the proposed upgrade of Afrimat Limited's Cape Lime mining right and internal road near Vredendal in Vredendal Magisterial District, Western Cape Province.

Report prepared for Cape Lime

18 December 2019

Report prepared by Integrated Specialist Services (Pty) Ltd (ISS)

Authors: Foreman Bandama (PhD-UCT) and Trust Mlilo (MA-UP & PhD *cand.* Wits)

1. EXECUTIVE SUMMARY

Item	Description
Proposed development and location	Cape Lime upgrade and road extension on Remainder of Portion 1 of Farm Vaderlansche Rietkuil No. 308, Farm Nuwedrift No 450, Portion 162 of Farom Karoovlakte No. 299 and Portion 21 of the Farm KYS No. 301 in Vredendal Magisterial District, Western Cape Province.
Purpose of the study	Phase 1 Archaeological Impact Assessment to determine the presence of archaeological resources and the impact of the proposed project on these resources within the area demarcated for the mining right and road upgrade.
1:50 000 Topographic Map	
Coordinates	33°19'12.9"South / 18°50'40.0"East
Municipalities	Vredendal Magisterial District
Predominant land use of surrounding area	Mining and Agriculture.
Applicant	CAPE LIME (Pty) Ltd Reg.no. 1999/002171/07
Reference No.	
EAP	Ntsanko Ndlovu Afrimat (Pty) Ltd Tel: 011 439 3260 Cell: 082 728 8975 Fax: 086 607 1354 E-mail: ntsanko.ndlovu@afrimat.co.za
Heritage Consultant	Integrated Specialist Services (Pty Ltd Constantia Park, Building 16-2, 546, 16th Road, Midrand, 1685 Tel: 010 492 4330, Fax: 086 652 9774, Cell: 071 685 9247 Email: trust@issolutions.co.za/ Email: fbandama@yahoo.co.uk
Authors	Dr Foreman Bandama and Mr Trust Mlilo (Archaeology and Heritage Specialists)
Date of Report	18 December 2019

NATIONAL LEGISLATION AND REGULATIONS GOVERNING THIS REPORT

This is a specialist report' and is compiled in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, and the Environmental Impact Assessment Regulations, 2014.

DECLARATION OF INDEPENDENCE

In terms of Chapter 5 of the National Environmental Management Act of 1998 specialists involved in Impact Assessment processes must declare their independence.

I, **Trust Mlilo**, do hereby declare that I am financially and otherwise independent of the client and their consultants, and that all opinions expressed in this document are substantially my own, notwithstanding the fact that I have received fair remuneration from the client for preparation of this report.

Expertise:

Dr Foreman Bandama and Mr Trust Mlilo, we do hereby declare that we are financially and otherwise independent of the client and their consultants, and that all opinions expressed in this document are substantially our own, notwithstanding the fact that we have received fair remuneration from the client for preparation of this report.

Expertise:

Dr Foreman Bandama is an independent archaeologist and heritage specialist with over 9 years' experience. He is an African archaeologist with various specialisations that include lithics, glass beads, ceramics, metallurgy and African theory. He holds an Archaeology honours with a first class dissertation in Stone Age from the University of Zimbabwe, and has an Archaeology Ph.D. from the University of Cape Town. Dr Bandama is an award winning author with over 21 journal articles and book chapters about lithics, glass beads, pottery and metallurgy. He has carried our several Phase 1 AIA/HIAs in the Western Cape Province of South Africa.

Trust Mlilo, MA. (Archaeology), BA Hons, PDGE and BA & (Univ. of Pretoria) ASAPA (Professional member) with more than 16 years of experience in archaeological and heritage impact assessment and management. Mlilo is an accredited member of the Association for Southern African Professional Archaeologists (ASAPA), Amafa akwaZulu Natali and Eastern Cape Heritage Resources Agency (ECPHRA). He has conducted more than hundred AIA/HIA Studies, heritage mitigation work and heritage development projects over the past 16 years of service. The completed projects vary from Phase 1 and Phase 2 as well as heritage management work for government, parastatals (Eskom) and several private companies such as BHP Billiton, Rhino Minerals.

Independence

The views expressed in this document are the objective, independent views of Mr Trust Mlilo and the survey was carried out under Afrimat (Pty) Ltd. Integrated Specialist Services (Pty) Lt d has no any business, personal, financial or other interest in the proposed development project apart from fair remuneration for the work performed.

Conditions relating to this report

The content of this report is based on the author's best scientific and professional knowledge as well as available information. Integrated Specialist Services (Pty) Ltd reserves the right to modify the report in any way deemed fit should new, relevant or previously unavailable or undisclosed information become known to the author from on-going research or further work in this field, or pertaining to this investigation.

This report must not be altered or added to without the prior written consent of the authors and Afrimat (Pty) Ltd. This also refers to electronic copies of the report which are supplied for the purposes of inclusion as part of other reports, including main reports. Similarly, any recommendations, statements or conclusions drawn from or based on this report must make reference to this report. If these form part of a main report relating to this investigation or report, this report must be included in its entirety as an appendix or separate section to the main report.

Authorship: This AIA/HIA Report has been prepared by Mr Trust Mlilo (Professional Archaeologist). The report is for the review of the Heritage Resources Agency (PHRA).

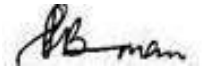
Geographic Co-ordinate Information: Geographic co-ordinates in this report were obtained using a hand-held Garmin Global Positioning System device. The manufacturer states that these devices are accurate to within +/- 5 m.

Maps: Maps included in this report use data extracted from the NTS Map and Google Earth Pro.

Disclaimer: The Authors are not responsible for omissions and inconsistencies that may result from information not available at the time this report was prepared.

The Archaeological and Heritage Impact Assessment Study was carried out within the context of tangible and intangible cultural heritage resources as defined by the SAHRA Regulations and Guidelines as to the authorisation of Mining Right Application being proposed by Cape Lime.

Signed by



18/ 12/ 2019

Foreman Bandama

Acknowledgements

The author acknowledges Afrimat (Pty) Ltd and Cape Lime for their assistance with project information, and the associated project BID as well as responding to technical queries related to the project.

This Phase 1 Archaeological Impact Assessment (AIA) Report was prepared to address requirements of Section 38 of the National Heritage Resources Act, Act 25 of 1999. Integrated Specialist Services (Pty) Ltd (ISS) was commissioned by Cape Lime to conduct this AIA study for the proposed upgrade of the mining right and extension of an internal access road in Remainder of Portion 1 of Farm Vaderlansche Rietkuil No. 308, Farm Nuwedrift No 450, Portion 162 of Farom Karoovlakte No. 299 and Portion 21 of the Farm KYS No. 301 in Vredendal Magisterial District, Western Cape Province. The report includes an archaeological impact study on potential resources that may be impacted by the proposed upgrades of the mining right and access road. The proposed development consists of:

- Construction of a new access road connect the mining facility with the quarry site in Welverdiend farm
- Upgrading of the might right for Cape lime

A stepped approach combining desktop survey, systematic field survey and mapping was employed in order to identity any archaeological landmarks on and around the development footprint. The findings largely show that parts of the proposed development areas are not on pristine ground, having been previously used for agriculture since the 17th century, as well as for ongoing mining/quarrying activities. Sections along the valleys are littered with lithics. Accordingly, care should be when approaching these areas. The farm also has historical infrastructure (farm houses and Anglo-Boer stone walled forts that are perched on hilltops) that occur away from the development footprint. The impact on the road construction is expected to be minimal because a large section will follow an existing gravel road. In the event that archaeological materials are uncovered, work should cease immediately and the HWC should be notified and activity should not resume until appropriate assessment and mitigatory work has been undertaken.

2. TABLE OF CONTENTS

3. LIST OF FIGURES

4. LIST OF TABLES

5. ABBREVIATIONS

AIA Archaeological Impact Assessment
BEA Basic Environmental Assessment – Section (23) (2)(d)
EIA Environmental Impact Assessment
ESA Early Stone Age
ESR Environmental Scoping Report – Section (29) (1)(d)
EIA Environmental Impacts Assessment – Section (32) (2)(d)
EMP Environmental Management Plan
GPS Global Positioning System
HP Historical Period
ISS Integrated Specialist Services
MIA Middle Stone Age
LSA Later Stone Age
MSA Middle Stone Age
HIA Heritage Impact Assessment
HWC Heritage Western Cape
NDP National Development Plan
NEMA National Environmental Management Act 107 of 1998
NHRA National Heritage Resources Act 25 of 1999
PHRA Provincial Heritage Resource Agency
SAHRA South African Heritage Resources Agency

6. DOCUMENT INFORMATION

6.1. Periodisation

Archaeologists divide the different cultural epochs according to the dominant material finds for the different time periods. This region-specific exercise sometimes results the same label having different dates for different areas. This makes it important to clarify and declare the periodization of the area one is studying. These periods are nothing a little more than convenient time brackets because their terminal and commencement are not absolute and there are several instances of overlap. In the present study, relevant archaeological periods are given below;

Early Stone Age (~ 2.6 million to 250 000 years ago)

Middle Stone Age (~ 250 000 to 40-25 000 years ago)

Later Stone Age (~ 40-25 000, to recently, 100 years ago)

Iron Age (~ AD200-1800)

Historic Period (~ AD 1840 to 1950, but a Historic building is classified as over 60 years old)

6.2. Definitions

Just like periodisation, it is also critical to define key terms employed in this study. Most of these terms derive from South African heritage legislation and its ancillary laws, as well as international regulations and norms of best-practice. The following aspects have a direct bearing on the investigation and the resulting report:

Cultural (heritage) resources are all non-physical and physical human-made occurrences, and natural features that are associated with human activity. These can be singular or in groups and include significant sites, structures, features, ecofacts and artefacts of importance associated with the history, architecture or archaeology of human development.

Cultural significance is determined means of aesthetic, historic, scientific, social or spiritual values for past, present or future generations.

Value is related to concepts such as worth, merit, attraction or appeal, concepts that are associated with the (current) usefulness and condition of a place or an object. Although significance and value are not mutually exclusive, in some cases the place may have a high level of significance but a lower level of value. Often, the evaluation of any feature is based on a combination or balance between the two.

Isolated finds are occurrences of artefacts or other remains that are not in-situ or are located apart from archaeological sites. Although these are noted and recorded, but do not usually constitute the core of an impact assessment, unless if they have intrinsic cultural significance and value.

In-situ refers to material culture and surrounding deposits in their original location and context, for example an archaeological site that has not been disturbed by farming.

Archaeological site/materials are remains or traces of human activity that are in a state of disuse and are in, or on, land and which are older than 100 years, including artefacts, human and hominid remains, and artificial features and structures. According to the National Heritage Resources Act (NHRA) (Act No. 25 of 1999), no archaeological artefact, assemblage or settlement (site) and no historical building or structure older than 60 years may be altered, moved or destroyed without the necessary authorization from the South African Heritage Resources Agency (SAHRA) or a provincial heritage resources authority.

Historic material are remains resulting from human activities, which are younger than 100 years, but no longer in use, including artefacts, human remains and artificial features and structures.

Chance finds means archaeological artefacts, features, structures or historical remains accidentally found during development

A grave is a place of interment (variably referred to as burial) and includes the contents, headstone or other marker of such a place, and any other structure on or associated with such place. A grave may occur in isolation or in association with others where upon it is referred to as being situated in a cemetery (contemporary) or burial ground (historic).

A site is a distinct spatial cluster of artefacts, structures, organic and environmental remains, as residues of past human activity.

Archaeological Impact Assessment (AIA) refers to the process of identifying, predicting and assessing the potential positive and negative cultural, social, economic and biophysical impacts of any proposed project which requires authorization of permission by law and which may significantly affect the cultural and natural heritage resources. Accordingly, a AIA must include recommendations for appropriate mitigation measures for minimizing or circumventing negative impacts, measures enhancing the positive aspects of the proposal and heritage management and monitoring measures.

Impact is the positive or negative effects on human well-being and / or on the environment.

Mitigation is the implementation of practical measures to reduce and circumvent adverse impacts or enhance beneficial impacts of an action.

Mining heritage sites refer to old, abandoned mining activities, underground or on the surface, which may date from the prehistorical, historical or the relatively recent past.

Study area or 'project area' refers to the area where the developer wants to focus its development activities (refer to plan).

Phase I studies refer to surveys using various sources of data and limited field walking in order to establish the presence of all possible types of heritage resources in any given area.

6.3. Assumptions and disclaimer

The investigation has been influenced by the unpredictability of buried archaeological remains (absence of evidence does not mean evidence of absence) and the difficulty in establishing intangible heritage values. It should be remembered that archaeological deposits (including graves and traces of mining heritage) usually occur below the ground level. Should artefacts or skeletal material be revealed at the site during construction, such activities should be halted immediately, and SAHRA or HWC must be notified in order for an investigation and evaluation of the find(s) to take place (cf. NHRA (Act No. 25 of 1999), Section 36 (6). Recommendations contained in this document do not exempt the developer from complying with any national, provincial and municipal legislation or other regulatory requirements, including any protection or management or general provision in terms of the NHRA. STEC assumes no responsibility for compliance with conditions that may be required by SAHRA in terms of this report.

7. TERMS OF REFERENCE

Integrated Specialist Studies (Pty) Ltd, on behalf of Cape Lime appointed Dr Foreman Bandama to carry out an AIA of the proposed mining right and access road construction in Vredendal Magisterial District of the Western Cape Province.

- Archaeological and heritage potential of the proposed mining right application site including any known data on affected areas;
- Provide details on methods of study; potential and recommendations to guide HWC to make an informed decision in respect of authorisation of the proposed prospecting right application.
- Identify all objects, sites, occurrences and structures of an archaeological or historical nature (cultural heritage sites) located in and around the proposed prospecting right application site;
- Assess the significance of the cultural resources in terms of their archaeological, historical, scientific, social, religious, aesthetic and tourism value;

- Describe the possible impact of the proposed mining development on these cultural remains, according to a standard set of conventions;
- Propose suitable mitigation measures to minimize possible negative impacts on the cultural resources;
- Review applicable legislative requirements;

8. INTRODUCTION

Cape Lime (Pty) Ltd, a subsidiary of Afrimat (Pty) Ltd proposes to upgrade its current Environmental Management Programme report in order to be compliant with the NEMA EIA Regulations 2014 as amended. Cape Lime's existing Environmental Management Programme was approved (28 October 2002) in terms of the Minerals Act, 1991 (Act 50 of 1991) and updated in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No 28 of 2002) approved on 17 May 2013. Cape Lime mines and processes limestone and dolomite, on Portions 0 and 1 of the Farm Vaderlandsche Rietkuil 308, Remainder of Farm Nuwedrif 450, Remainder of Farm 510, and Portion 40 of Farm 301, situated approximately 8 km south-east of the Vredendal. The current activities entail, apart from mining, also the crushing and screening of all mined material as well as calcination of limestone in an existing Fluid Bed Lime Kiln. The proposed site is situated next to the R362, approximately 8 km south-east of the Vredendal town centre (by road), in the Western Cape Province. The size of the site is 4002.5 ha. The additional component (within this area) includes the construction of an access road connecting the existing road towards the quarry site in Welverdiend farm.

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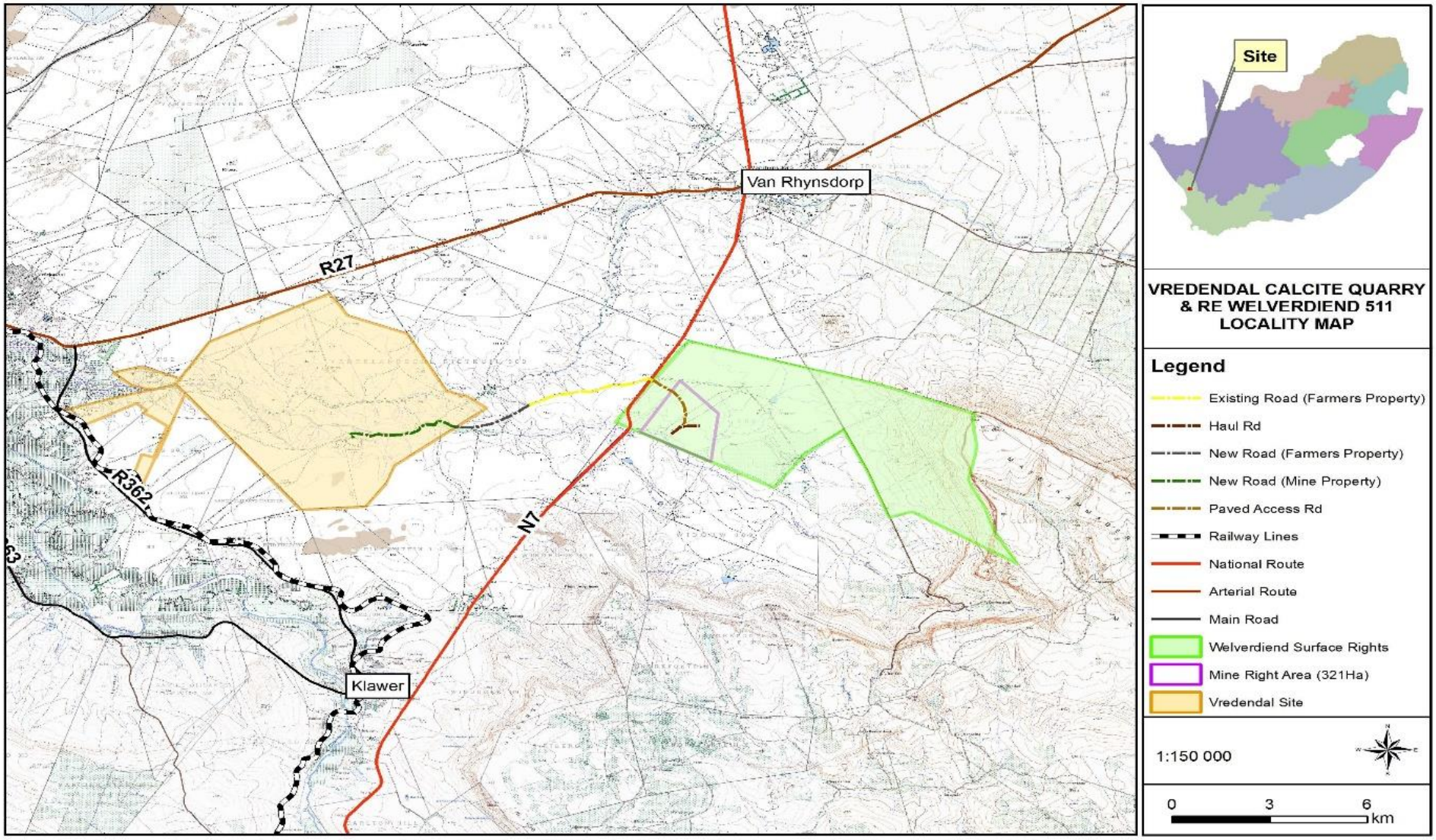

Figure 1: Location of the study area

9. PROJECT DESCRIPTION

The Vredendal limestone and dolomitic ore are of an exceptionally high quality and are the only currently operating source suitable as raw materials for the production of high quality glass and refractory materials in South Africa. The high quality limestone is also suitable for the production of lime for water treatment and the manufacture of Precipitated Calcium Carbonate (PCC). The lime would otherwise have to be imported. The markets currently served are:

- Water treatment (potable and effluent)
- Glass Industry (Flat glass and container glass)
- Aggregates
- Chemical Industries
- Mineral Fillers Industries
- Metallurgical industry

Cape Lime is also a holder of the mining rights for the mining of limestone from within a 321ha area. on the Remainder of Farm 511 (Farm Welverdiend) in Vanrhynsdorp. Awarded in June 2012, in terms of Section 22 of the Mineral and Petroleum Resources Development Act 2002 (Act No. 28 of 2002), No processing takes place at Farm Welverdiend, all product material is transported to the existing Vredendal plant (± 15km west of the site) for processing.

The proposed project will also include the following new developments;

- The construction of 2 new Kilns in addition to the existing Kiln which has been in operation since 2004 and;
- The lengthening of an existing road located between the two Cape Lime mining rights Farm 511/4 Welverdiend and Farm Vaderlandshce Rietkuil 308/1, (see figure 2) The road will be used to transport material from Farm Welverdiend to the Vredendal primary crushing plant.

The addition of new Kilns will enable the mine to increase its overall production capacity of high quality white lime products. Cape Lime is confronted on a regular basis with enquiries with regards to the supply of high quality white lime products to potential new projects in South Africa, for which Cape Lime does not have the current production capacity.

The mine currently transports about 3000 tons of material a month from Farm 511/4 Welverdiend, Vanrhynsdorp to the Vredendal Plant via the N7 and R27 roads. The new haul road is more feasible than the current road due to reduced hauling distance and will prevent the need for trucks and machinery to travel along the N7 and R27 to the Vredendal plant.

The Open Pit Mining process entails removal of overburden to expose the ore before drilling and blasting takes place according to a structured mine plan. Excavation of blasted material is done by an Excavator and 18 ton trucks haul the material to the primary crushing plant.
Run-of-mine material from a specific quarry (dolomite and/or limestone) is tipped into the feed bin from where the ore is fed to a jaw crusher. Thereafter the material goes through a series of screening and further crushing stages. The top size of the material may vary with respect to the product/products being produced. Crushed material is stockpiled at the primary crusher stockpile area.

Crushed white dolomite from the primary crushing plant is fed to the Mineral Fillers plant where the size of the white dolomite is progressively reduced using crushers, ball mills, screens and air classifier. The resultant range of micro-fine products (5 microns, 15 microns, 75 microns and 300 microns) are stored in silos from where it can be packed in small bags or bulk bags for sale.

Crushed dolomite from the primary crushing plant is fed to the Dolomite Processing Plant where it is crushed and screened to -2 mm particle size. The material is then stored in silos before being loaded into bulk road trucks.

Crushed limestone from the primary crushing plant is fed to the secondary crusher and subsequently screened and air classified to yield three products. The coarser fraction (+1-6mm) is stockpiled and used as feed material for the Kiln. The middle fraction (-1mm) is stored in bins from where it is subsequently blended (after analysis) to obtain a consistent product composition before being loaded into road trucks when sold. The fine fraction (-200micron) is removed from the middle fraction before it's fed to the storage bins by passing the material through an air classifier. The fine fraction (-200micron) are routed to silos for storage before dispatched in road tankers when sold.

Limestone ($CaCO_3$) is calcined in a Kiln at ±920˚C to obtain quicklime (CaO) using coal as fuel. All exhaust gas streams pass through bag filter units to be cleaned before being released into the atmosphere. The plant is fully automated to monitor all the process parameters. Quicklime is stored in silos before being bagged, sold in bulk or conveyed to the Oxide Processing Plant or Hydrator plant for further processing. The material obtained at the bag filter units are sold as a low -grade quicklime or passed through the hydrating plant to produce a low- grade hydrated lime product.

Quicklime is mixed with water in a process reactor to yield dry hydrated lime ($Ca(OH)_2$), which is air classified to remove oversize material. The oversize material separated by the air classifying system passes through a milling section to reduce its particle size. The final product is then bagged or dispatched in bulk road tankers.

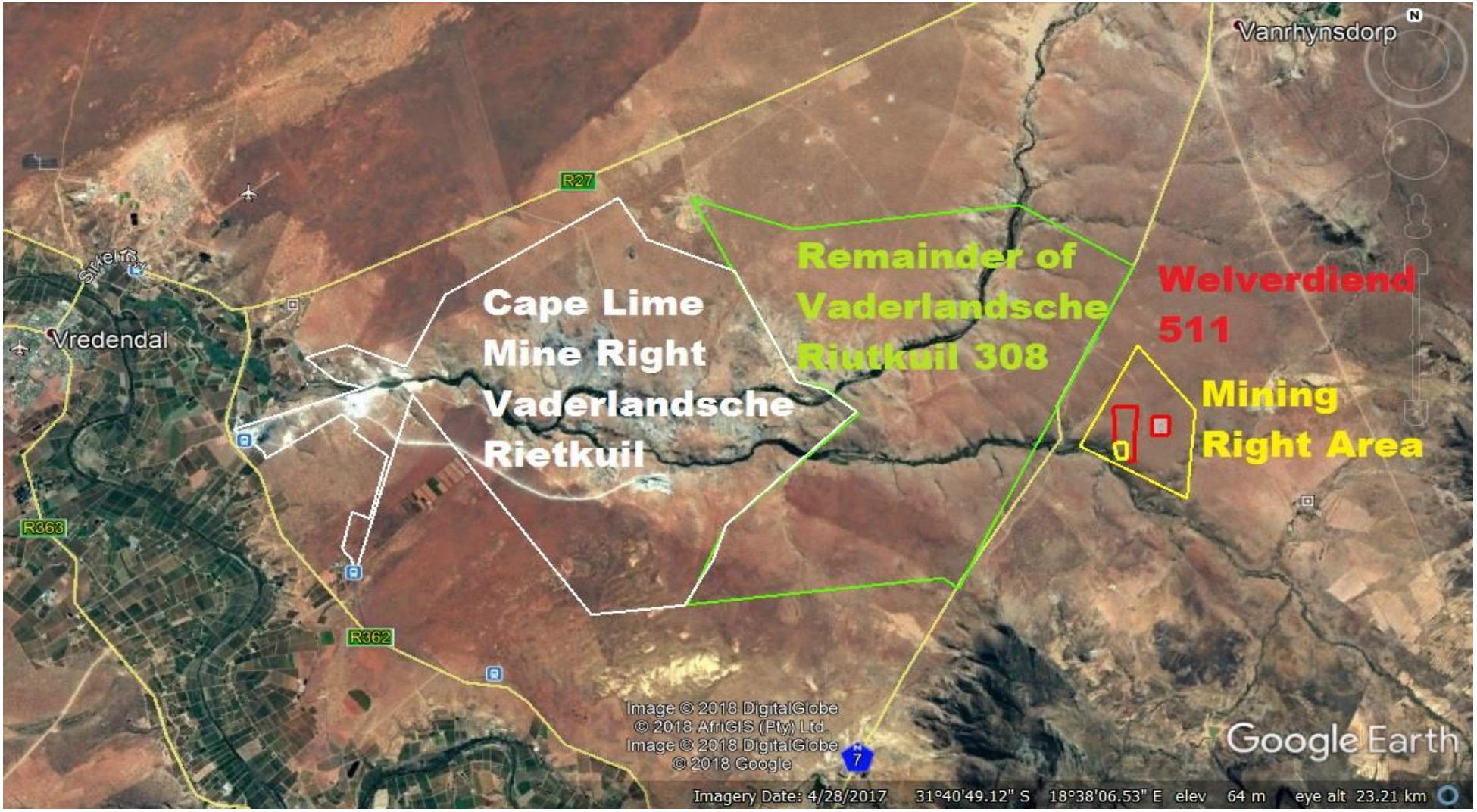

Figure 2: Google Earth Map showing the two Cape Lime mining rights: Farm Vaderlandsche Rietkuil and Welverdiend Farm

10. LEGISLATION CONTEXT

Relevant pieces of legislations relevant to this study are presented here. Under the National Heritage Resources Act (Act 25 of 1999) (NHRA), Mineral and Petroleum Resources Development Act 28 of 2002, and the National Environmental Management Act (NEMA), an AIA is required as a specialist sub-section of the EIA. Archaeological heritage in South Africa is governed by the NHRA and falls under the overall jurisdiction of the SAHRA and its PHRAs. There are different sections of the NHRA that are relevant to this study. The present proposed development is a listed activity in terms of Section 38 of the NHRA which stipulates that the following development categories require a AIA to be conducted by an independent heritage management consultant:

- Construction of a road, wall, power line, pipeline, canal or other linear form of development or barrier exceeding 300m in length
- Construction of bridge or similar structure exceeding 50m in length
- Development or other activity that will change the character of a site -
- Exceeding 5000 sq. m
- Involving three or more existing erven or subdivisions
- Involving three or more erven or divisions that have been consolidated within past five years
- Rezoning of site exceeding 10 000 sq. m
- The costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority
- Any other development category, public open space, squares, parks, recreation grounds.

Thus, any person undertaking any development in the above categories, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development. Section 38 (2) (a) of the same act also requires the submission of a heritage impact assessment report for authorization purposes to the responsible heritage resources agencies (SAHRA/PHRAs). Because, the proposed upgrades on PPC Riebeek West will change the character of a various parts of the property exceeding 5000 sq. m, then an AIA is required according to this section of act.

Related to Section 38 of the NHRA are Sections 34, 35, 36 and 37. Section 34 stipulates that no person may alter, damage, destroy, relocate etc any building or structure older than 60 years, without a permit

issued by SAHRA or a provincial heritage resources authority. This section may not apply to present study since none were identified. Section 35 (4) of the NHRA stipulates that no person may, without a permit issued by SAHRA, destroy, damage, excavate, alter or remove from its original position, or collect, any archaeological material or object. This section may apply to any significant archaeological sites that may be discovered before or during construction. This means that any chance find must be reported to SAHRA or the relevant PHRA, who will assist in investigating the extent and significance of the finds and inform about further actions. Such actions may entail the removal of material after documenting the find site or mapping of larger sections before destruction. Section 36 (3) of the NHRA also stipulates that no person may, without a permit issued by the South African Heritage Resources Agency (SAHRA), 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. This section may apply in case of the discovery of chance burials, which is unlikely. The procedure for reporting chance finds also applies to the unlikely discovery of burials or graves by the developer or his contractors. Section 37 of the NHRA deals with public monuments and memorials but this may not apply to this study.

In addition, the new EIA Regulations (21 April 2006) promulgated in terms of NEMA (Act 107 of 1998) determine that any environmental reports will include cultural (heritage) issues. The new regulations in terms of Chapter 5 of the NEMA provide for an assessment of development impacts on the cultural (heritage) and social environment and for Specialist Studies in this regard. The end purpose of such a report is to alert the developer (PCC in this case), the environmental consultant, SAHRA or the relevant PHRA and interested and affected parties about existing heritage resources that may be affected by the proposed development, and to recommend mitigatory measures aimed at reducing the risks of any adverse impacts on these archaeological resources.

Evaluation of the proposed development as guided by the criteria in NHRA, MPRDA and NEMA ACT	Stipulation for developments	Requirement details
NHRA Section 38	Construction of road, wall, power line, pipeline, canal or other linear form of development or barrier exceeding 300m in length	Yes
	Construction of bridge or similar structure exceeding 50m in length	No
	Development exceeding 5000 sq. m	Yes
	Development involving three or more existing erven or subdivisions	Yes
	Development involving three or more erven or divisions that have been consolidated within past five years	Yes
	Rezoning of site exceeding 10 000 sq. m	Not available
	Any other development category, public open space, squares, parks, recreation grounds	Yes
NHRA Section 34	Impacts on buildings and structures older than 60 years	Subject to identification during Phase 1

11: DEFINITIONS

The following definitions are adopted in this AIA report:

Heritage resources

This means any place or object of cultural significance

Cultural significance

This means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance

Archaeological resources

This includes:

i. material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years including artefacts, human and hominid remains and artificial features and structures;

ii. rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation;

iii. wrecks, being any vessel or aircraft, or any part thereof which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the republic as defined in the Maritimes Zones Act, and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation;

iv. features, structures and artefacts associated with military history which are older than 75 years and the site on which they are found.

Development

This 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 the change to the nature, appearance or physical nature of a place or influence its stability and future well-being, including:

i. construction, alteration, demolition, removal or change in use of a place or a structure at a place;

ii. carrying out any works on or over or under a place;

iii. subdivision or consolidation of land comprising a place, including the structures or airspace of a place;

iv. constructing or putting up for display signs or boards;

v. any change to the natural or existing condition or topography of land; and

vi. any removal or destruction of trees, or removal of vegetation or topsoil

12. METHODOLOGY

The study was undertaken using a combination of desktop study and systematic field surveys (fieldwalking and drive-throughs). These field techniques were used to document the physiographic settings and history of the area as well as determining the presence/absence of any archaeological, or cultural landmarks on the footprint of the area proposed to host the upgrades. Desktop study was focused on both published and unpublished archaeological, historical and anthropological documentary works. These included maps, photographs, site registers, journals, monographs and autobiographies, and fieldwork reports - particularly AIAs and HIAs hosted by heritage databases such as WHC/ SAHRA. The latter, formed a key component of this research; they provided background information, which aided towards understanding the archaeology of the landscape. Relevant published and unpublished sources were consulted in generating desktop information for this AIA. This included online databases such as Google Earth, Google Scholar and SAHRIS. More importantly previous HIAs conducted in the same project area were also consulted to understand the heritage character of the landscape. These include Deacon (1990), Halkett and Finneegan (2007), Hart and Webley (2009), Halkett (2012), Orton (2004, 2006, 2007, 2010, 2011a, 2011b, 2012, 2014a ,2014b,), Kaplan (2005, 2006, 2008a, 2008b, 2008c) for the same project area.

Upon gathering background information from the desktop research, a field study of the area earmarked to host the upgrades and its vicinity was undertaken. This was carried out under the guidance of Cape Lime staff who arranged access to various sections of the farms. Physiography and land use of the area was documented using detailed photographs (Figure 3). Systematic surface surveys were conducted using 200m x 1000m quadrants following stratified random sampling (Renfrew & Bahn 2004). The quadrants were investigated by a team of two archaeologists using field walks and drive throughs. Ultimately, the recorded findings were then analysed in view of the proposed development. The result of this investigation is a report indicating the presence/absence of archaeological resources and how they will be impacted and conserved from the proposed development.

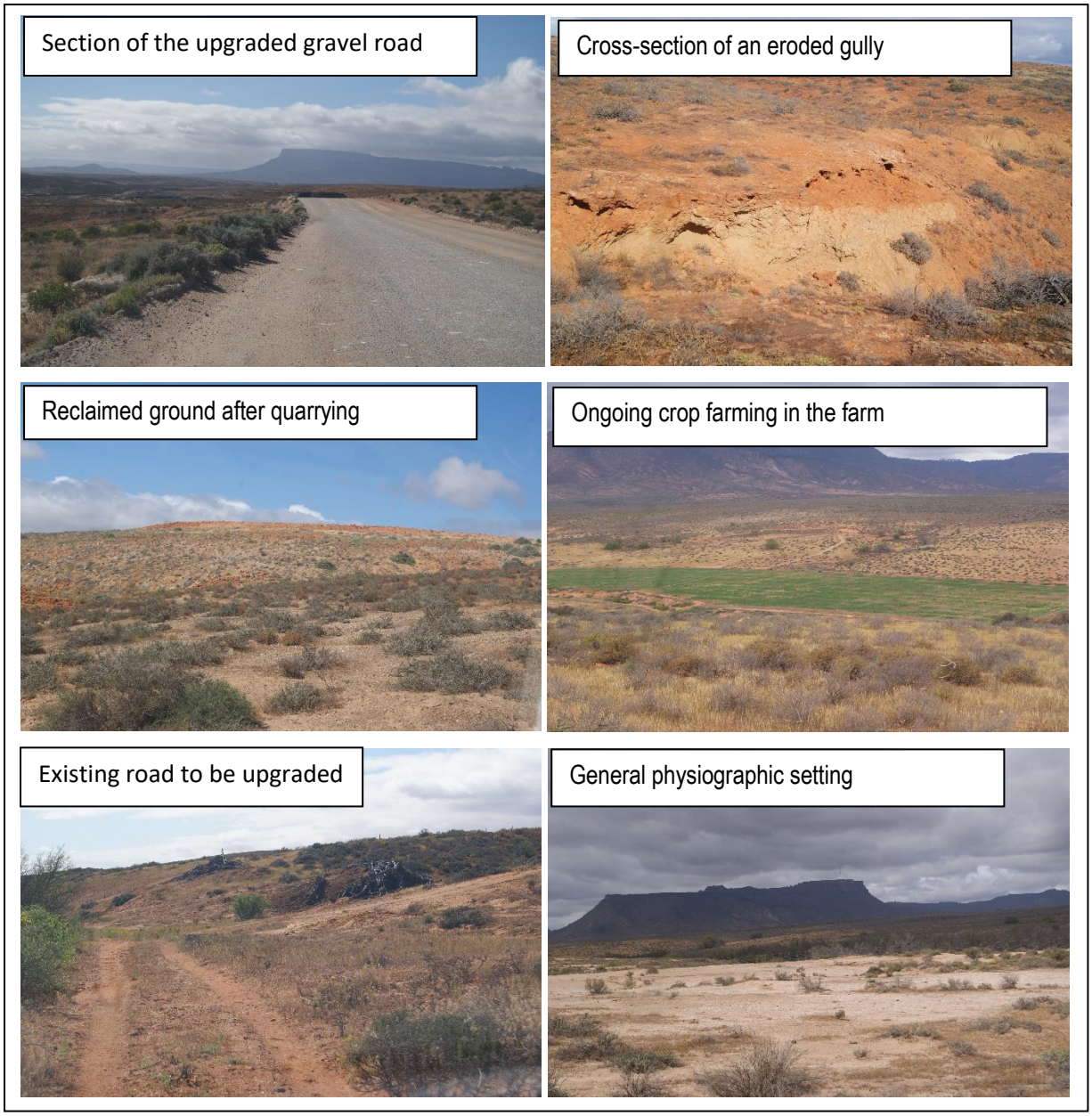

Figure 3: The general physiography and land use of the area proposed for the development.

13. LIMITATIONS

No excavations were undertaken hence this study was largely informed by the unpredictability of buried archaeological remains. Considering the fact that the absence of sub-surface data does not mean to say there is no chance of encountering archaeological deposits, any finds recovered during the development process must be reported to SAHRA/HWC. Some of the historic buildings on farm could not be accessed hence their inspection was mostly limited to the exterior.

14. RESULTS

14.1. Archaeological Context

This section of the Western Cape Province is now beginning to yield some archaeological data, thanks to the recent HIA/AIA studies in this region. The Province in general is renowned for hosting rich and diverse archaeological sequences which depict continuous human occupation (Deacon and Deacon 1999), but intensive agriculture more than a century has resulted in the diminished integrity of whatever sights may have been on the landscape.

14. 2. Summary of Findings

Isolated lithics of the ESA and MSA attest to the general presence of this culture on the broad landscape, but no artefacts or sites were located on the development path. A total of ten isolated surface lithic cluster were recorded on the farm but none was recovered on the area earmarked for the development (Figure 4)

Figure 4**:** Lithics recorded in the farm.

Beyond the area ear marked for the proposed development, the study also reported historical sites perched high up the hillocks. These include stonewalled forts (probably dating to the Anglo-Boer period), probable historical farmhouse and a stonewalled fence. All these occur over 1km away from the proposed path and are shielded from view by several ridges (Figure 5).

Figure 5: Possible historical structures in the project area. Note that the structures will not be affected by the proposed development.

Figure 6: Possible historical structures in the project area. Note that this structure is located outside the mining area but it provides an insight about the heritage character of the landscape.

Figure 7 Possible historical structures approximately 200m from the proposed access road route.

Figure 8: Possible historical structures in the vicinity of the proposed road route.

About 100m from the farm house was a cemetery with formal graves. One of the graves had a head stone with inscriptions showing the year of death as 1929, while the other headstone had two names

(Wilhem Camhausen 1932 and Emelie Hausen 1920). The dimensions for the latter were uncharacteristically too wide for a single grave, showing that they may have re-opened Emelie's 1920 grave twelve years later (1932) to bury Wilhem next to Emelie (Figure 10).

Figure 9: A historical grave marked by a tombstones and inscribed headstone with two names. Note that this is an indication of twin grave.

Figure 10: Cemetery approximately 200m from the proposed access road route.

The cemetery was also fenced off with dry stonewall, parts of which were poorly cemented. All of these built structures occur over a kilometre away and are shielded from view by the ridge and will not be impacted by the development.

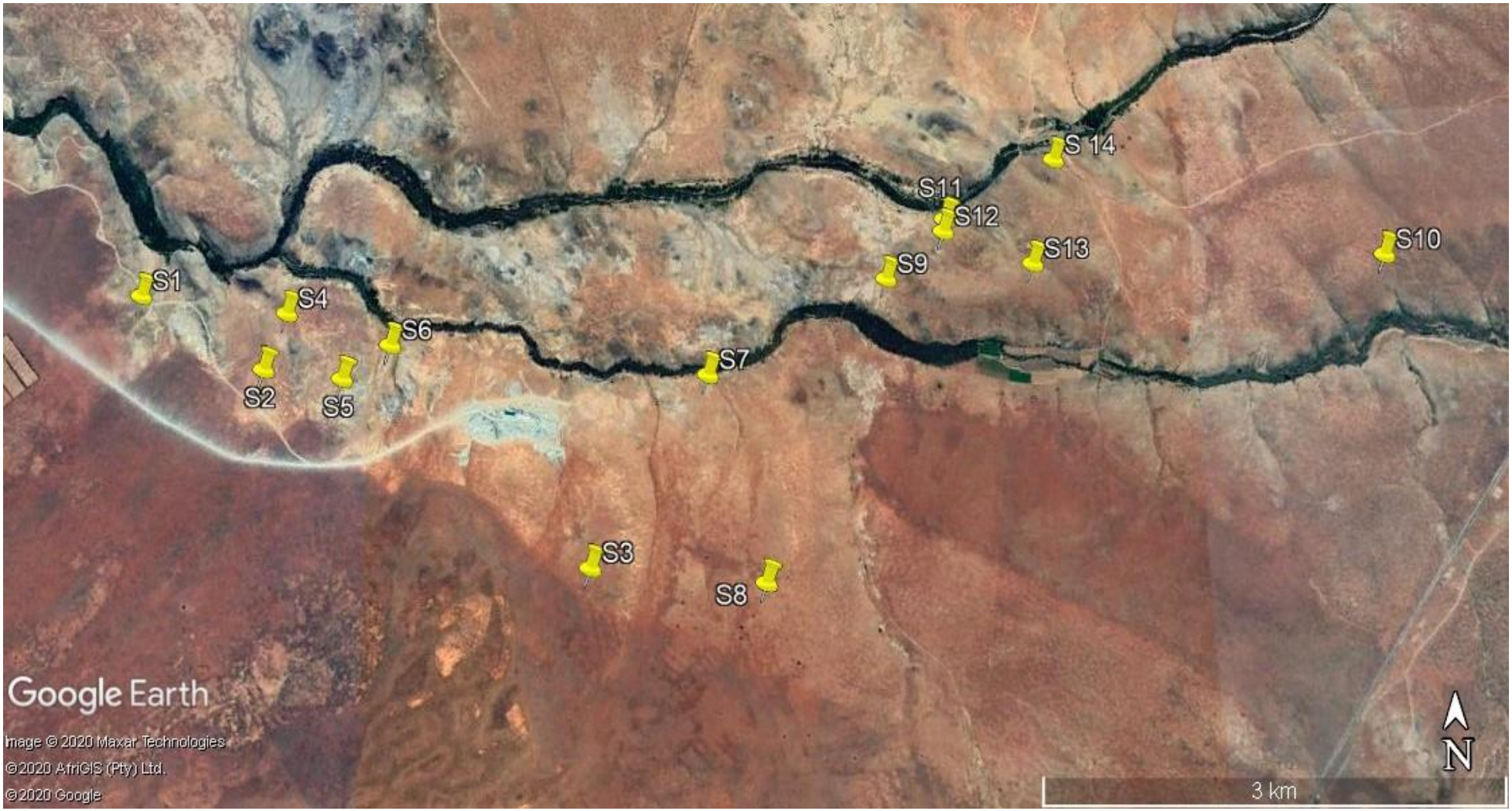

Figure 11: Sites recorded during the survey (see Table 1 below).

Table 1. Summary of Heritage sites recorded during survey.

Number		Material & Period	GPS Location	Significance	To be affected by development
Lithic clusters	(1)	22 ESA/MSA lithics	31°41'12.92"S 18°35'30.42"E	Low	No (road already erected past this)
	(2)	10 ESA/MSA lithics	31°41'29.20"S 18°36'3.44"E	Low	No (road already erected past this)
	(3)	10 ESA/MSA lithics	31°42'11.70"S 18°37'29.39"E	Low	No (road already erected past this)
	(4)	2 ESA/MSA lithics	31°41'16.99"S 18°36'8.75"E	Low	No (road already erected past this)
	(5)	17 ESA/MSA lithics	31°41'31.39"S 18°36'24.19"E	Low	No (road already erected past this)
	(6)	13 ESA/MSA lithics	31°41'24.00"S 18°36'36.02"E	Low	No (road already erected past this)
	(7)	4 MSA lithics	31°41'31.15"S 18°37'59.33"E	Low	No (road already erected past this)
	(8)	1 ESA lithic	31°42'15.02"S 18°38'14.11"E	Low	No (outside development corridor)
	(9)	6 MSA lithics	31°41'10.62"S 18°38'46.39"E	Low	No (outside development corridor)
	(10)	4 MSA lithics	31°41'6.55"S 18°40'57.35"E	Low	No (outside development corridor)
Structures & Features	(11)	Dilapidated historical house attached to a stonewalled kraal	31°40'57.59"S1 8°39'2.29"E	Low	No (outside development corridor)
	(12)	Cemetery with 1920s-1930s graves	31°41'0.32"S 18°39'1.77"E	High	No (outside development corridor)
	(13)	Historical stone walled fence stretching for about 2km	31°41'7.86"S 18°39'24.89"E	Low	No (outside development corridor)
	(14)	Circular stonewalled Anglo-Boer war fort	31°40'44.61"S 18°39'31.64"E	Medium	No (outside development corridor)

15. CONCLUSIONS AND RECOMMENDATIONS

The footprint of the proposed upgrades does not lie on pristine ground but occurs in area already affected by modern developments that include farming quarrying and access roads. As revealed from desktop study, the archaeology of the area is concentrated along the valleys outside the proposed development footprint where 10 lithic clusters were reported. Those lithic artefacts that occur in the area, appear in isolated clusters and are of low significance. Four historical structures and features (cemetery, farm house, stonewalled fencing and a stonewalled fort) were also reported but much further away from development path. The potential for chance finds, still remains, and the developer and his contractors are requested to be diligent and observant during development. The procedure for reporting chance finds has clearly been laid out and if this report is adopted, development may continue.

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APPENDIX 1

CHANCE FIND PROCEDURE FOR THE PROPOSED UPGRADE OF AFRIMAT LIMITED'S CAPE LIME MINING RIGHT AND INTERNAL ROAD NEAR ROAD NEAR VREDENDAL IN VREDENTAL MAGISTERIAL DISTRICT WESTERN CAPE PROVINCE.

FEBRUARY 2020

ACRONYMS

BGG	Burial Grounds and Graves
CFPs	Chance Find Procedures
ECO	Environmental Control Officer
HIA	Heritage Impact Assessment
ICOMOS	International Council on Monuments and Sites
ISS	Integrated Specialist Services (Pty) Ltd
NHRA	National Heritage Resources Act (Act No. 25 of 1999)
SAHRA	South African Heritage Resources Authority
SAPS	South African Police Service
UNESCO	United Nations Educational, Scientific and Cultural Organisation

CHANCE FIND PROCEDURE

INTRODUCTION

An Archaeological Chance Find Procedure (CFP) is a tool for the protection of previously unidentified cultural heritage resources during construction. The main purpose of a CFP is to raise awareness of all mine and construction workers and management on site regarding the potential for accidental discovery or damage of graves and cultural heritage resources and establish a procedure for the protection of these resources. Chance Finds are defined as potential cultural heritage (or paleontological) objects, features, or sites that are identified outside of or after Heritage Impact studies, normally as a result of construction monitoring. Chance Finds may be made by any member of the project team who may not necessarily be an archaeologist or even visitors. Appropriate application of a CFP on development projects has led to discovery of cultural heritage resources that were not identified during archaeological and heritage impact assessments. As such, it is considered to be a valuable instrument when properly implemented. For the CFP to be effective, the site manager must ensure that all personnel on the proposed development site understand the CFP and the importance of adhering to it if cultural heritage resources are encountered. In addition, training or induction on cultural heritage resources that might potentially be found on site should be provided. In short, the Chance find procedure details the necessary steps to be taken if any culturally significant artefacts are found during construction.

DEFINITIONS

In short the term 'heritage resource' includes structures, archaeology, meteors, and public monuments as defined in the South African National Heritage Resources Act (Act No. 25 of 1999) (NHRA) Sections 34, 35, and 37. Procedures specific to burial grounds and graves (BGG) as defined under NHRA Section 36 will be discussed separately as this require the implementation of separate criteria for CFPs.

BACKGROUND

Proposed construction site and access routes are subject to heritage survey and assessment at planning stage in accordance with the NHRA Act 25 of 1999. These surveys are based on surface indications alone and it is therefore possible that sites or significant archaeological remains can be missed during surveys because they occur beneath the surface. These are often accidentally exposed in the course of construction or any associated mining and construction work and hence the need for a Chance Find Procedure to deal with accidental finds. In this case an extensive Archaeological Impact Assessments completed by Bandama and Mlilo (2020) for this current project are adequate. The AIA/HIA conducted were comprehensive covering the entire site. The studies confirmed that the project area is in the vicinity of historical structures and burial sites. These sites are significantly far from the proposed development and will not be directly affected by the current project.

PURPOSE

The purpose of this Chance Find Procedure is to ensure the protection of previously unrecorded heritage resources within the proposed development site. This Chance Find Procedure intends to provide the applicant and contractors with appropriate response in accordance with the NHRA and international best practice. The aim of this CFP is to avoid or reduce project risks that may occur as a result of accidental finds whilst considering international best practice. In addition, this document seeks to address the probability of archaeological remains finds and features becoming accidentally exposed during earth moving and ground altering activities during mining and construction of the access road. The proposed construction activities have the potential to cause severe impacts on significant tangible and intangible cultural heritage resources buried beneath the surface. ISS developed this Chance Find Procedure to define the process which govern the management of Chance Finds during construction. This ensures that appropriate treatment of chance finds while also minimizing disruption of the construction schedule. It also enables compliance with the NHRA and all relevant regulations. Archaeological Chance Find Procedures are to promote preservation of archaeological remains while minimizing disruption of construction scheduling. It is recommended that due to the low to moderate archaeological potential of the project area, all site personnel and contractors be informed of the Archaeological Chance Find procedure and have access to a copy while on site. This document has been prepared to define the avoidance, minimization and mitigation measures necessary to ensure that negative impacts to known and unknown archaeological remains as a result of project activities and are prevented or where this is not possible, reduced to as low as reasonably practical during construction.

Thus, this Chance Finds Procedure covers the actions to be taken from the discovering of a heritage site or item to its investigation and assessment by a professional archaeologist or other appropriately qualified person to its rescue or salvage.

CHANCE FIND PROCEDURE

General

The following procedure is to be executed in the event that archaeological material is discovered:

- All construction activity in the vicinity of the accidental find/feature/site must cease immediately avoid further damage to the site.

- Briefly note the type of archaeological materials you think you've encountered, and their location, including, if possible, the depth below surface of the find

- Report your discovery to your supervisor or if they are unavailable, report to the project ECO who will provide further instructions.

- If the supervisor is not available, notify the Environmental Control Officer immediately. The Environmental Control Officer will then report the find to the Site Manager who will promptly notify the project archaeologist and HW/SAHRA.
- Delineate the discovered find/ feature/ site and provide 25m buffer zone from all sides of the find.
- Record the find GPS location, if able.
- All remains are to be stabilised in situ.
- Secure the area to prevent any damage or loss of removable objects.
- Photograph the exposed materials, preferably with a scale (a yellow plastic field binder will suffice).
- The project archaeologist will undertake the inspection process in accordance with all project health and safety protocols under direction of the Health and Safety Officer.
- Finds rescue strategy: All investigation of archaeological soils will be undertaken by hand, all finds, remains and samples will be kept and submitted to a Museum as required. In the event that any artefacts need to be conserved, the relevant permit will be sought from the HWC.
- An on-site office and finds storage area will be provided, allowing storage of any artefacts or other archaeological material recovered during the monitoring process.
- In the case of human remains, in addition to the above, the SAHRA Burial Ground Unit will be contacted and the guidelines for the treatment of human remains will be adhered to. If skeletal remains are identified, an archaeological will be available to examine the remains.
- The project archaeologist will complete a report on the findings as part of the permit application process.
- Once authorisation has been given by HW, the Applicant will be informed when construction activities can resume.

MANAGEMENT OF CHANCE FINDS

Should the Heritage specialist conclude that the find is a heritage resource protected in terms of the NRHA (1999) Sections 34, 36, 37 and NHRA (1999) Regulations (Regulation 38, 39, 40), ISS will notify SAHRA and/or HW on behalf of the applicant. SAHRA/HW may require that a search and rescue exercise be conducted in terms of NHRA Section 38, this may include rescue excavations, for which an archaeologist will submit a rescue permit application having fulfilled all requirements of the permit application process.

In the event that human remains are accidently exposed, SAHRA Burial Ground Unit or Heritage Specialist must immediately be notified of the discovery in order to take the required further steps:

a. Heritage Specialist to inspect, evaluate and document the exposed burial or skeletal remains and determine further action in consultation with the SAPS and Traditional authorities:

b. Heritage specialist will investigate the age of the accidental exposure in order to determine whether the find is a burial older than 60 years under the jurisdiction of SAHRA or that the exposed burial is younger than 60 years under the jurisdiction of the Department of Health in terms of the Human Tissue Act.

c. The local SAPS will be notified to inspect the accidental exposure in order to determine where the site is a scene of crime or not.

d. Having inspected and evaluated the accidental exposure of human remains, the project Archaeologist will then track and consult the potential descendants or custodians of the affected burial.

e. The project archaeologist will consult with the traditional authorities, local municipality and SAPS to seek endorsement for the rescue of the remains. Consultation must be done in terms of NHRA (1999) Regulations 39, 40, 42;

f. Having obtained consent from affected families and stakeholders, the project archaeologist will then compile a Rescue Permit application and submit to SAHRA Burial Ground and Graves Unit.

g. As soon as the project archaeologist receives the rescue permit from HW he will in collaboration with the company/contractor arrange for the relocation in terms of logistics and appointing of an experienced undertaker to conduct the relocation process.

h. The rescue process will be done under the supervision of the archaeologist, the site representative and affected family members. Retrieval of the remains shall be undertaken in such a manner as to reveal the stratigraphic and spatial relationship of the human skeletal remains with other archaeological features in the excavation (e.g., grave goods, hearths, burial pits, etc.). A catalogue and bagging system shall be utilised that will allow ready reassembly and relational analysis of all elements in a laboratory. The remains will not be touched with the naked hands; all Contractor personnel working on the excavation must wear clean cotton or non-powdered latex gloves when handling remains in order to minimise contamination of the remains with modern human DNA. The project archaeologist will document the process from exhumation to reburial.

i. Having fulfilled the requirements of the rescue/burial permit, the project archaeologist will compile a mitigation report which details the whole process from discovery to relocation. The report will be submitted to HW and to the applicant.

Note that the relocation process will be informed by SAHRA/HW Regulations and the wishes of the descendants of the affected burial.