



**PHASE 1 HERITAGE IMPACT ASSESSMENT AND  
DESKTOP PALAEOANTHROPOLOGICAL IMPACT ASSESSMENT:**

**PROPOSED ESTABLISHMENT OF A 20HA CEMETERY LOCATED  
ON PORTION 43 OF THE FARM HONIG KRANTZ NO. 945 IN THE  
CATO RIDGE AREA OF THE MKHAMBATHINI LOCAL  
MUNICIPALITY AND UMGUNGUNDLOVU DISTRICT MUNICIPALITY,  
KZN.**

**PREPARED FOR: TIMBALI MEMORIAL PARK (PTY) LTD**

**DATE: 31 JANUARY 2022**

**DRAFT REPORT**

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<b>Date:</b>	31 January 2022
<b>Document Title:</b>	Phase 1 Heritage Impact Assessment & Desktop Palaeontological Impact Assessment for the proposed establishment of a 20ha cemetery on Portion 43 of the Farm Honig Krantz No. 945 in the Cato Ridge area of KwaZulu-Natal.
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<b>Peer Review:</b>	Jean Beater – JLB Consulting
<b>Report Prepared For:</b>	Timbali Memorial Park (Pty) Ltd

**I, Dr Phillipa Harrison, declare that –**

General declaration:

- I act as the independent specialist in this application in terms of Section 12 and 13 of the regulations;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of section 24F of the Act.



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## EXECUTIVE SUMMARY

Green Door Environmental was appointed on behalf of Timbali Memorial Park (Pty) Ltd to conduct a Phase 1 Heritage Impact Assessment (HIA) and Desktop Palaeontological Impact Assessment (PIA) for the proposed establishment of a cemetery located on the Old Coffee Farm property, on Portion 43 of the Farm Honig Krantz No. 945 in Cato Ridge, Mkhambathini Local Municipality and uMgungundlovu District Municipality, KwaZulu-Natal. The proposed cemetery site is approximately 20ha in extent and requires rezoning as part of the cemetery development project. As such, a Phase 1 HIA is being undertaken in accordance with the requirements of Section 41(1) of the KwaZulu-Natal Amafa and Research Institute Act, 2018 (Act 5 of 2018). The proposed cemetery site is located within an area that is designated as 'moderately sensitive' in terms of fossil sensitivity according to the SAHRIS palaeo-sensitivity map. As such a desktop PIA is also required for the proposed cemetery development project.

The Phase 1 HIA and Desktop PIA also form part of the Environmental Authorisation process under the National Environmental Management Act (NEMA) 1998 (Act 107 of 1998) for the proposed establishment of the Cato Ridge Cemetery. The proposed cemetery development triggers Listed Activities in terms of the Environmental Impact Assessment (EIA) Regulations 2014 (amended 2017) under NEMA 1998 (Act 107 of 1998) for which a Basic Assessment Process is required.

The proposed cemetery site is accessed off the D246 Road via Uitkomst Street and is located approximately 1.7km to the south west of Cato Ridge town. The site is triangular in shape and slopes from the north east to the south west with gentle gradients. Most of the site is currently undeveloped and comprises secondary grassland, with a high density of alien invasive vegetation, which indicates past disturbance (le Roux, 2021). The property is known as the Old Coffee Farm as it previously formed part of a coffee farming operation in Cato Ridge, with most of the site previously cultivated with coffee plantations. Coffee cultivation on the property ended approximately 30 years ago.

There are a cluster of buildings in the north eastern corner of the site. These comprise the main farmhouse, a number of residential apartments and a cottage which are leased to tenants, storage rooms, a small dairy, horse stables, staff accommodation, gardens and a chicken house. The oldest buildings on the property were constructed as part of the previous coffee farming operation, and comprise the main farmhouse, as well as two buildings which the current landowner converted into a cottage and an apartment block. These buildings are approximately 50 years old. The Applicant for the cemetery project intends to retain most of the buildings on the property, but will undertake refurbishments as part of the cemetery development.

There is a small water storage dam located along the upper western site boundary and a small watercourse which traverses the central portion of the site. Current land use on the property comprises livestock grazing and mowing and bailing of grass. The current landowner also keeps a small jersey cow herd on the property and runs a horse stabling operation. There is a 3.2ha fenced-off area in the south western portion of the site which is used by Eskom for the storage of equipment.

The entire cemetery development site is underlain by tillite or rhythmite sedimentary rock of the Dwyka Formation, of the Karoo Supergroup (Gondwana, April 2021). A relatively thick mantle of transported (colluvial) and residual soils overlie the bedrock at the study site, which is on average

more than 2m thick (Gondwana, April 2021). These residual soils grade with depth into weathered tillite, with the weathered tillite bedrock occurring between depths of 1.8m to 2.5m across the site (Gondwana, April 2021). The likelihood of significant fossils being present on the development footprint is low as the Dwyka Group is associated with glacial deposits from the Late Carboniferous to Early Permian period. The cold glacial environment in which the sedimentary rocks of the Dwyka Group were deposited is not considered conducive to fossilisation. In addition, while trace and fragmentary *Glossopteris* plant fossils have been found in mudstones at some Dwyka sites, none have been recorded in KwaZulu-Natal (Bamford, 2020).

The Phase 1 HIA included a desktop assessment and review of relevant current and historical aerial imagery of the study site. The SAHRIS website and Provincial Heritage Register were consulted for data on the presence and significance of any heritage sites within the general project area and immediate surrounds. In addition, the available heritage literature covering the larger study area was also consulted. The Desktop PIA included the consultation of the relevant geological maps, paleontological databases, records, relevant literature and existing paleontological assessment studies for the larger study area, to determine the likelihood of fossils being present within the development site and immediate surrounds.

A ground survey of the study site was conducted on the 21<sup>st</sup> January 2022 following standard archaeological survey procedures. The consultant liaised with the current property owners to determine the site history, particularly in relation to the buildings present on the site, as well as on the possible presence of graves, stone walling or other heritage features on the study site. None of the persons interviewed were aware of the presence of any graves or other features on the development footprint.

No heritage resources were identified on the proposed cemetery development footprint during the Phase 1 HIA and Desktop PIA, and the site does not form part of any known cultural or heritage landscape. The oldest built structures present on the property are approximately 50 years old. As the study site is wholly underlain by sedimentary rock of the Dwyka Formation which was deposited under extreme glacial conditions, no well preserved fossils are expected to be present on the study site. As such, the proposed cemetery development may proceed on the identified site subject to the recommendations as contained in Section 11 of this Report.

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## APPENDICES

- Appendix A: Short CV of Heritage Consultant  
Appendix B: Site Photographs  
Appendix C: Chance Find Procedures for Heritage / Palaeontological Resources

## LIST OF ABBREVIATIONS

- EAP Environmental Assessment Practitioner  
ECO Environmental Control Officer  
EIA Environmental Impact Assessment

HIA	Heritage Impact Assessment
NEMA	National Environmental Management Act
NHRA	National Heritage Resources Act
PIA	Palaeontological Impact Assessment
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System

# CATO RIDGE CEMETERY: PHASE 1 HERITAGE IMPACT ASSESSMENT AND DESKTOP PALAEOLOGICAL IMPACT ASSESSMENT

## 1 INTRODUCTION AND DEVELOPMENT BACKGROUND

Green Door Environmental was appointed on behalf of Timbali Memorial Park (Pty) Ltd to conduct a Phase 1 Heritage Impact Assessment (HIA) and Desktop Palaeontological Impact Assessment (PIA) for the proposed establishment of a cemetery located on Portion 43 of the Farm Honig Krantz No. 945 in Cato Ridge, Mkhambathini Local and uMgungundlovu District Municipality, KwaZulu-Natal. The proposed cemetery site is accessed off the D246 Road via Uitkomst Street and is located at GPS coordinates S29°45'5.64" and E30°34'17.20", approximately 1.7km to the south west of Cato Ridge town.

The proposed cemetery will comprise a private cemetery development and will occupy an area just under 20ha in extent. The cemetery will be surrounded by a security fence, with manned security, and will allow for a density of approximately 2 200 graves/ha. The proposed cemetery will also include the following infrastructure: wake room, storage rooms, kitchen, chapel, coffee shop, florist, memorial garden, reception, office, consulting rooms, boardroom, mortuary, prep room and cold room, grieving lounge, ablution facilities, car wash for the washing of hearses, access road, internal roads, parking, and labour accommodation. The property requires rezoning from Agriculture 3 (Limited Tourism) to Cemetery as part of the proposed development.

This Phase 1 HIA is being undertaken in accordance with the requirements of Section 41(1) of the KwaZulu-Natal Amafa and Research Institute Act, 2018 (Act 5 of 2018). The proposed cemetery site is located within an area that is designated as 'moderately sensitive' in terms of fossil sensitivity according to the SAHRIS palaeo-sensitivity map. As such a desktop PIA is also required for the proposed cemetery development project. The Phase 1 HIA and Desktop PIA also form part of the Environmental Authorisation process under the National Environmental Management Act (NEMA) 1998 (Act 107 of 1998) for the proposed establishment of the Cato Ridge Cemetery. The proposed cemetery development triggers Listed Activities in terms of the Environmental Impact Assessment (EIA) Regulations 2014 (amended 2017) under NEMA 1998 (Act 107 of 1998) for which a Basic Assessment Process is required.

## 2 SCOPE OF THE ASSESSMENT

The Phase 1 HIA and Desktop PIA aims to locate, identify and assess the significance of any heritage resources, including archaeological and palaeontological deposits/sites, built structures older than 60 years, burial grounds and graves, graves of victims of conflict and basic cultural landscapes and viewsapes, as defined and protected by the National Heritage Resources Act (NHRA), 1999 (Act 25 of 1999) and the KwaZulu-Natal Amafa and Research Institute Act.

As per the requirements set out in Section 41(3) of the KwaZulu-Natal Amafa and Research Institute Act, the key terms of reference for the Phase 1 HIA were as follows:

- The identification and mapping of all heritage resources in the study area.
- Undertaking an assessment of the significance of such resources in terms of the heritage assessment criteria set out in Section 6(2) and/or Section 7 of the NHRA.
- Undertaking an assessment of the impact of the proposed development on the identified heritage resources.
- An evaluation of the impact of the proposed development on such identified heritage resources relative to the sustainable social and economic benefits to be derived from the development.
- Reporting on the results of the consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources.
- The consideration of alternatives should any heritage resources potentially be adversely affected by the proposed development.
- The compilation of plans for mitigating of any adverse effects during and after the completion of the proposed development.

In addition to the above, the primary aim of the Desktop PIA was to undertake a review of all relevant palaeontological and geological literature including maps and previous palaeontological impact reports for the general study area, to predict the potential for the occurrence of buried fossil heritage within the development footprint.

### **3 ASSUMPTIONS AND LIMITATIONS**

It is difficult to apply pure scientific methods within a natural environment without limitations or assumptions. The following apply to this study:

- The cemetery development site has a long history of agricultural use and is largely disturbed, having previously been terraced and used for coffee plantations, as well as more recently for the mowing and bailing of grass. Any heritage sites that were previously visible on the site surface would have been destroyed by the agricultural activities.
- Areas of dense vegetation are present on the study site which may have compromised heritage site visibility.
- The 3.2ha fenced-off portion of the property which is used by Eskom was not accessible. Therefore it was assessed from the outside, along the fenceline.
- Heritage/palaeontological resources may be present below the surface. No subsurface investigations were undertaken as part of the Phase 1 HIA and Desktop PIA.
- The findings, results, observations, conclusions and recommendations provided in this report are based on the authors' best scientific and professional knowledge as well as available information regarding the perceived impacts on heritage/palaeontological resources.
- The study results are based on a single day field investigation conducted during the summer months when vegetation cover is denser. Once-off assessments such as this may potentially miss certain heritage information, thus limiting accuracy, detail and confidence.
- Any additional information used to inform the assessment was limited to data and GIS data sets which were available for the area at the time of assessment.

## **4 LEGISLATIVE REQUIREMENTS**

### **4.1 NATIONAL ENVIRONMENTAL MANAGEMENT ACT (NEMA) 1998 (ACT 107 OF 1998)**

This Phase 1 HIA and Desktop PIA has been undertaken in compliance with the requirements for specialist studies as contained in the EIA Regulations 2014 (amended 2017) under NEMA, as outlined in Appendix 6 of GNR 326 which provides the requirements for specialist reports, and Section 13 of GNR 326 which provides the general requirements for Environmental Assessment Practitioners (EAPs) and specialists.

### **4.2 NATIONAL HERITAGE RESOURCES ACT (NHRA) 1999 (ACT 25 OF 1999)**

The NHRA makes provisions for the management and protection of heritage resources on a national level in South Africa. Section 3(1-3) of the NHRA defines those heritage resources in South Africa which form part of the national estate due to their cultural significance or other special value for the present community and future generations. Such resources include places, buildings, structures, equipment, oral traditions, historical settlements, townscapes, landscapes, geological sites, archaeological and palaeontological sites, graves and burial grounds and movable objects. Section 4 of the NHRA establishes both the national and provincial systems for the management of heritage resources within the country.

Section 7(1) of the NHRA provides for a three-tier management system which operates at a national, provincial and local level and distinguishes between three categories for the grading of places and objects which form part of the national estate, as follows:

- National (Grade I) heritage resources, which are resources that are regarded as being of national significance, and are managed at a national level by SAHRA;
- Provincial (Grade II) heritage resources, which have provincial or regional significance and are managed by provincial heritage resources authorities; and
- Local (Grade III) heritage resources which are the responsibility of local authorities.

Sections 34, 35 and 36 of the NHRA provides for the protection of heritage resources from damage, destruction or alteration, and Section 38 of the NHRA sets out the requirements for heritage resources management.

### **4.3 KWAZULU-NATAL AMAFA AND RESEARCH INSTITUTE ACT 2018 (ACT 5 OF 2018)**

The KwaZulu-Natal Amafa and Research Institute Act provides for the recognition of the establishment of the KwaZulu-Natal Amafa and Research Institute as the provincial heritage resources authority for the Province of KwaZulu-Natal, to identify, conserve, protect, manage and administer heritage resources in the Province of KwaZulu-Natal.

Chapter 7 of the Act provides for the establishment of the Amafa and Research Forum, whose objectives include the compilation of a consolidated register of all heritage resources in the Province of KwaZulu-Natal. Chapter 8 of the Act provides for the general protection of heritage resources, specifically the general protection of structures older than 60 years, graves of victims of conflict, informal and private burial grounds, battlefield sites, archaeological sites, rock art sites, palaeontological sites, historic fortifications, meteorite and meteorite impact sites. Section 41(1 – 10) of Chapter 8 of the Act sets out the requirements for heritage resources management specifically in terms of the undertaking of developments, and the need and requirements for impact assessment studies and report requirements.

Chapter 9 of the Act provides for the special protection of heritage resources including the designation of protected area, heritage landmark and provincial landmark status, and special protection of graves of members of the Royal Family, battlefields, public monuments and memorials, and heritage objects. Chapter 9 of the Act also makes provision for the establishment of a consolidated register of heritage sites and heritage objects in the Province of KwaZulu-Natal. Chapter 10 of the Act provides for the determination of criteria for best practice, standards, norms and conditions for the management of heritage resources in the Province of KwaZulu-Natal. Lastly, Chapter 11 outlines the general provisions of the Act and includes allowances for the drafting of Regulations to enable the provincial heritage resources authority to regulate heritage matters in the Province of KwaZulu-Natal.

#### **4.4 MINIMUM STANDARDS FOR HERITAGE SPECIALIST STUDIES**

The South African Heritage Resources Agency (SAHRA) Minimum Standards for Heritage Specialist Studies (2007, 2016) in terms of Section 38(1) and 38(8) of the NHRA outlines the requirements for Phase 1 HIA studies, including the requirements for Phase 1 HIA Reports and provides a standardised site significance and field rating methodology.

#### **4.5 KWAZULU-NATAL AMAFA AND RESEARCH INSTITUTE REGULATIONS, 2021 (DRAFT REGULATIONS)**

The draft KwaZulu-Natal Amafa and Research Institute Regulations, 2021 in terms of Section 58 of the KwaZulu-Natal Amafa and Research Institute Act, provides for the regulation of heritage matters in the KwaZulu-Natal Province. The Regulations specifically outline the requirements for permit applications and the application procedures to be followed. Section 7 of the Regulations outlines the requirements in terms of the discovery of archaeological or palaeontological material or a meteorite. Section 12 of the Regulations outlines the heritage resources management requirements in terms of undertaking developments, and procedures to be followed to ensure compliance with the requirements of the KwaZulu-Natal Amafa and Research Institute Act and NHRA.

Table 1 below outlines the legislative requirements applicable to the proposed Cato Ridge Cemetery Phase 1 HIA and Desktop PIA study.

**Table 1: Applicable Legislative Requirements**

Legislation	Relevant Section	Description
EIA Regulations 2014 (amended 2017) under NEMA 1998 (Act 107 of 1998)	GNR 327 Part 23	<i>"The development of cemeteries of 2500 square metres or more in size."</i>
	GNR 327 Part 27	<i>"The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for - (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan."</i>
KwaZulu-Natal Amafa and Research Institute Act 2018 (Act 5 of 2018)	Section 41(1)	<i>"Any person who intends to undertake a development categorized as – (a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length; (b) the construction of a bridge or similar structure exceeding 50 m in length; (c) any development or other activity which will change the character of a site - (i) exceeding 5 000 m<sup>2</sup> in extent; or (ii) involving three or more existing erven or subdivisions thereof; or (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or (iv) the costs of which will exceed a sum set in terms of regulations; (d) the re-zoning of a site exceeding 10 000 m<sup>2</sup> in extent; or (e) any other category of development provided for in regulations, must, at the very earliest stages of initiating such a development, notify the Institute and furnish it with details regarding the location, nature and extent of the proposed development."</i>

#### **4.6 MANAGEMENT OF GRAVES, BURIAL GROUNDS AND CEMETERIES**

As the proposed development entails the establishment of a cemetery, legislation concerning the protection and management of graves, burial grounds and cemeteries is relevant to this project, as outlined below.

Section 2 of the NHRA defines a grave as *"a place of interment and includes the contents, headstone or other marker of such a place, and other structure on or associated with such place"*. The KwaZulu-Natal Cemeteries and Crematoria Act 1996 (Act 12 of 1996) defines a grave as *"an excavation in which human remains have been intentionally placed for the purposes of burial, but excludes any such excavation where all human remains have been removed"* and a burial ground as *"two or more graves that are grouped closely enough to be managed as a single entity"*. Sections 38 and 39 of the KwaZulu-Natal Amafa and Research Institute Act and Section 36 of the NHRA provides for the protection of graves of victims of conflict, informal and private burial grounds and graves older than 60 years, and graves or burial grounds deemed to be of heritage significance by a heritage authority.

No person may damage, alter, exhume, inundate or remove from its original position any grave without the permission of the relevant authorities as listed in Table 2 below.

**Table 2: Protection of Graves, Burial Grounds and Cemeteries in KwaZulu-Natal**

Description	Relevant Section	Relevant Authority
Graves contained within a formalised cemetery.	KwaZulu-Natal Cemeteries and Crematoria Act 1996 (Act 12 of 1996)	Department of Health
Graves older than 60 years located outside of a formalised cemetery, and the graves of the victims of conflict.	KwaZulu-Natal Amafa and Research Institute Act 2018 (Act 5 of 2018)	KwaZulu-Natal Amafa and Research Institute

## 5 STUDY METHODOLOGY

### 5.1 DESKTOP ASSESSMENT

An initial desktop assessment and review of relevant current and historical aerial imagery of the study site was undertaken at the start of the project. Historical imagery was obtained from the Department of Rural Development and Land Reform and the National Geospatial Information website (<http://cdngiportal.co.za/cdngiportal/>) in order to identify historical land uses associated with the study site and surrounds. The SAHRIS website and Provincial Heritage Register were consulted for data on the presence and significance of any heritage sites within the Mkhambathini Local Municipal area and in particular the Cato Ridge area. In addition, the available heritage literature covering the larger study area was also consulted.

The methods employed for the Desktop PIA included the consultation of the relevant geological maps, paleontological databases, records, relevant literature and existing paleontological assessment studies for the larger study area, to determine the likelihood of fossils being present within the development site and immediate surrounds. The study also made use of the site specific specialist Geotechnical Investigation Report (Gondwana Geo Solutions, April 2021) to determine the geology and soil characteristics of the study site.

### 5.2 GROUND SURVEY

A ground survey of the study site was conducted on the 21<sup>st</sup> January 2022 which comprised a walkover and visual survey of the development footprint, where vegetation density and terrain allowed. The assessment was done by foot and limited to a Phase 1 visual survey. Geographic coordinates were taken using a handheld Garmin Etrek GPS unit (Datum: WGS84). All readings were taken using the GPS unit, and accuracy was to a level of 5m. Photographic documentation of the site was undertaken using a Huawei P20 Smartphone camera. Ground visibility on the development site footprint was generally good. Archaeological and cultural heritage site recording, significance assignment and associated mitigation recommendations were done according to the field rating system prescribed by SAHRA (2007, 2016).

The Consultant also liaised with the current property owners both telephonically prior to the site visit, and in person during the ground survey, in order to gain an understanding of the site history, age of the buildings present on the site, and determine the possibility of the presence of any graves, stone walling or other heritage features on the study site. The landowners were not aware of the presence of any graves, stone walling or other heritage features on the development footprint.

The relevant site photographs are included in Appendix B.

## 6 PROJECT DESCRIPTION AND LOCALITY

The proposed cemetery development site comprises the Old Coffee Farm on Portion 43 of the Farm Honig Krantz No. 945 which is located approximately 1.7km to the south west of Cato Ridge town in the Mkhambathini Local and uMgungundlovu District Municipality of KwaZulu-Natal. The project site is approximately 20ha in extent and is accessed off the D246 Road via Uitkomst Street in Cato Ridge. The site is triangular in shape and slopes from the north east to the south west with gentle gradients. The area surrounding the site comprises a number of land uses which include agricultural activities such as livestock grazing, mowing and bailing of grass, poultry farming and cultivation of crops (sugar cane, vegetables and macadamia nut trees). Other land uses include a horse care unit, poultry abattoir, soft drink bottling plant, bottle store, wedding venue, truck and fuel depot and workshop, motocross track and clay pigeon shooting range.

Most of the cemetery development site is currently undeveloped and comprises secondary grassland with a high density of alien invasive vegetation which indicates past disturbance (le Roux, 2021). The property formed part of a historic coffee farming operation in Cato Ridge, with most of the site previously cultivated with coffee plantations. Coffee cultivation on the site ended approximately 30 years ago, however the contour banks and terraces are still present on the site from the historic coffee farming operation. Current land use on the property comprises livestock grazing and mowing and bailing of grass. The current landowner also keeps a small jersey cow herd on the property and runs a horse stabling operation.

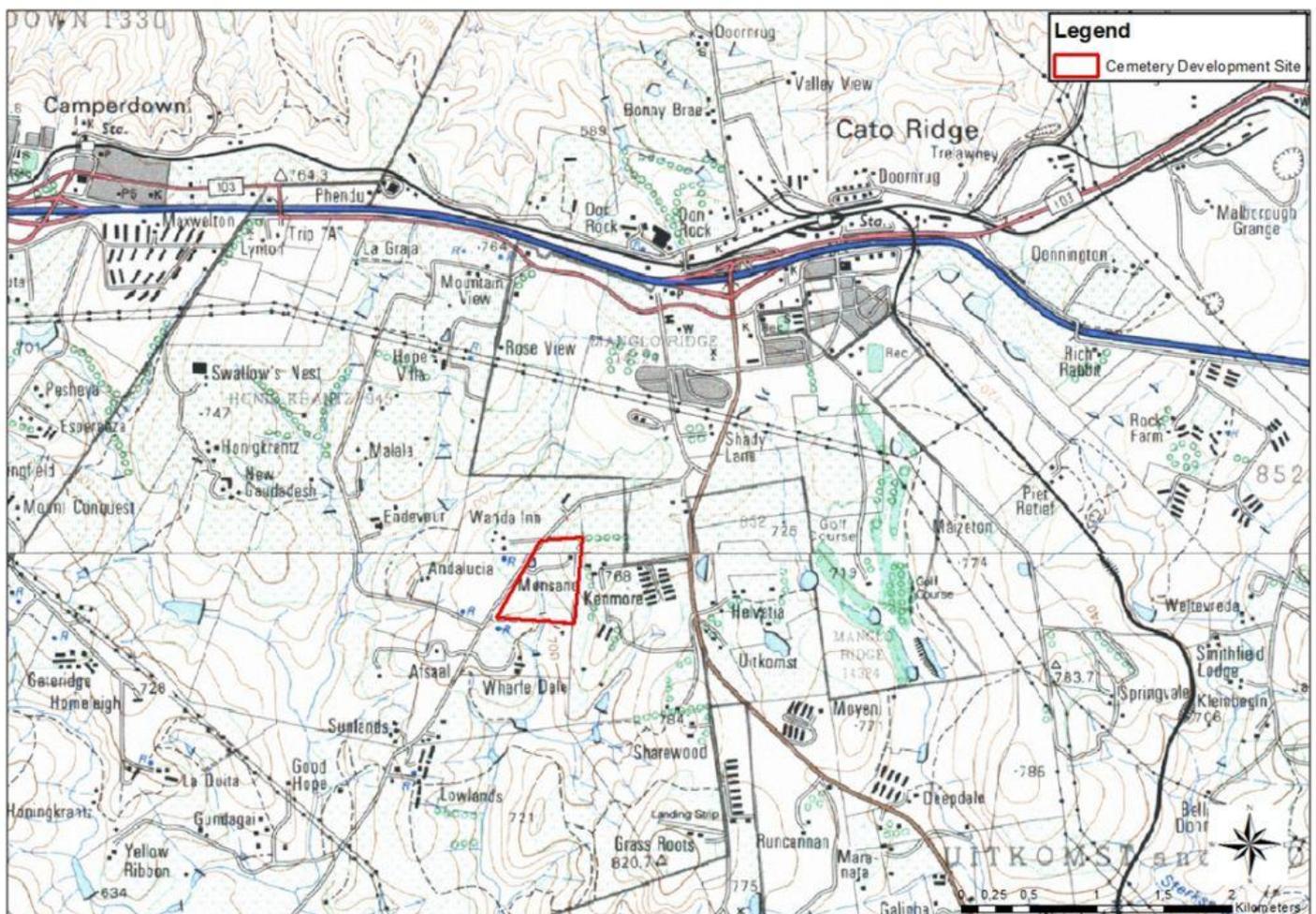
There are a cluster of buildings located in the north eastern corner of the site. These comprise the main farmhouse, a number of residential apartments and a cottage which are leased to tenants, storage rooms, a small dairy, horse stables, staff accommodation, a chicken house and gardens. The oldest buildings on the property were constructed as part of the previous coffee farming operation. These comprise the main farmhouse and two other buildings located adjacent to the main farmhouse, one of which comprised the laboratory for the coffee farming operation, and the other a shed-type building. The current landowner converted the laboratory and shed into a cottage and an apartment block after taking ownership of the property approximately 30 years ago. These buildings are approximately 50 years old, however alterations have been carried out on the buildings within the last 30 years. All other buildings on the property were constructed by the current landowner within the last 30 years. The project Applicant intends to retain most of the buildings on the property, but will undertake refurbishments as part of the cemetery development. For example, the Applicant intends to convert the main farmhouse into a chapel and the horse stables into consulting rooms.

There is a small dam located along the upper western site boundary and a small watercourse which traverses the central portion of the site. The watercourse will be excluded from the development footprint, while the dam will be incorporated into the cemetery design. Lastly, there is a 3.2ha fenced-off area in the south western portion of the site which is leased to Eskom for the storage of equipment. The lease is coming to an end and it is understood that Eskom will be removing the machinery, equipment and material from the property, and this area will be incorporated into the cemetery development. This 3.2ha area also comprises secondary grassland with a high level of disturbance, having previously formed part of the coffee cultivation on the property.

Table 3 below provides the details of the general project area and the specifics of the development, while Figures 1 - 3 below provide locality maps.

**Table 3: Details of the General Project Area and Development Specifics**

Property description	Portion 43 of the Farm Honig Krantz No. 945
Magisterial District	Mkhambathini Local Municipality and uMgungundlovu District Municipality
1: 50 000 map sheet number	2930DC
Central co-ordinate of the development	S29°45'5.64" and E30°34'17.20"
Type of development	Cemetery
Property zoning	Current zoning is Agriculture 3 (Limited Tourism). To be re-zoned to Cemetery.



**Figure 1: Topographical map of the proposed cemetery development site in Cato Ridge.**



Figure 2: Locality map of the study site and surrounding area.

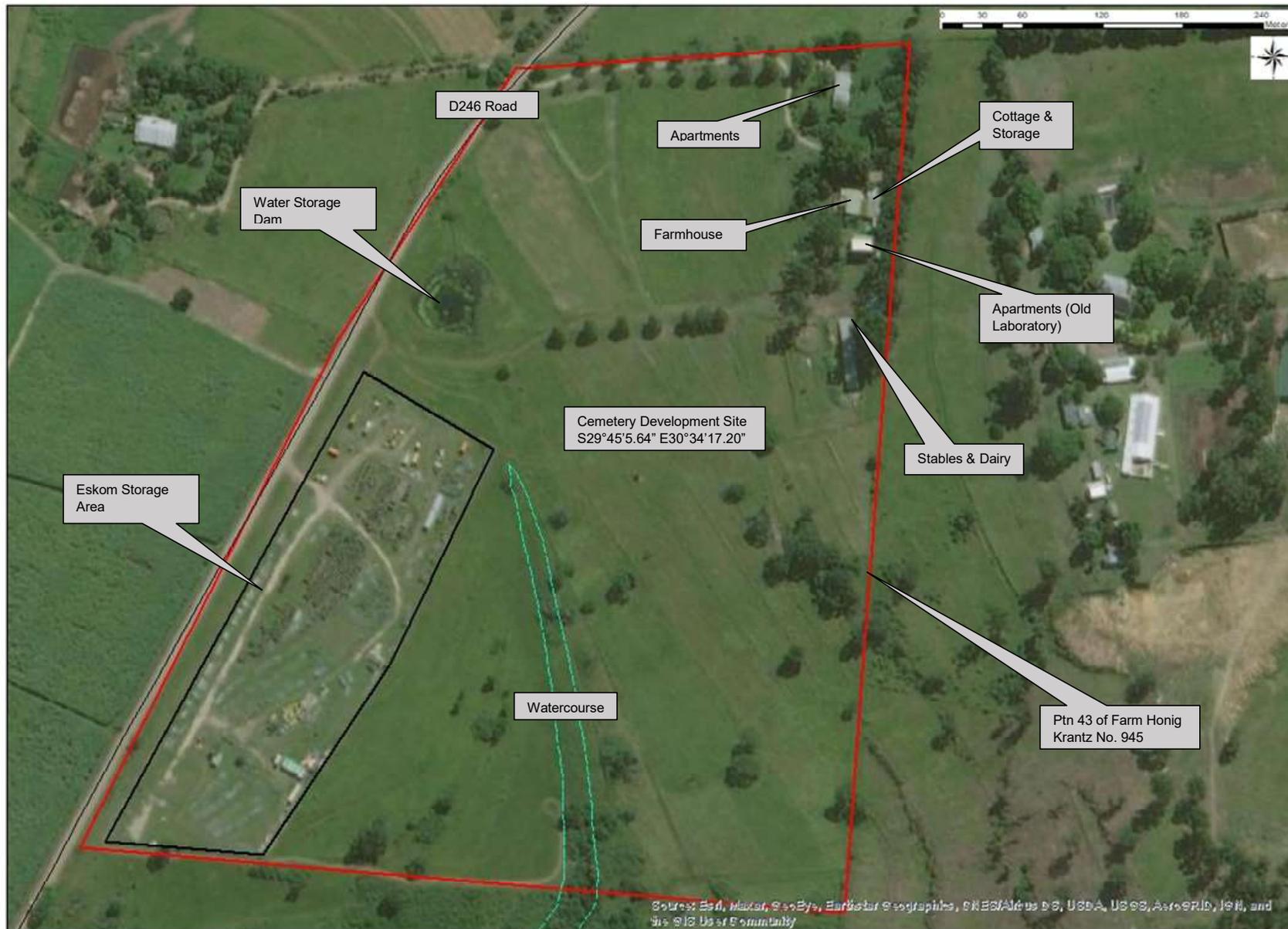


Figure 3: Current layout of the cemetery development property.

## 7 CULTURAL OVERVIEW OF THE STUDY AREA

Cato Ridge is situated approximately 30km south east of Pietermaritzburg and 50km north west of Durban in the Valley of a Thousand Hills. The town is named after the first mayor of Durban, George Christopher Cato (1814 – 1893). Sporadic heritage surveys have previously been undertaken in the greater Camperdown and Cato Ridge areas by archaeologists from the KwaZulu-Natal Museum. While the study area has never been extensively surveyed for archaeological and heritage sites, some sites have been recorded in the general area by heritage resource consultants and the KwaZulu-Natal Museum.

The Museum Heritage Site Inventories do contain records of Early, Middle and Later Stone Age sites in the general Pietermaritzburg, Camperdown and Cato Ridge area which comprise the presence of stone flakes and tools, generally located in close proximity to water courses, as well as in some open air locations. There are also a number of Iron Age sites in the greater study area, which are generally characterised by the presence of pottery remains, remains of stone structures such as stone walling, and other metal artefacts. None of these sites however occur on or directly adjacent to the cemetery development property. A number of colonial-era buildings and farmsteads associated with the Victorian and Edwardian periods are also present within the greater Camperdown and Cato Ridge area. All of these sites are protected by heritage legislation, however none are located on the cemetery development footprint.

The closest provincial heritage site as listed in the Provincial Heritage Register is located approximately 10.5km to the east of the cemetery development site, and comprises the Monteseel Cycad Monument in Monteseel Township (Register ref: 9/2/403/0001).

## 8 GEOLOGY AND PALAEOLOGY

South Africa has a very rich fossil record, dating back over some 3.5 billion years. Fossil heritage is found in all provinces of South Africa. The palaeontological sensitivity of the study site as per the SAHRIS palaeo-sensitivity map is shown in Figure 4 below. The SAHRIS paleo-sensitivity map shows the area as “moderately sensitive” in terms of fossil sensitivity.

The 2930 Durban 1:250 000 Geological map series (Council for Geosciences) was used to identify the general geology of the study area, as shown in Figure 5 below. The local geology of the larger study area is characterised by diamictite, subordinate varved shale and boulder shale of the Dwyka Formation, of the Karoo Supergroup. More specifically, the entire cemetery development site is underlain by tillite or rhythmite sedimentary rock of the Dwyka Formation (Gondwana, April 2021). A relatively thick mantle of transported (colluvial) and residual soils overlie the bedrock at the study site, which is on average more than 2m thick (Gondwana, April 2021). These residual soils grade with depth into weathered tillite, with the weathered tillite bedrock occurring between depths of 1.8m to 2.5m across the site (Gondwana, April 2021).

The geological formations of the Dwyka Group are largely restricted to the edges of the Karoo Basin, with the study site forming part of the eastern exposures, and comprising glacial deposits (tillite) from retreating ice sheet about 300 million years ago during the Late Carboniferous to Early Permian period. The Dwyka Group is the earliest and lowermost deposit in the Karoo Supergroup Basin. Approximately 300 to 290 million years ago, southern Africa was part of the supercontinent Gondwana

and was located in the Antarctic region with much of the land surface covered by ice sheets. As Gondwana drifted northwards and the ice sheets melted they dropped moraine trapped in the ice, together with some plant matter from the vegetation that was gradually colonising the land surface, forming a thick unit of tillite (Bamford, 2020). Deposited flora from this period (Late Carboniferous) comprises *Glossopteris* leaves, wood, as well as other plants such as lycopods, sphenophytes and ferns (Bamford, 2020). Terrestrial vertebrates had not yet evolved during this period (Bamford, 2020).

The Dwyka Group is made up of a number of differing lithological facies which were deposited in the marine environment of the Karoo Basin as a result of the differing environmental processes associated with glacial formation and retreat. These facies are further subdivided into two main geological formations, namely the Elandsvlei Formation in the southern deposits and the Mbizane Formation in the northern deposits. Of the various facies that make up the Dwyka Group, fossil plant fragments and trace fossils have only been recorded from the mudrock facies in the Douglas area of the Northern Cape, and in the Free State (Bamford, 2020). No fossils associated with the Dwyka Group have been recorded from KwaZulu-Natal (Bamford, 2020).

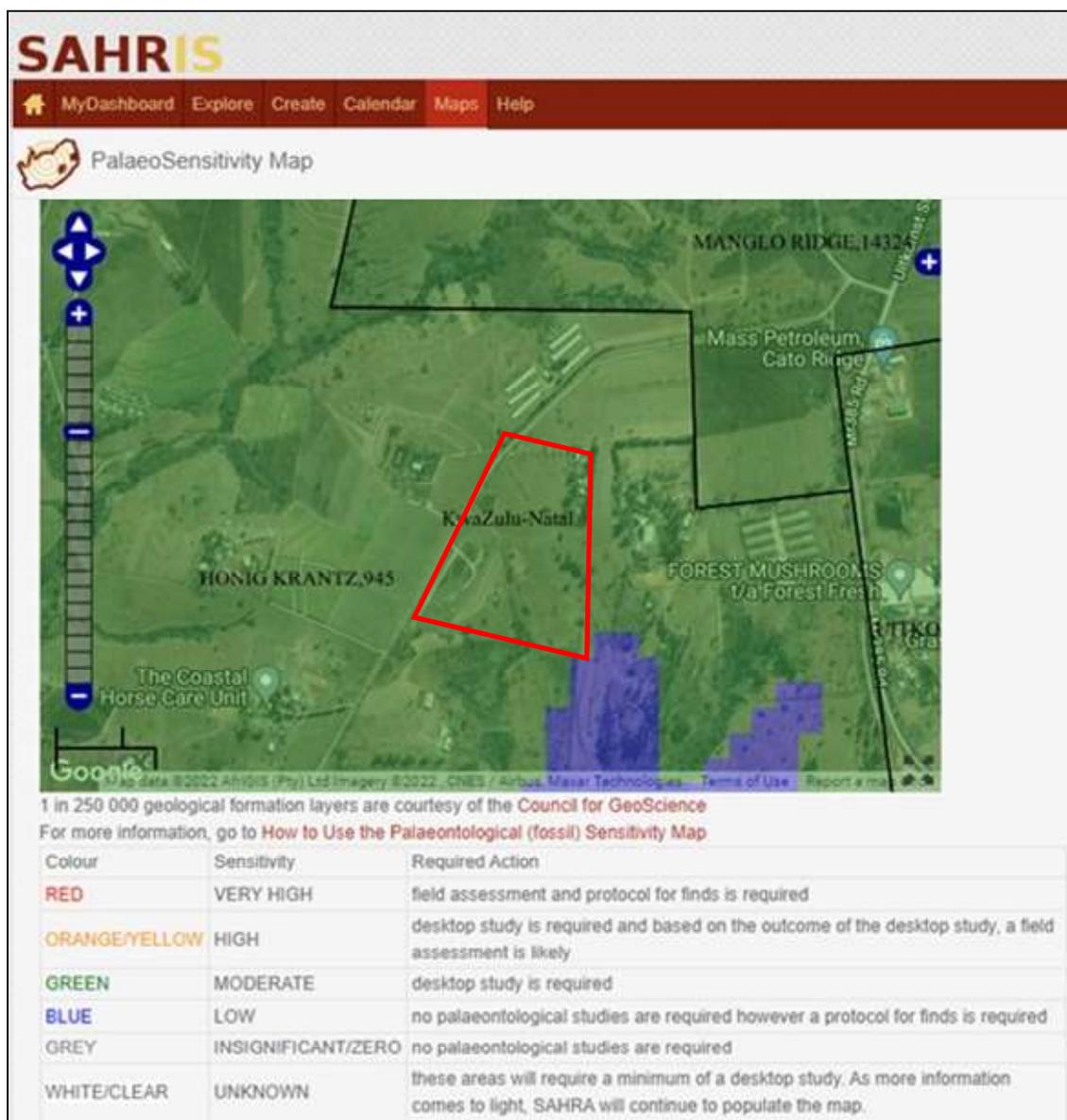


Figure 4: SAHRIS palaeo-sensitivity map for the study site (SAHRIS).

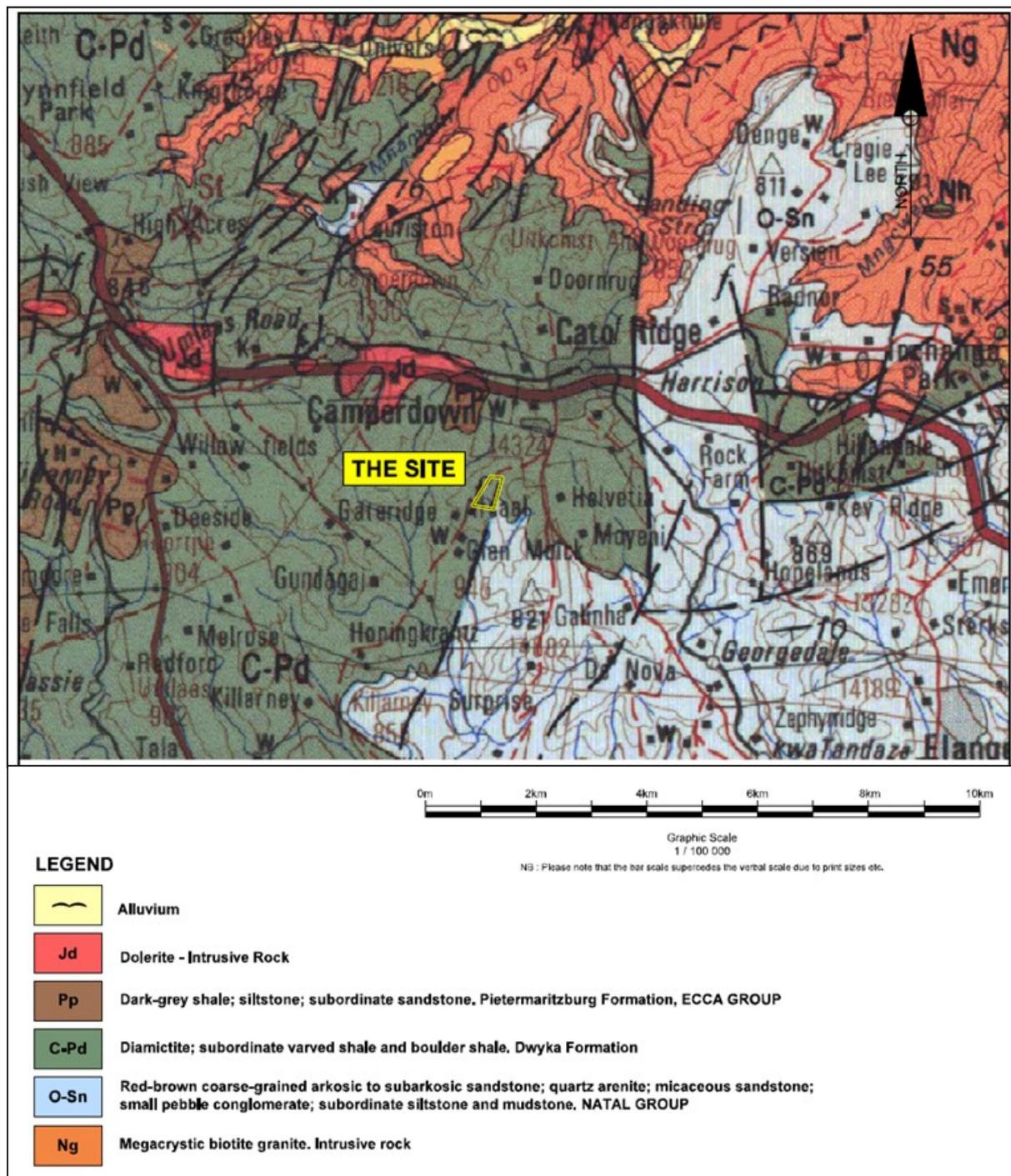


Figure 5: Regional geology of the study area (Council for Geosciences).

## 9 ASSESSMENT RESULTS

### 9.1 DESKTOP STUDY

An investigation into historical aerial imagery of the development site was undertaken as part of the Phase 1 HIA. Aerial imagery from 1937, 1973 and 1983 (Figures 6 – 8) was used to identify past activity on the study site. The aerial imagery shows that the development site has a relatively long history of agricultural use and associated anthropogenic disturbance.

Aerial imagery from 1937 shows the site as undeveloped, comprising grassland (Figure 6). There are no built structures present on the development site. The watercourse along the central portion of the site can be clearly seen in the aerial imagery.



**Figure 6: Historic aerial imagery of the development site from 1937 shows the site as undeveloped, comprising grassland. There are no built structures present on the cemetery site in 1937.**

Aerial imagery from 1973 shows little change on the site since 1937, with the site still largely undeveloped and comprising grassland (Figure 7). However, the small water storage dam is now evident in the north western portion of the site. Three buildings are now also evident in the north eastern corner of the site. These buildings are still present on the study site today and comprise the farmhouse, cottage (converted storage shed) and apartment block (converted coffee farm laboratory).

Aerial imagery from 1983 shows the commencement of the coffee farming operation on the site (Figure 8). Contouring of the site has taken place with embankments and terraces evident in the aerial imagery. The three buildings (farmhouse, shed and laboratory) are evident on the site and a fourth building is also evident now, on the area which today houses the horse stables.

The coffee farming operation ceased approximately 30 years ago and the site was cleared of the coffee trees in 1994/1995. More recent Google Earth imagery of the site is available from 2002 to the present day, and shows the change in land use from the coffee cultivation to the current use of the site for livestock grazing and mowing and bailing of grass (Figure 9). The 3.2ha area in the south western portion of the site was fenced off in 2017, and used by Eskom for the storage of equipment (Figure 10).



**Figure 7: Historic aerial imagery of the development site from 1973. Much of the site is still undeveloped grassland, however, the small dam and three buildings are now evident on the site.**



**Figure 8: Historic aerial imagery of the development site from 1983 shows the coffee farming operation on the site.**



**Figure 9: Google Earth imagery of the development site from 2002, showing a change in land use from coffee cultivation to grassland for livestock grazing and mowing and bailing.**



**Figure 10: Google Earth imagery of the development site from 2017, showing the Eskom storage area in the south western portion of the site.**

The results of the desktop assessment show that the transformation of the site began in the 1970s, with the most of the site transformed from grassland to coffee plantations by the 1980s. The earliest built structures on the site were established shortly before 1973 as part of the coffee farming operation, making them approximately 50 years old. No heritage resources are evident on the site surface in the historic aerial imagery of the site. In addition, as the study site has been terraced and extensively cultivated, it is likely that any subsurface heritage resources that may have been present on the site have been disturbed and/or destroyed.

## 9.2 GROUND SURVEY

No development activities associated with the proposed establishment of the cemetery had begun at the time of the ground survey. No heritage resources were identified on or directly adjacent to the 20ha cemetery development footprint as outlined in Table 4 below. The built structures present in the north eastern corner of the study site are all younger than 60 years. These structures will be retained on the site and incorporated into the cemetery development.

**Table 4: List of Possible Heritage Resources and Assessment Findings**

Heritage Resource Type	Finding
Places, buildings, structures and equipment of cultural significance	None
Places to which oral traditions are attached or which are associated with living heritage	None
Historical settlements and townscapes	None
Landscapes and natural features	None
Geological sites of scientific or cultural importance	None
Archaeological and palaeontological sites	None
Graves and burial grounds	None
Public monuments and memorials	None
Sites of significance relating to the history of slavery in South Africa	None
Movable objects	None

An assessment in terms of the significance criteria outlined in Section 3(3) of the NHRA was also undertaken for the study site as part of the Phase 1 HIA, as shown in Table 5 below.

**Table 5: Evaluation of Heritage Sites or Objects in terms of Section 3(3) of the NHRA**

Significance criteria for heritage sites or objects in terms of Section 3(3) of the NHRA 1999 (Act 25 of 1999)	Rating
Importance in the community, or pattern of South Africa's history.	Negligible
In possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage.	Negligible
Has potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage.	Negligible
Importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects.	Negligible
Importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;	Negligible
Importance in demonstrating a high degree of creative or technical achievement at a particular period.	Negligible
Has a strong or special association with a particular community or cultural group for social, cultural or spiritual reasons.	Negligible
Has a strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa.	None
Sites of significance relating to the history of slavery in South Africa.	None

### 9.3 SITE SIGNIFICANCE AND FIELD RATING

The field rating system (Table 6) as developed by SAHRA (2007, 2016) does not apply to the proposed cemetery development in Cato Ridge as no heritage sites occur on, or directly adjacent to the development footprint.

**Table 6: Site Significance and Field Rating (SAHRA 2007, 2016)**

Level	Description	Action
Grade I National Resource	This site is considered to be of National significance.	Nominated to be declared by SAHRA and maintained in situ.
Grade II Provincial Resource	This site is considered to be of Provincial significance.	Nominated to be declared by Provincial Heritage Authority and maintained in situ.
Grade IIIA Local Resource	This site is considered to be of a High significance locally.	The site must be retained as a heritage register site.
Grade IIIB Local Resource	This site is considered to be of a High/Medium significance locally.	The site must be mitigated and part retained as a heritage register site.
Grade IIIC Local Resource	This site is considered to be of a Low significance locally.	The site needs to be recorded but may be granted destruction authorisation at the discretion of the relevant heritage authority.
Generally Protected A	High to medium significance	Mitigation necessary before destruction.
Generally Protected B	Medium significance	Site to be recorded before destruction.
Generally Protected C	Low significance	Site has been sufficiently recorded (in the Phase 1). It requires no further recording before destruction.

#### 9.4 PALAEOLOGY

The results of the Desktop PIA show that the “moderate sensitivity” in terms of the SAHRIS palaeo-sensitivity is applicable to the entire study site. The excavations for the cemetery will expose some sediments of the Dwyka Formation. However, based on the study findings, the rock underlying the site comprises tillite, deposited in a cold, glacial environment, which is not conducive to fossilization. As such, no well preserved fossils are expected to be present on the study site. In addition, due to the nature of the development (cemetery), it is unlikely that bedrock will be exposed during excavations for graves. However, in the unlikely event that the cemetery development exposes fossil material, the chance find protocol in Appendix C must be implemented.

### 10 IMPACT ASSESSMENT

Any development or anthropogenic activity in a natural system will have an impact on the surrounding environment, usually in a negative way. The assessment criteria as outlined in Table 7 below have been used to identify, predict and assess the significance of any potential heritage and palaeontological related impacts associated with the proposed cemetery development on Portion 43 of the Farm Honig Krantz No. 945 in Cato Ridge.

As no heritage sites or resources have been identified on the development footprint or immediate surrounds; the area is not part of any known cultural landscape; and it is highly unlikely that fossils are present within the cemetery site footprint; the proposed activity poses a minimal risk to heritage and palaeontological resources, as shown in Table 8 below.

**Table 7: Summary of Aspects used for Assessing Heritage / Palaeontological Impacts**

Aspect	Rating	Description
Nature	Positive	The impact on the resource will be positive.
	Negative	The impact on the resource will be negative.
Probability (with mitigation)	Definitely	The impact will definitely occur even with mitigation (100%).
	Likely	It is likely that the impact will occur (60%-99%).
	Fair	There is a fair chance that the impact will occur (30% -59%).
	Unlikely	It is unlikely that the impact will occur (0% - 29%).
Reversibility (with mitigation)	Possible	It is possible to reverse the impact.
	Partly	It is partly possible to reverse the impact.
	Not possible	It is not possible to reverse the impact.
Extent	Site	The impact will be limited to the site.
	Local	The impact will affect the local area (within a radius of 40km).
	Provincial	The impact will affect areas beyond the site but within the boundaries of KwaZulu-Natal.
	National	The impact will affect areas beyond the Province but within the boundaries of South Africa.
Duration	Short-term	0-5 years (construction phase).
	Medium-term	5-40 years (construction and operation).
	Long-term	(>40 years).
	Permanent	Permanent damage to the resource.
Significance of Impact without Mitigation	Low	Small impact / disturbance.
	Medium	Moderate impact / disturbance expected.
	High	Significant impact / disturbance expected.
Significance of Impact Post-Mitigation	Low	Small impact / disturbance.
	Medium	Moderate impact / disturbance expected.
	High	Significant impact / disturbance expected.

**Table 8: Impact Assessment Results for the Cemetery Site**

Aspect	Rating	Description
Nature	Positive	-
	Negative	While it is highly unlikely that impacts to fossils or heritage resources will occur, any impacts resulting from the cemetery development will be negative.
Probability (with mitigation)	Definitely	-
	Likely	-
	Fair	-
	Unlikely	It is unlikely that the impact will occur (0% - 29%).
Reversibility (with mitigation)	Possible	-
	Partly	-
	Not possible	It is not possible to reverse the impact.
Extent	Site	The impact will be limited to the site.
	Local	-
	Provincial	-
	National	-
Duration	Short-term	-
	Medium-term	-
	Long-term	-
	Permanent	Permanent damage to the heritage resource.
Significance of Impact without Mitigation	Low	Small impact / disturbance.
	Medium	-
	High	-
Significance of Impact Post-Mitigation	Low	Small impact / disturbance.
	Medium	-
	High	-

## 11 CONCLUSION AND RECOMMENDATIONS

The Phase 1 HIA for the proposed establishment of a cemetery on Portion 43 of the Farm Honig Krantz No. 945 in Cato Ridge identified no heritage sites or features on the development footprint or immediate surrounds. The area also does not form part of any known cultural landscape. It is also highly unlikely that fossils are present within the cemetery development footprint due to the nature of the bedrock (glacial tillite) and geological conditions present at the site and surrounding area. The proposed development may therefore proceed as no heritage or paleontological features are threatened by the cemetery development.

In the unlikely event that the cemetery development exposes any graves, fossils or other heritage features on the development footprint, all activities must cease and the Environmental Control Officer (ECO) appointed for the cemetery development project must be contacted. The ECO must in turn notify the provincial heritage resource authority, the KwaZulu-Natal Amafa and Research Institute and/or the heritage consultant, and the chance find protocol in Appendix C must be implemented.

The proposed development must adhere to the requirements of the NHRA and the KwaZulu-Natal Amafa and Research Institute Act, and Draft Regulations, which requires that a person that discovers any archaeological or palaeontological material or a meteorite must immediately cease all operations or activity within a 25m radius of the discovery, and must notify the KwaZulu-Natal Amafa and Research Institute.

## 12 REFERENCES

Bamford, M. 2020. Phase 1 Palaeontological Impact Assessment for the Proposed D59 Bridge near Richmond, KwaZulu-Natal Province. Internal Palaeontological Reports, SAHRA.

Gondwana Geo Solutions. Preliminary Report on a Geotechnical Investigation carried out for the Cato Ridge Memorial Park, Cato Ridge, KwaZulu-Natal. April 2021.

le Roux, P. Biodiversity Assessment: Assessment of a proposed 20ha Cemetery on Ptn 43 of Honig Krantz No. 945, Mkhambathini Local Municipality, KZN. December 2021.

South African Heritage Resources Agency. 2007. Minimum Standards for the Archaeological and Heritage Components of Impact Assessments. (Unpublished guidelines).

South African Heritage Resources Agency. 2016. Updated Minimum Standards for the Archaeological and Heritage Components of Impact Assessments. (Unpublished draft guidelines).

<http://cdngportal.co.za/cdngportal/>

## **APPENDICES**

## APPENDIX A: SHORT CV OF THE HERITAGE CONSULTANT

### CURRICULUM VITAE

#### **Dr. Phillipa Harrison**

Environmental Assessment Practitioner (EAP) and Heritage Consultant

Green Door Environmental

*PhD. Geog Sci (UKZN), BA Hons Archaeology (UNISA)*

#### **CONTACT DETAILS**

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Hilton, KZN, 3245

#### **QUALIFICATIONS**

2015 – 2021 Bachelor of Arts Honours (Archaeology), University of South Africa (UNISA)

2003 – 2006 Doctor of Philosophy (PhD), University of KwaZulu-Natal, Pietermaritzburg, South Africa  
Project The Role of Tourism in Natural Resource Management in the Okavango Delta, Botswana.  
Supervisors Profs. B. Maharaj and T. Hill, Department of Geography, University of KwaZulu-Natal

2001 – 2002 Master of Arts (MA), University of KwaZulu-Natal, Pietermaritzburg, South Africa  
Project The Impact of Tourism on Agriculture in the Okavango Delta, Botswana.  
Supervisors Prof. B. Maharaj, Department of Geography, University of KwaZulu-Natal

2000 Bachelor of Arts Honours (Geography), University of KwaZulu-Natal, Pietermaritzburg  
1997 – 1999 Bachelor of Arts (Geography and English), University of KwaZulu-Natal, Pietermaritzburg

#### **PROFESSIONAL REGISTRATIONS**

Association of Southern African Professional Archaeologists (ASAPA)

#### **CAREER PROFILE WITHIN THE ENVIRONMENTAL AND HERITAGE IMPACT ASSESSMENT FIELDS**

Dr Phillipa Harrison has nine years experience in the Environmental Assessment field with experience in conducting Basic Assessment and Scoping and EIA processes, compiling Environmental Management Programmes, undertaking Water Use and Waste Management License Applications, and undertaking Heritage

Impact Assessment and Desktop Palaeontological Impact Assessments. Project experience has been in the industrial, agricultural, commercial, linear and waste management sectors.

### Areas of Expertise

- Heritage Impact Assessment and Desktop Palaeontological Impact Assessment Studies;
- EIA and Basic Assessment Processes (including the Public Participation Process);
- Environmental Management Programmes (EMPr);
- Water Use License Applications;
- Waste Management License Applications;
- Internal review of other EAP's EIA work; and
- Section 24G applications and compilation of reports for unlawful activities.

### CURRENT EMPLOYMENT RECORD

#### Green Door Environmental, Hilton, South Africa

*June 2015 to Present - Environmental Assessment Practitioner and Heritage Consultant*

Responsible for undertaking Heritage Assessment studies and Environmental Authorisation processes for new developments within all sectors. Compiling and implementing construction and operational EMPrs. Project Management, Permit Applications, Compilation of Reports and Environmental Reviews.

### EXAMPLES OF PROJECT EXPERIENCE

PROJECT NAME	AUTHORISATION PROCESS
<ul style="list-style-type: none"> <li>• <b>Phase 1 Heritage Impact Assessment and Desktop Palaeontological Impact Assessment:</b> for the proposed establishment of the Richmond Cemetery in Richmond, Richmond Local Municipality and uMgungundlovu District Municipality, KwaZulu-Natal.</li> </ul>	Phase 1 Heritage Impact Assessment and Desktop Palaeontological Impact Assessment
<ul style="list-style-type: none"> <li>• <b>Phase 1 Heritage Impact Assessment:</b> for the proposed establishment of a second residential development at Beacon Hill Country Estate on Portion 5 of Erf 1280 and a game park on Portion 9 of Erf 1280 in Bishopstowe, Pietermaritzburg, Msunduzi Local and uMgungundlovu District Municipality, KwaZulu-Natal.</li> </ul>	Phase 1 Heritage Impact Assessment
<ul style="list-style-type: none"> <li>• <b>Cultural Heritage Resource Identification, Mapping and Assessment:</b> for the larger Environmental Management Framework (EMF) for the Msunduzi Local Municipality, KwaZulu-Natal.</li> </ul>	Heritage Identification and GIS Mapping
<ul style="list-style-type: none"> <li>• <b>Basic Assessment Process and Environmental Auditing:</b> for the KwaZulu-Natal Arts and Culture Trust for the establishment of the Isandlwana Affirmation Village and Garden of Remembrance tourism facility adjacent to the Isandlwana Battlefield near Nquthu, in the Umzinyathi District Municipality of KwaZulu-Natal.</li> </ul>	Basic Assessment Process and Environmental Auditing

**APPENDIX B: SITE PHOTOGRAPHS**



**Plate 1: Photograph showing the western portion of the site with the Eskom storage area in the background.**



**Plate 2: Photograph showing the northern portion of the site with a terraced area from the previous coffee cultivation evident in the photograph.**



**Plate 3: Photograph facing eastwards with horse stables in the background.**



**Plate 4: Photograph showing the southern portion of the property.**



**Plate 5: Eskom storage area in the south western portion of the development site.**



**Plate 6: Water storage dam on the property.**



**Plate 7: Main farmhouse in the north eastern portion of the property.**



**Plate 8: Old coffee farm laboratory building which has been converted into apartments.**



**Plate 9: Old coffee farm storage building which has been converted into a cottage.**



**Plate 10: Second apartment block on the property.**



**Plate 11: Small dairy building on the property.**



**Plate 12: Horse stables on the property.**

## APPENDIX C: CHANCE FIND PROCEDURES FOR HERITAGE / PALAEOLOGICAL RESOURCES

### 1. INTRODUCTION

The following procedures must be considered in the event that previously unknown heritage resources, including fossils, burial grounds or graves, are exposed or found during the life of the project. The procedures below are based on the National Heritage Resources Act, 1999 Regulations (Reg No. 6820, GNR 548) and the KwaZulu-Natal Amafa and Research Institute Draft Regulations, 2021.

The term 'heritage resource' here includes burial grounds and graves, structures, archaeology, palaeontology, meteors and public monuments. If any sign of the above are uncovered during excavation of the site, the following protocol must be observed:

- All work in the vicinity of the find must immediately cease, with a radius of at least 25 meters of the site or discovery, and further disturbance of the heritage resource must be avoided.
- The ECO and project manager/developer must be notified of the discovery.
- The ECO must arrange for a suitably qualified specialist to consider the heritage resource, either via communicating with the ECO via telephone or email, or based on a site visit.
- The ECO and specialist must advise on the appropriate mitigation measures to be implemented.
- Should the specialist conclude that the find is a heritage resource protected in terms of the NHRA (1999) and the KwaZulu-Natal Amafa and Research Institute Act (2018), a written report must be submitted to the KwaZulu-Natal Amafa and Research Institute within a period of 30 days from the date of making such a discovery.
- The report must include – the names of the person reporting; the object discovered; the time and date of such discovery; the location of such discovery; and the municipal area within which the discovery was made.
- The Provincial Heritage Resource Authority (PHRA) may require that a full Heritage Impact Assessment (HIA) to be conducted and may require rescue excavations to take place.

### 2. BURIAL GROUND AND GRAVE FIND PROCEDURE

In the event that human remains are accidentally exposed, the project manager and / or ECO must immediately be notified of the discovery in order to take the required further steps:

- The local SAPS will be notified on behalf of the Applicant;
- A suitably qualified specialist must be arranged to inspect the exposed burial and determine in consultation with the SAPS:
  - a) The temporal context of the remains, i.e.:
    - forensic
    - authentic burial grave (informal or older than 60 years); or
    - archaeological (older than 100 years).
  - b) If any additional graves or burial sites may exist in the vicinity.
- Should the specialist conclude that the find is a heritage resource protected in terms of the NHRA (1999) and the KwaZulu-Natal Amafa and Research Institute Act (2018), a written report must be submitted to the KwaZulu-Natal Amafa and Research Institute within a period of 30 days from the date of making such a discovery.
- The SAHRA / PHRA may require that interested parties be identified and that consultation and /or grave relocation take place.
- If consultation and / or grave relocation are required, consultation and grave relocation must take place in terms of the NHRA (1999) and the KwaZulu-Natal Amafa and Research Institute Act (2018).

### 3. FOSSIL FIND PROCEDURES

#### 3.1 Introduction

In the context of this application, it is unlikely that any fossil finds will require the declaration of permanent "no go" areas and it is likely that if any fossil finds are made, a temporary pause in activity within a particular area will be required. In the event that fossil material is uncovered during excavation, the strategy to be employed will be to rescue the material as quickly as possible.

The procedures outlined below are in general terms and will require adaptation depending on the specifics of type of fossil find. The procedures outlined below are detailed in terms of fossil bone finds, which usually occur sparsely. However, they do serve as a guideline for other fossil material finds, which may occur on the site.

#### 3.2 Isolated and Cluster Bone Finds

There are two types of fossil bone finds – 'isolated bone finds' and 'cluster bone finds'. During the excavation process, isolated bones may be found within the walls or base of the excavation, or as they appear on the stockpile or spoil heap. When bones appear singly, in different parts of the excavation site, they are considered 'isolated bone finds', however, when six or more isolated bones / pieces are found, the finds are considered a 'cluster bone find'. A 'cluster bone find' is when

several bones are uncovered in the same spot or grouped together within the excavation site. These bones may or may not resemble an intact or partially intact skeleton.

### 3.2.1 Response by Personnel in the Event of an Isolated Bone Find

The following responses should be undertaken by personnel in the event of isolated bone finds:

1. An isolated bone exposed in an excavation or spoil heap must be retrieved before it is covered by further spoil from the excavation and set aside;
2. The site foreman and ECO must be informed;
3. The responsible field person (site foreman or ECO) must take custody of the fossil. The following information is to be recorded:
  - Position (excavation position);
  - Depth of find in hole;
  - Digital image of hole showing vertical section (side); and
  - Digital image of fossil.
4. The fossil should be placed in a bag (e.g. a Ziploc bag), along with any detached fragments. A label must be included with the date of the find, position information, and depth; and
5. The ECO is to inform the Applicant who must then contact the heritage consultant. The ECO is to describe the occurrence and provide images via email.

### 3.2.2 Response by Palaeontologist in the Event of Isolated Bone Finds

The palaeontologist will assess the information and liaise with the Applicant and the ECO and a suitable response procedure will be established.

### 3.3 Response by Personnel in the Event of a Cluster Bone Find

The following responses should be undertaken by personnel in the event of bone cluster finds:

1. Immediately stop excavation in the vicinity of the potential material. Mark or flag the position as well as the spoil heap that may contain fossils;
2. Inform the site foreman and the ECO; and
3. The ECO is to inform the developer who must then contact the heritage consultant. The ECO must then describe the occurrence and provide images via email.

### 3.3.2 Response by Palaeontologist in the Event of a Bone Cluster Find

A palaeontologist must assess the information and liaise with the Applicant and the ECO and a suitable response procedure must be established. It is likely that a Field Assessment by the palaeontologist will be required. The response time / scheduling of the Field Assessment will be decided in consultation with the Applicant and the ECO. The Field Assessment could have the following outcomes:

- If a human burial, the appropriate authority is to be contacted. The find must be evaluated by a human burial specialist to decide if Rescue Excavation is feasible, or if it is a Major Find.
- If the fossils are of an archaeological context, an archaeologist must be contacted to evaluate the site and decide if Rescue Excavation is feasible, or if it is a Major Find.
- If the fossils are of a palaeontological context, the palaeontologist must evaluate the site and decide if Rescue Excavation is feasible, or if it is a Major Find.

### 3.4 Rescue Excavation

Rescue Excavation refers to the removal of the material from the site excavation. This is applicable if the volume or significance of the exposed material appears to be relatively confined and it is feasible to remove it without compromising the contextual data. The time span for Rescue Excavation should be relatively rapid to avoid any undue delays (e.g. less than one week).

In principle, the strategy during the mitigation is to “rescue” the fossil material as quickly as possible. The strategy to be adopted depends on the nature of the occurrence, particularly the density of the fossils. The methods of collection would depend on the preservation or fragility of the fossil and whether in loose or in lithified sediment.

These could include:

- On-site selection and sieving in the case of robust material in sand; and
- Fragile material in loose sediment would be encased in blocks using Plaster-of-Paris or reinforced mortar.

If the fossil occurrence is dense and is assessed to be a “Major Find”, a carefully controlled excavation is required.

### 3.5 Major Finds

A Major Find is when the occurrence of material that, by virtue of quantity, importance and time constraints, cannot be feasibly rescued without compromising the detailed material recovery and contextual data / observations.

### 3.5.1 Management Options for Major Finds

In consultation with the Applicant and the ECO, the following options should be considered when deciding on how to proceed in the event of a Major Find.

#### Option 1: Avoidance

Avoidance of the Major Find through project redesign or relocation. This ensures minimal impact to the site and is the preferred option from a heritage resource management perspective. When feasible, it can also be the least expensive option from a construction perspective. The find site will require site protection measures, such as erecting fencing or barricades. Alternatively, if excavation of the find will be delayed substantially or indefinitely, the exposed finds can be stabilised and the site refilled or capped. Appropriate protection measures should be identified on a site-specific basis and in wider consultation with the heritage and scientific communities. This option is preferred as it will allow the later excavation of the finds with due scientific care and diligence.

#### Option 2: Emergency Excavation

Emergency excavation refers to the “no other option” situation where avoidance is not feasible due to design, financial and time constraints. It can delay construction and emergency excavation itself will take place under tight time constraints, with the potential for irrevocable compromise of scientific quality. It could involve the removal of a large, disturbed sample by an excavator and conveying this by truck from the immediate site to a suitable place for “stockpiling”. This material could then be processed later. Emergency excavation is not the preferred option for a Major Find due to the loss of contextual data and the loss of sample integrity.

### 3.6 Exposure of Other Fossil Types (e.g. Plants, Fossil Shell Beds)

#### 3.6.1 Response for Personnel in the Event of Other Fossil Finds

The following responses should be undertaken by personnel in the event of any type of fossil finds:

1. The site foreman and ECO must be informed;
2. The responsible field person (site foreman or ECO) must record the following information:
  - Position (excavation position);
  - Depth of find in hole;
  - Digital image of the hole showing the vertical section (side); and
  - Digital images of the fossiliferous material.
3. A generous quantity of the excavated material containing the fossils should be stockpiled near the site, for later examination and sampling;
4. The ECO is to inform the developer who must then contact the heritage consultant. The ECO is to describe the occurrence and provide images via email.

#### 3.6.2 Response by the Palaeontologist in the Event of Other Fossil Finds

The palaeontologist will assess the information and liaise with the developer and the ECO and a suitable response will be established. This will most likely be a site visit to document and sample the exposure in detail, before it is covered up.

### 4. MONITORING FOR FOSSILS

A regular monitoring presence over the period during which excavations are made, by either an archaeologist or palaeontologist, is generally not practical.

The field supervisor or foreman and workers involved in digging excavations must be encouraged and informed of the need to watch for potential fossil and buried archaeological material. Workers seeing potential objects are to report to the field supervisor who, in turn, will report to the ECO. The ECO will inform the heritage consultant in the case of fossil finds.

To this end, responsible persons must be designated. This will include hierarchically:

- The field supervisor or foreman who is going to be most often in the field;
- The ECO for the project; and
- The Project Manager.

Should the monitoring of excavations be stipulated in the Archaeological Impact Assessment and / or the Heritage Impact Assessment, the contracted Monitoring Archaeologist (MA) can also monitor for the presence of fossils and make field assessment of any material brought to attention. The MA is usually sufficiently informed to identify fossil material and this avoids additional monitoring by a palaeontologist.

The MA then becomes the responsible field person and fulfils the role of liaison with the palaeontologist and coordinates with the Applicant and the ECO. If fossils are exposed in non-archaeological contexts, the palaeontologist should be summoned to document and sample / collect them.