

PHASE 1 HERITAGE IMPACT ASSESSMENT REPORT

Jindal Melmoth Iron Ore Project
Proposed South Block Mining Rights Area
King Cetshwayo District Municipality,
Mthonjaneni Local Municipality,
KwaZulu-Natal

Prepared for

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Prepared by



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08 May 2023

MANAGEMENT SUMMARY

eThembeni Cultural Heritage was appointed by SLR Consulting to undertake a Phase 1 Heritage Impact Assessment of the proposed Melmoth Iron Ore Project, specifically the anticipated South Block Mining Rights Area, as required by the National Environmental Management Act 107 of 1998 as amended, in compliance with Section 38 of the National Heritage Resources Act 25 of 1999 as amended; and in accordance with the KZN Amafa and Research Institute Act (5/2018).

Description and significance assessment of heritage resources

Graves older than 60 years have been identified and these will have to be fully audited during the wider public participation process and implementation of a Relocation Action Plan should the Mining Right Application be authorised.

In the event of any subterranean archaeological residues being exposed during the construction and operational phase, these will require further assessment in terms of the Chance Finds Protocol as detailed in this Report.

Assessment of development impact

Very High with regard to grave sites unless mitigation measures are implemented.

High, with regard to *in situ* archaeological remains, unless mitigation measures are implemented.

See Tables in the body of this Report.

Recommended mitigation measures

Auditing and documentation of graves over 60 years old under Free, Prior and Informed Consent.

Survey and mapping, and shovel test excavations of any identified archaeological residues as monitored prior to and during all mining activities being implemented. Should these be determined to be of high heritage significance they may require mitigation by means of formal excavation and recording, under an excavation permit applied for from the Amafa Heritage and Research Institute, the Provincial Heritage Resource Agency.

Recommended monitoring

Monitoring by an accredited Heritage Practitioner will be required ahead of any earthworks to assess if any subterranean archaeological remains are present, or if any evidence of unidentified or archaeological graves are present.

Induction and training of the Project appointed ECO to recognise archaeological evidence and the presence of unmarked graves should these be exposed.

Should such remains be identified they will be subject to the Chance Finds Protocol under a permit issued by the Amafa Heritage and Research Institute.

Conclusion

The requisite surveys for this large-scale mining project are incomplete due to community tensions limiting the heritage practitioner's access to the proposed MLA, engagement with affected families with regard to graves reported to be over 60 years old, and concomitant concerns for the safety of survey personnel.

More inclusive local community endorsement for the mine are in the process of high-level resolution. Should the Mining Rights Application be approved this should be endorsed with the proviso that the requisite surveys will be finalised in the course of the ESIA, and in the formulation of the Environmental Management Plan Report (EMPr), as prescribed by NEMA (107/1998), as amended.

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List of Acronyms

CRM	Cultural Resources Management
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
ESIA	Environmental and Social Impact Assessment
FPIC	Free, Prior, and Informed Consent
FSL	Full Supply Level (of a dam or water impoundment)
HIA	Heritage Impact Assessment
ICOMOS	The International Council on Monuments and Sites
IFC	International Finance Corporation
IMF	International Monetary Fund
LIA	Late Iron Age
MLA	Mine Lease Area
MRA	Mining Right Application
NEMA	National Environmental Management Act, Act 107 of 1998, as amended
NHRA	National Heritage Resources Act, Act 25 of 1999, as amended
PHRA	Provincial Heritage Resources Agency
UNESCO	United Nations Educational, Scientific and Cultural Organization
WB	The World Bank

Section 1: CURRICULUM VITAE

Leonard Outram van Schalkwyk

Name of Company: eThembeni Cultural Heritage Management
Position: Principal Heritage Consultant
Profession: Archaeologist; Heritage Practitioner
Date of birth: July 1959
Position: Director
Years with Firm: 23
Contact details: thembeni@iafrica.com
Mobile: +27 (0) 82 655 9077

Professional Membership and Association

- Association of Professional Heritage Practitioners – Accredited Member since 2016.
- Association of Southern African Professional Archaeologists (ASAPA): Current.
- ASAPA Council Member - Cultural Resources Management Portfolio (CRM) (2011 – 2019).
- ASAPA CRM Section – Reg No.165. Listed as Principal Investigator since 1998.
- Amafa Heritage and Research Institute: accredited heritage practitioner since 2001.
- SAHRA Archaeological Permit Advisory Committee (2004/5).
- South African member of International Scientific Committee for Archaeological Management, elected by ICOMOS-SA Executive (1999 - 2000).
- Provincial Representative: South African World Heritage Convention Committee (1998- 2000).
- Southern African Museums Association (1984-1999).
- South African Association of Archaeologists (1984-1998).

Specialist competency

I obtained a Masters degree in Archaeology (specialising in the history of early farmers in southern Africa) from the University of Cape Town in 1982. I have worked on a diversity of projects including the establishment of the Ondini Cultural Museum in Ulundi; the heritage management of burial sites in the Richards Bay Mining/Rio Tinto Mine Lease Areas (Zulti North and South) for the Mbonambi, Sokhulu, Dube and Mkwanzazi Traditional Authorities; and a variety of archaeological excavations and oral history recording projects. I have worked with many rural communities to establish integrated heritage and land use plans and speak competent Zulu.

Expertise and Experience

I have had 35 years of professional experience as a practicing archaeologist and as a heritage resource practitioner in South Africa, Lesotho, Namibia, Botswana, and Mozambique. My research interests have focussed on the Later Stone Age and Iron Age of southern Africa, while my management specializations are heritage impact assessments, archaeological site management, community liaison, and ancestral grave management. I have successfully run a heritage management consultancy as a going business concern for the past 23 years and conducted in excess of 1000 Heritage Management and Impact Assessments. My most current heritage management projects are all listed on SAHRIS. (<http://www.sahra.org.za>).

My key heritage management and research initiatives include:

Member of the Ministerial Monuments Task Group committee to formulate the KwaZulu-Natal Heritage Act No 10 of 1997 and oversaw the transition of the KwaZulu Monuments Council to the new PHRA, Amafa aKwaZulu Natali (Now the KZN Amafa and Research Institute in terms of the KZN Amafa and Research Institute Act No.5 of 2018). The KwaZulu-Natal Heritage Act (10 of 1997) provided the template for the subsequent rescinding of the National Monuments Act and promulgation of the South African Heritage Resources Act No.25 of 1999.

Maluti/Drakensberg

- Implementation of the cultural resources management plan for the uKhahlamba Drakensberg Park (CURE), focussing on rock art management.
- ICOMOS (SA) observer for the uKhahlamba Drakensberg Park World Heritage Site assessment.
- Maloti / Drakensberg Trans Frontier Conservation and Development Area project feasibility assessment for the Global Environment Facility of the World Bank (GEF). Worked both in Lesotho and South Africa.
- Mnweni Valley cultural landscape management, northern uKhahlamba / Drakensberg - cultural tourist guide training, development of integrated land use and cultural heritage management plans, co-ordination of displays for the interpretive centre.
- Lead consultant - cultural resources assessment of uThukela Water Scheme for Department of Water Affairs and Forestry and Institute of Natural Resources.
- Cultural Team Leader – Cultural Heritage Management Plan and Heritage Site Mitigation within the FSL of the Polihali Dam, Lesotho. PGS Heritage Contract C6025. LHDA. (2018 to 2023).

Other KZN

- In collaboration with the Archaeology Dept. of the Natal Museum, my team and I were responsible for the reconstruction of King Cetshwayo's Royal iKhanda at Ondini, and the establishment of the KwaZulu Cultural Museum in Ulundi, under the then KwaZulu Monuments Council.
- Specialist report on coastal zone management of KwaZulu-Natal for Environmental Evaluation Unit of the University of Cape Town.
- Co-Director with Prof. Haskel Greenfield, Ndongondwane Early Iron Age Project. University of Manitoba Anthropology Dept.
- Co-Director with Prof. Tony Pollard, Isandlwana Archaeological Project, Glasgow University Archaeology Research Division.
- Principal Investigator - survey and excavation of heritage resources in Richards Bay Minerals' concession areas (both ZN and ZS MLA's), KwaZulu-Natal. This included an oral history recording program with traditional wisdom keepers to ensure appropriate mitigation. Procedures regarding discovery, retrieval, and re-interment of human remains were satisfactorily negotiated.
- Heritage resource monitoring of the Rio Tinto-Richards Bay Mining Zulti South Mineral Lease Area.
- Fencing and stabilization of excavated deposits at Border Cave, Ingwavuma district, for KMC (1987-1997); latterly for Dr Lucinda Backwell and Prof. Lyn Wadley of Wits University. (2018 - 2023).
- Excavation of middens at King Shaka's KwaBulawayo iKhanda in collaboration with Dr. Gavin Whitelaw (KwaZulu-Natal Museum).

- Curation and stabilization of excavated deposits at Sibudu Shelter, uThongathi district, KZN for Prof. Lyn Wadley (Wits University).
- Curation and stabilization of excavated deposits at Mhlathuzana Shelter and Shongweni Cave, eThekweni Outer West, KZN, for Dr. Gerrit Dusseldorf (Leiden University).
- Co-Director with Prof. Kent Fowler. Reconnaissance, and survey of the Zulu kingdom period amakhanda in the eMakhosini Basin, Zululand. (Current).

Mozambique

- Archaeological Impact Assessment of Riversdale Coal MLA, Tete, Mozambique, for Golder and Associates.

Botswana

- Cultural heritage management of greater Chobe Conservation area in Botswana – Department of Parks and Wildlife. Production of policy document for submission to World Wildlife Fund.

DAC Legacy Projects

For the Independent Development Trust and National Department of Arts and Culture:

- Heritage Practitioner – Oliver Tambo Homestead and Memorial Site development at Inkantolo, and Khananda Hill Memorial Site, Bizana, EC; and the JL Dube Homestead and Ohlange Institute Heritage Site (KZN).

Employment Record

2000 to present

Director at eThembeni Cultural Heritage, an independent consultancy specializing in heritage impact assessments, ancestral grave management, cultural resource management plans, and integrated environmental management.

November 1996 to December 2000

Assistant Director (Research, Professional Services, and Compliance) of Amafa aKwaZulu-Natali.

November 1992 to October 1996

Archaeologist with the KwaZulu Monuments Council; Principal Professional Officer - (Research Division).

February 1986 to October 1992

Professional Officer and Officer-in-Charge at Ondini Museum in Ulundi with the KwaZulu Monuments Council.

July 1983 to January 1986

Field Director of an Early Iron Age archaeological research project in the lower uThukela Valley under the aegis of the KwaZulu Bureau of Natural Resources.

December 1978 to June 1983

Deployed as a Ranger/Naturalist in the Kruger National Park under Messrs. Piet van Wyk and Johan Verhoef.

December 1977 to February 1978

Field Research Assistant in Hluhluwe/Mfolozi Game Park (HIP) under the Regional Ecologist, Roger Porter.

Language Proficiency

	Speaking	Reading	Writing
English	Excellent	Excellent	Excellent
Afrikaans	Good	Excellent	Good
Zulu	Competent	Basic	Poor

Certification

I, the undersigned, certify that to the best of my knowledge and belief, these data correctly describe me, my qualifications, and my experience.

My expanded bio can be viewed at:

<https://www.linkedin.com/in/lenvanschalkwyk/>

Section 2: DECLARATION OF INDEPENDENCE

I, Len van Schalkwyk, declare that eThembeni Cultural Heritage has no financial or personal interest in the proposed development, nor its developers or any of its subsidiaries, apart from the provision of HIA and heritage management consulting services.



05 May 2023.

Section 3: INTRODUCTION

The Jindal Melmoth Iron Ore Project (the Project) site is located 25 km southeast of Melmoth, within the Mthonjaneni Local Municipality in the KwaZulu-Natal Province (See Fig.1).

Jindal Iron Ore (Pty) Ltd (Jindal), is owned by Jindal Steel and Power (Mauritius) Limited (74%) and South African BEE partner Mr. Thabang Khomo (Pty) Ltd (26%). Jindal holds two Prospecting Rights over the project site. The prospecting rights are referred to as North Block (PR 10644) and South Block (PR 10652) and have a total combined area of 20 170 ha.

The areas of interest contain banded iron formations (BIF) and were investigated by Premier Zululand Zinc in 1908 followed by Union Carbide Prospecting SA in 1969 and Iscor (Pty) Ltd in the 1980's. The investigations indicated that iron ore was present as magnetite, a magnetically recoverable mineral of high iron content, and as amphibole grunerite, a mineral of low iron content that is not recoverable.

In January 2021 Jindal appointed SLR Consulting South Africa as the independent EAP to undertake an ESIA and public participation process and prepare all documentation for a Mining Right Application (MRA). Jindal has also appointed consultants to produce a Bankable Feasibility Study for the proposed Melmoth Iron Ore Mine¹.

¹ Information provided by SLR Consulting

Reports in fulfilment of Section 38(3) of the NHRA must include the following information:

- the identification and mapping of all heritage resources in the area affected.
- an assessment of the significance of such resources in terms of the heritage assessment criteria set out in regulations.
- an assessment of the impact of the development on such heritage resources.
- an evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development.
- the results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources.
- if heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and
- plans for mitigation of any adverse effects during and after completion of the proposed development.

The HIA will be limited to the actions described above, i.e., identification of heritage resources and recommendations for their management, and does not include any mitigation costs.

Section 5: HERITAGE BASELINE INFORMATION

The banded ironstone of the Mhlathuze/ Formation (Matthews & Charlesworth 1981) has long been known to geologists. There has been a long history of prospecting and assaying of banded ironstone formations in and around the Project area during the 20th Century. While most of the Zululand banded ironstone is of poor quality, this deposit shows some surface enrichment yielding up to 54% iron (Du Toit 1931).

These deposits are known to have been extensively worked in precolonial times. Early Iron Age settlements occurred in the rich colluvial deposits of the Mhlathuze riverbanks and iron working debris and other cultural discards have been observed (Chrisjan Schmidt, pers.comm. 2022)³ and my own personal observations over the last three decades. These residues witness the earliest farming communities settling in the region c. 750-1050 AD (van Schalkwyk 1994a, b; 1996).

As far as archaeologists have been able to determine, it is these iron deposits that were targeted for iron smelting in the 18th and early 19th Centuries by the Shezi blacksmiths of the Cube clan. The Shezi were the sought after and appointed blacksmiths to both Kings Shaka and Dingaan in their accessions to power and expansion of the Zulu Kingdom. Their respective armies required large numbers of spears and battle axes. Further, a greater demand for hoes for agriculture arose due to increased cultivation to feed these armies.

Shallow mining pits and smelting and smithing furnaces have been the subject of archaeological investigation from the Project area and westwards to *Qa-Qa-Lensirnbi* (Iron Ridge), on the middle reaches of the Mhlathuze River. These attest to, by precolonial standards, a very large quantity of ore being removed from this range for smelting and smithing to meet these demands (Maggs 1991,1992).

“In this district dwelled - and still dwell - the Ntombela, Majola and Sikakana tribes, the men who mined the iron, but who did not work it ... this was undertaken by the Amacube, the hereditary iron workers of the Zulus, some five hundred blacksmiths, with their trade handed down from father to son, and preserved to them by Royal Decree Here the Ntombela, Sikakana and Majola tribes carried the iron ore, and here the Amacube smelted it” (Reyburn 1940).

The western edge of the Project area is also a significant historical and cultural landscape. In 1816, in a running battle from the Nkandla Forest and down the Umhlathuze valley, King Shaka’s troops routed and dealt a crippling blow to the *Amaphela* Impi of King Zwide of the Ndwandwe, his arch nemesis. Following this Battle of the *Amaphela*⁴ King Shaka was able to subjugate the Ndwandwe and extend his Kingdom over the Black Mfolosi River as far as the Pongola River (Ndwandwe 2022). A sizeable increase to his area of overlordship.

³ Chrisjan Schmidt is a farm manager in Nkwalini with a lay interest in archaeology.

⁴ *Amaphela* is the Zulu term for cockroaches. It is said the fleeing Ndwandwe regiment shouldered their shields over their backs as they fled to escape up the steep valley sides of the Umhlathuze, reminiscent of scurrying cockroaches.

The early 20th Century surveyed farms within the Project area were amalgamated as Trust Farms in the 1970s and subsequently incorporated into the newly established KwaZulu Homeland in 1979. The landholdings comprising these Trust Farms were subsequently placed under the jurisdiction of traditional law of regional *Inkosi* Mhlaba Sam Zulu, and local *Nkosi* Lucky Zulu (Enthembeni Traditional Authority), under custody of the Ingonyama Trust Act.

A gradual but systematic settlement expansion within the Project Area took place on these Trust Farms from the 1980's and accelerated post 1994 (my personal observations) and included the acquisition of a number of commercial farms bordering the proposed Mine Lease Area (MLA) as a consequence of land restitution initiatives in the 2000s. Earlier settlement within the proposed MLA had also taken place in the 1970s when people were moved out of the FSL of the Goedertrouw Dam. Settlement has largely taken the form of traditional nucleated family homesteads practicing subsistence agriculture and the husbanding of cattle and goats.

Appendix B contains a summary of knowledge of the archaeological aspects of the broader region.

Section 6: PROJECT LOCATION AND ENVIRONMENTAL DESCRIPTION

The proposed Mine Lease Area (MLA) is located to the south of the town of Melmoth and due west of the R66 at Ndundulu. It lies within the Enthembeni Traditional Authority currently under the leadership of *Inkosi* Lucky Zulu and his appointed *izinduna*.

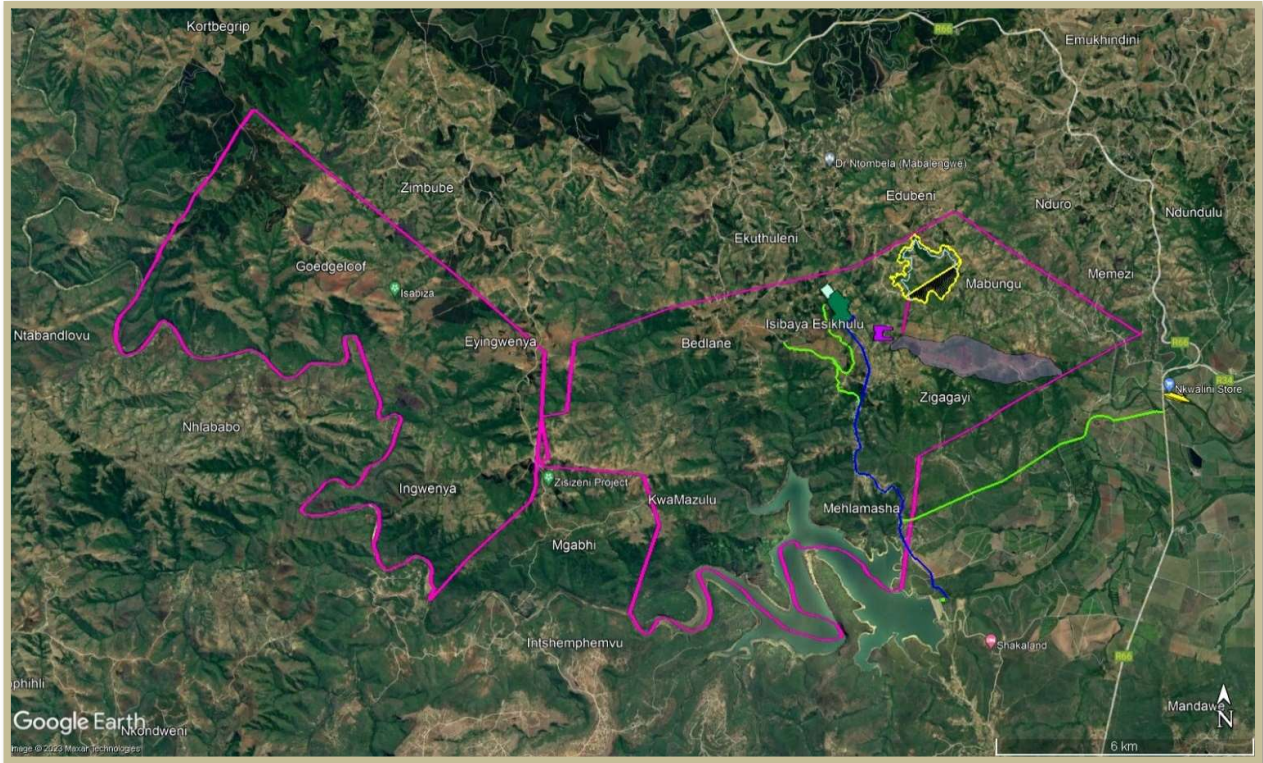


Figure 2 Location of the proposed South Block MLA (pink lined boundary) and MRA area and layout to the NE. (see also kml loaded to SAHRIS Case File).

The topography of the area comprises steeply incised valleys with moderately undulating interflues between the valleys. Basal cover is to the greatest extent *ngongoni* grassland dominated by *Aristida congest* and *A. junciformis*. Feral *Eucalyptus spp* are established along most of the arterial road networks and around domestic residences. Elements of Valley Bushveld thicket occur along the lower reaches of the valley bottoms, but these in turn are heavily infested with alien species, viz. Mauritian Thorn (*Biancaea decapetala*), Bugweed (*Solanum mauritanum*), Lantana (*Lantana camara*) and Triffid Weed (*Chromolaena odorata*).

The underlying lithology comprises metavolcanic rocks, granites, and gneisses of the Swazian, Nondweni and Mfongosi Groups; the later containing the iron deposits that are of mining interest. The interflues are underlain by Natal Group sandstones and the steep valley sides are overlain by a deeply weathered overburden derived from the sandstone capping's and Dwyka tillites below.

None of these lithologies are fossil bearing and consequently, no further palaeontological mitigation is recommended.⁵

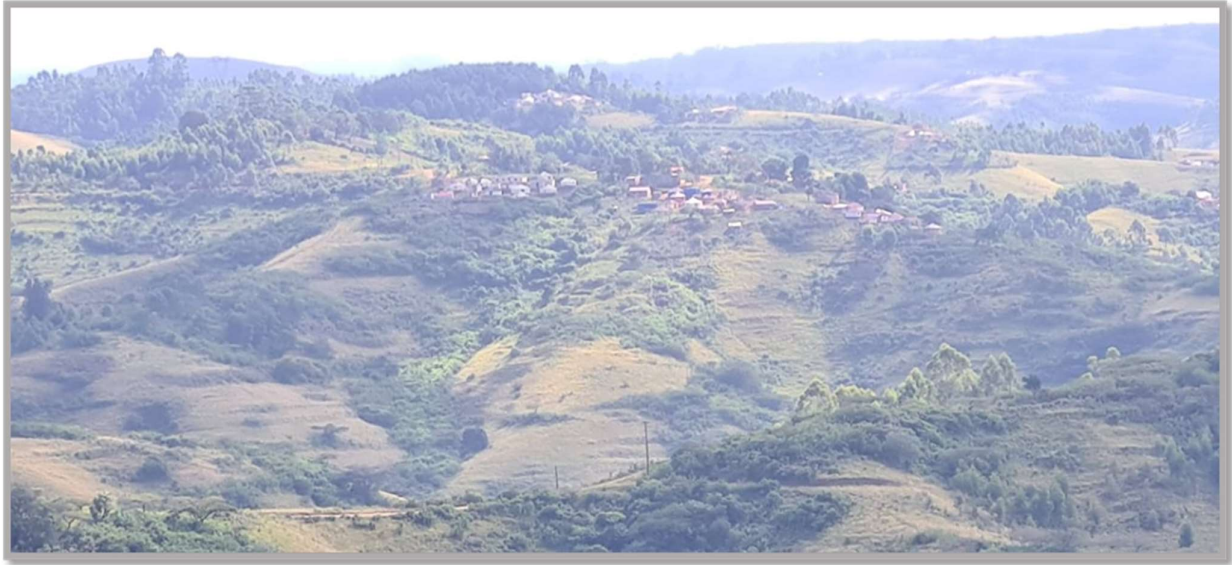


Figure 3 Typical landscape of the study area

Section 7: FIELD ASSESSMENTS

eThembeni Cultural Heritage Management first met with the Enthembeni Traditional Council, *Indunankulu Inkosi Zulu*, and attendant Princes of the Royal House, when called to a meeting on 04 January 2022. Mr Lindelihle Gcabashe, Stakeholder Relations Manager for Jindal, introduced Len van Schalkwyk to the Council Meeting.

I stated my *bona fides*, and eThembeni's role and function in the seeking of a MRA for Jindal in compliance with prevailing legislation and requested access to the proposed mining area to undertake our survey work. After lengthy deliberation access was granted subject to conditions beyond my ambit or control: (1) that a proposed meeting of the Jindal Executive and the Traditional Council must first be concluded and, (2) a planned meeting with the Council and representatives of CoGTA must take place, prior to any specialists being allowed on site for assessment purposes.

Inkosi Zulu did accede to Mr. Gcabashe conducting me around and through the proposed mining area for orientation purposes.

Subject to Traditional Authority clearance and notification from Mr Gcabashe, eThembeni then awaited permission to conduct our field assessments in pursuance of the HIA Report for the proposed South Block MLA and MRA. In April of 2023 such clearance had still not been granted due to growing polarisation of sentiments within the broader Enthembeni community regarding

⁵ Palaeontological Technical Report for KZN. Groenewald, G. 2012.

the prospective mine. I am informed by Mr. Gcabashe that a more inclusive local community endorsement for the mine is currently being pursued through a high-level resolution process.

Table 1. Schedule of Field Assessments and Interviews with Traditional Leadership

Date	Purpose
5 & 6 January 2022	Orientation of the MLA.
24 & 25 April 2022	Provisional assessments in the Mine Pit and Mine Plant areas, TSF 3 & 7 options, and the Waste Rock Dump (WRD) options.
26 April	Completed TSF 5 Assessment.
12 & 13 May 2022	Meetings with selected <i>izinduna</i> (Traditional Ward Heads) and <i>Labantwana</i> (Princes) of the Enthembeni Traditional and Royal Councils, residing within the proposed South Block MLA who are directly affected by the physical mining footprint.
12 May 2022	<i>Induna</i> Mangenge Zulu of Mabungu Ward. <i>Induna</i> Nophagama Zulu of Isibaya Esikhulu Ward.
13 May 2022	Mr. Mbuzo Ngobese of Ekuthuleni Ward (retired <i>Induna</i>).
13 May 2022	<i>Mtwana</i> M. Zulu.
13 May 2022	<i>Mtwana</i> Sokhile Zulu.
17 - 29 June 2022	Mr. Mbuzo Ngobese to assess and document graves. Objective not achieved.

These interviews provided corroborating testimonies of the lineage and succession of the Zulu *amakhosi* of the Enthembeni Traditional Authority back to the reign of King Mpande in the 19th Century. They all further confirmed settlement of the Trust farms after 1979 when these landholdings were incorporated into the KwaZulu Homeland, and the very strong association of the residents of Enthembeni with the land under the Traditional Authority.

All interviewees confirmed that there was no oral history pertaining to their people having ever mined for or smelted iron ore within the proposed MLA, but they were aware of the oral history of the Shezi clan and the Ncube people having done so in the past in the Nkandla district.

On the question of graves, they confirmed that burials were conducted under traditional rites and that graves are mostly located at family homesteads. On the question of graves older than 60 years (those graves requiring permits from Amafa in the event of approved exhumation and reinternment) they were aware of a single extended family's graves that contained around 27 graves predating 1962. These are located within the boundaries of the selected Waste Rock Dump area (See Fig.1) centred on 28.701440° **E**: 31.466600° **W**. They further conceded that some of the abandoned and oldest *imizi* (homesteads) may include graves predating 1960 but that this would have to be confirmed by respective homestead residents.

Mr. Ngobese offered to contact the families concerned in order that these graves could be documented with family members present.

I travelled from Pietermaritzburg on invitation of Mr. Ngobese and met him in Melmoth on the 17th of June 2022. On my arrival he cancelled due to a family bereavement. Until the 28th of June, he remained evasive each time I enquired whether the affected families had been

contacted. He subsequently agreed to meet me again in Melmoth on the 29th of June. At this meeting he suggested we leave my vehicle in Melmoth, and that I travel with him in his private vehicle. On questioning this he was vague but said that he did not want to be seen conducting an outsider vehicle into the area. I declined to travel with him and said we would make a future arrangement.

I immediately contacted Mr Gcabashe and he informed me that there was an anti-mining faction within the community that were fomenting tensions and suspicion amongst the Enthembeni residents. He would notify me when it would be appropriate to revisit to complete my field work. To date (April 2023) I have received no notification that I would be allowed to proceed, suffice to say that a high-level resolution process is in hand.

The requisite surveys for this large-scale mining project are incomplete due to community tensions limiting the heritage practitioner's access to the proposed MLA, engagement with affected families with regard to graves reported to be over 60 years old, and concomitant concerns for the safety of survey personnel. More inclusive local community endorsement for the mine are in the process of high-level resolution.

With regard to potential archaeological sites, it is my observation and considered opinion that the areas identified for mining activities in the MRA area have a very low potential for archaeological residues. Late Iron Age settlements tend to cluster on hill tops and the higher lying ground of the valley interfluves, and such site residues are extremely ephemeral in nature. These are the same areas that historically and latterly have been settled by the current communities in the proposed South Block Mining Rights Application Area. Any Late Iron Age settlement residues will then have been masked or displaced by the historical and more recent settlements, rendering them to be of low scientific significance.

However, given the nature of the topography and some unsettled interfluve areas within the proposed MRA area and its anticipated infrastructure developments, *in situ* archaeological remains may be present. These will only be discernible with further systematic foot surveys to be conducted during the wider ESIA.

With regard to historical and extant homesteads, all contain ancestral burial sites which will require universal FPIC, and negotiated compensation, for exhumation and reinternment during any envisaged Relocation Action Plan, should the Mining Rights Application be approved. The graves older than 60 years that have been identified will further require comment and permitting from Amafa prior to any interventions being pursued.



Figure 4 South facing landscape-wide view of the proposed South Block MLA and Mining Rights Application Area

Section 8: HERITAGE RESOURCE OBSERVATIONS AND ASSESSMENT OF SIGNIFICANCE

No mining activities associated with the proposed project had begun at the time of our site visits between January and June 2022. Table 2 summarises the heritage resources identified for assessment.

Table 2. Heritage resources and observations

Heritage resource type	
Ecofacts	None were identified within the proposed development area.
Places, buildings, structures and equipment	None were identified within the proposed development area.
Places to which oral traditions are attached or which are associated with living heritage	<ol style="list-style-type: none"> 1. Historical landscapes: The landscape across which the Battle of the Amaphele was fought is located at the western extreme of the proposed South Block MLA and will not be affected by the current MRA. 2. Late Iron Age Iron Mining: All elders interviewed confirmed that there was no oral history pertaining to their people having ever mined for or smelted iron ore within the proposed South Block MLA, but they were aware of the oral history of the Shezi clan and the Ncube people having done so in the past in the Nkandla district.

Historical settlements and townscapes	None were identified within the proposed development area.
Cultural landscapes and natural features	Open pit mining and the waste rock dump will have an irreversible and therefore Very High impact on the immediate natural, cultural, and historical landscape that cannot be mitigated. These landscapes will be irreversibly altered, notwithstanding implementation of the requisite Mine Closure Plan.
Geological sites of scientific or cultural importance	None were identified within the proposed development area.
Archaeological sites	Should the Mining Rights Application be approved this should be endorsed with the provisor that the requisite surveys will be finalised in the course of the ESIA, and in the formulation of the Environmental Management Plan Report (EMPr), as prescribed by NEMA (107/1998), as amended.
Graves and burial grounds	Should the Mining Rights Application be approved this should be endorsed with the provisor that the requisite surveys will be finalised in the course of the ESIA, and in the formulation of the Environmental Management Plan Report (EMPr), as prescribed by NEMA (107/1998), as amended.
Public monuments and memorials	None were identified within the proposed development area.
Battlefields	Battle of the Amaphele – see above.

Section 9: ASSESSMENT OF DEVELOPMENT IMPACT

Loss of Heritage Resources

Archaeological resources are considered a unique and non-renewable resource. Should any such resources be discovered during the construction and operational phases the impacts can be seen as permanent and irreversible. The impact would be High unless mitigation measures can be implemented.

Loss of Heritage Resources		
Type of Impact	Direct	
Nature of Impact	Negative	
Phases	Construction and Operational	
Criteria	Without Mitigation	With Mitigation
Intensity	Severe change (Very high)	Prominent change (High)
Duration	Very long term/ Permanent (> 20 years)	Very long term/ Permanent (> 20 years)
Extent	Local	Beyond site
Consequence	Very high	High
Probability	Definite / Continuous	Possible / frequent
Significance	Very high -	Medium -
Degree to which impact can be reversed		
	Irreversible - Unmitigated archaeological resources are rendered to low scientific significance if altered or damaged by construction and operational activities.	
Degree to which impact may cause irreplaceable loss of resources		
	High - Unmitigated archaeological resources are rendered to low scientific significance if altered or damaged by construction and operational activities.	
Degree to which impact can be avoided		
	Medium - Predevelopment mitigation (survey, site identification, mapping, and description of archaeological finds)	
Degree to which impact can be mitigated		
	Medium - Predevelopment mitigation (survey, site identification, mapping, and description of archaeological finds)	
Cumulative impact		
Nature of cumulative impacts	Development activities in and around the project area have been limited to domestic homestead expansion and local infrastructure, viz. access roads, water pipelines and electricity provision. Cumulative impacts are thus not expected.	
Rating of cumulative impacts	Medium	Low
Residual impact		
Residual impact discussion	Medium	

Relocation of Graves

Graves and Burial Grounds are accorded the highest level of significance in the NHRA. The procedure for consultation regarding burial grounds and graves (Section 36 of the NHRA) is applicable to all graves older than 60 years located outside a formal cemetery administered by a local authority. The following extract from this legislation is applicable:

SAHRA or Amafa may not issue a permit for any alteration to or disinterment or reburial of a grave unless it is satisfied that the applicant has, in accordance with regulations made by the responsible heritage resources authority—

(a) made a concerted effort to contact and consult communities and individuals who by tradition have an interest in such grave or burial ground; and

(b) reached agreements with such communities and individuals regarding the future of such grave or burial ground.

Should any graves be discovered during the construction and operational phases the impacts can be seen as permanent and irreversible. The impact would be High unless mitigation measures can be implemented.

Description of Impact (update)		
Type of Impact	Direct	
Nature of Impact	Negative	
Phases	Construction and Operational	
Criteria	Without Mitigation	With Mitigation
Intensity	Severe change (Very high)	Prominent change (High)
Duration	Very long term/ Permanent (> 20 years)	Very long term/ Permanent (> 20 years)
Extent	Local	Beyond site
Consequence	Very high	High
Probability	Definite / Continuous	Definite / Continuous
Significance	Very high	High
Degree to which impact can be reversed	Irreversible: Substantial intervention will be required. Unmitigated graves will incur vigorous/widespread community mobilization against the project. This may result in legal action if graves are altered or damaged by construction and operational activities.	
Degree to which impact may cause irreplaceable loss of resources	High. Unmitigated, graves will incur vigorous/widespread community mobilization against the project. This may result in legal action if altered or damaged by construction and operational activities.	
Degree to which impact can be avoided	Medium: Predevelopment mitigation (graves audit and engagement with affected families to negotiate exhumation and reinterment with fair compensation) is an essential requirement.	

Description of Impact (update)		
Degree to which impact can be mitigated	Medium: Predevelopment mitigation (graves audit and engagement with affected families to negotiate exhumation and reinterment with fair compensation) is an essential requirement.	
Cumulative impact		
Nature of cumulative impacts	Development activities in and around the project area have been limited to domestic homestead expansion and local infrastructure development, viz. access roads, water pipelines and electricity provision. Resident communities, cognoscente of grave locations, would have advised infrastructure contractors where to deviate in order to avoid such grave locations. Cumulative impacts are thus not expected.	
Rating of cumulative impacts	Medium -	Low -
Residual impact		
Residual impact discussion	High	

Section 10: RECOMMENDED MITIGATION MEASURES

Archaeological Mitigation/ Enhancement Measures

Complete survey of the MRA and ancillary infrastructure for possible site identification, mapping and description will allow for further mitigatory measures. Low significance sites can be recorded for addition to the provincial archaeological data base. Medium and high significance sites may require further recording and excavation to retrieve data for future research and addition to the data base.

Chance Finds Protocol must be in place for Construction and Operational Phases.

Graves and Burial Sites Mitigation/ Enhancement Measures

Complete survey of the MRA and ancillary infrastructure for possible graves identification, auditing, and engagement with affected families will allow for further mitigatory measures to be pursued under FPIC and within the scope of the envisaged ESIA and Relocation Action Plan. Amafa will not issue a permit for any alteration to or disinterment or reburial of a grave unless it is satisfied that the developer has, in accordance with regulations made by the responsible heritage resources authority –

- (a) made a concerted effort to contact and consult communities and individuals who by tradition have an interest in such grave or burial ground; and,
- (b) reached agreements with such communities and individuals regarding the future of such grave or burial ground.

The Chance Finds Protocol for unidentified graves must be in place for Construction and Operational Phases.

Section 11: RECOMMENDED MONITORING

During construction phases all mine infrastructure and excavation areas must be monitored by an accredited Heritage Practitioner. Induction and training of the appointed ECO/s must be undertaken in order that the application of the Chance Finds Protocol for the life-of-mine through such ECOs can be implemented.

Section 12: PROTOCOLS FOR THE IDENTIFICATION, PROTECTION AND RECOVERY OF HERITAGE RESOURCES DURING CONSTRUCTION AND OPERATION

It is possible that sub-surface heritage resources could be encountered during the construction phase of this project. The Environmental Control Officer and all other persons responsible for site management and excavation should be aware that indicators of sub-surface sites could include:

- Ash deposits (unnaturally grey appearance of soil compared to the surrounding substrate).
- Bone concentrations, either animal or human.
- Ceramic fragments, including potsherds.
- Stone concentrations that appear to be formally arranged (may indicate the presence of an underlying burial, or represent building/structural remains); and
- Fossilised remains of fauna and flora, including trees.

In the event that such indicator(s) of heritage resources are identified, the following actions should be taken immediately:

- All construction within a radius of at least 20m of the indicator should cease. This distance should be increased at the discretion of supervisory staff if heavy machinery or explosives could cause further disturbance to the suspected heritage resource.
- This area must be marked using clearly visible means, such as barrier tape, and all personnel should be informed that it is a no-go area.
- A guard should be appointed to enforce this no-go area if there is any possibility that it could be violated, whether intentionally or inadvertently, by construction staff or members of the public.
- No measures should be taken to cover up the suspected heritage resource with soil, or to collect any remains such as bone or stone.
- If a heritage practitioner has been appointed to monitor the project, s/he should be contacted, and a site inspection arranged as soon as possible.
- If no heritage practitioner has been appointed to monitor the project, the head of archaeology at Amafa's Pietermaritzburg office should be contacted; telephone 033 3946 543).
- The South African Police Services should be notified by an Amafa Heritage staff member or an independent heritage practitioner if human remains are identified. No SAPS official may disturb or exhume such remains, whether of recent origin or not.
- All parties concerned should respect the potentially sensitive and confidential nature of the heritage resources, particularly human remains, and refrain from making public statements until a mutually agreed time.

- Any extension of the project beyond its current footprint involving vegetation and/or earth clearance should be subject to prior assessment by a qualified heritage practitioner, considering all information gathered during this initial heritage impact assessment.

Section 13: CONCLUSION

The requisite surveys for this large-scale mining project are incomplete due to community tensions limiting the heritage practitioner's access to the proposed MLA, engagement with affected families with regard to graves reported to be over 60 years old, and concomitant concerns for the safety of survey personnel. More inclusive local community endorsement for the mine are in the process of high-level resolution.

Should the Mining Rights Application be approved this should be endorsed with the provisor that the requisite surveys will be finalised in the course of the ESIA, and in the formulation of the Environmental Management Plan Report (EMPr), as prescribed by NEMA (107/1998), as amended.

This report can be loaded to the created SAHRIS Case File for Amafa's comments and decision.

The client may contact the Amafa Heritage and Research Institute's Pietermaritzburg office should any queries arise.

Sandisiwe Matole: sandisiwe.matole@amafainstitute.org.za (Tel. 033 3946543)

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APPENDIX A STATUTORY REQUIREMENTS

General

The identification, evaluation, and management of heritage resources in South Africa is required and governed by the following legislation:

- National Environmental Management Act 107 of 1998 as amended (NEMA)
- KwaZulu-Natal Heritage Act 4 of 2008 as amended by the KZN Amafa and Research Institute Act (5/2018).
- National Heritage Resources Act 25 of 1999 as amended (NHRA)
- Minerals and Petroleum Resources Development Act 28 of 2002 (MPRDA)

KZN Amafa and Research Institute Act (5/2018).

This Act is implemented by the KZN Amafa and Research Institute (Act (5/2018)), the provincial heritage resources authority (PHRA) charged to provide for the conservation, protection, and administration of both the physical and the living or intangible heritage resources of the province; along with a statutory Council to administer heritage conservation in the Province.

National Heritage Resources Act 25 of 1999 (NHRA)

The NHRA established the South African Heritage Resources Agency (SAHRA) together with its Council to fulfill the following functions:

- co-ordinate and promote the management of heritage resources at national level;
- set norms and maintain essential national standards for the management of heritage resources in the Republic and to protect heritage resources of national significance;
- control the export of nationally significant heritage objects and the import into the Republic of cultural property illegally exported from foreign countries;
- enable the provinces to establish heritage authorities which must adopt powers to protect and manage certain categories of heritage resources; and
- provide for the protection and management of conservation-worthy places and areas by local authorities.

Heritage Impact Assessments

Section 38(1) of the NHRA may require a Heritage Impact Assessment in case of:

- the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
- the construction of a bridge or similar structure exceeding 50m in length;
- any development or other activity which will change the character of a site—
 - (i) exceeding 5 000m² 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 by SAHRA or a provincial heritage resources authority.
- the re-zoning of a site exceeding 10 000m² in extent; or
 - any other category of development provided for in regulations by SAHRA or a PHRA.

Reports in fulfilment of NHRA Section 38(3) must include the following information:

- the identification and mapping of all heritage resources in the area affected;
- an assessment of the significance of such resources in terms of the heritage assessment criteria set out in regulations;
- an assessment of the impact of the development on such heritage resources;
- an evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;
- the results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources;
- if heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and
- plans for mitigation of any adverse effects during and after completion of the proposed development.

It is incumbent upon the developer or Environmental Practitioner to approach the South African Heritage Resources Agency (SAHRA) or Amafa to ascertain whether an HIA is required for a project; what categories of heritage resource must be assessed; and request a detailed motivation for such a study in terms of both the nature of the development and the nature of the environment. Section 38(2) of the NHRA states specifically that 'The responsible heritage resources authority must ... if there is reason to believe that heritage resources will be affected by such development, notify the person who intends to undertake the development to submit an impact assessment report'. In other words, the heritage authority must be able to justify a request for an Archaeological, Palaeontological or Heritage Impact Assessment. The Environmental Practitioner may also submit information to the heritage authority in substantiation of exemption from a specific assessment due to existing environmental disturbance, for example.

Visual Impact Assessments

There are no legal requirements in NEMA that specifically regulate activities that may infringe on the visual attributes of a region. The NHRA provides legislative protection for listed or proclaimed sites, such as urban conservation areas, nature reserves and proclaimed scenic routes. It requires that these areas be protected against physical and aesthetic change. Visual pollution is controlled, to a limited extent, by the Advertising on Roads and Ribbons Act 21 of 1940, which deals mainly with signage on public roads. The 'Guideline for involving visual &

aesthetic specialists in EIA processes' by Oberholzer (2005) was developed to provide guidelines and general good practice for specialist visual input into the EIA process in South Africa.

Definitions of heritage resources

The Act defines a heritage resource as any place or object of cultural significance i.e. of aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance. This includes, but is not limited to, the following wide range of places and objects:

- living heritage as defined in the National Heritage Council Act 11 of 1999 (cultural tradition; oral history; performance; ritual; popular memory; skills and techniques; indigenous knowledge systems; and the holistic approach to nature, society and social relationships);
- ecofacts (non-artefactual organic or environmental remains that may reveal aspects of past human activity.
- places, buildings, structures and equipment.
- places to which oral traditions are attached or which are associated with living heritage;
- historical settlements and townscapes;
- landscapes and natural features;
- geological sites of scientific or cultural importance;
- archaeological and palaeontological sites;
- graves and burial grounds;
- public monuments and memorials;
- sites of significance relating to the history of slavery in South Africa;
- movable objects, but excluding any object made by a living person; and
- battlefields.

Furthermore, a place or object is to be considered part of the national estate if it has cultural significance or other special value because of:

- its importance in the community, or pattern of South Africa's history;
- its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
- its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
- its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
- its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
- its importance in demonstrating a high degree of creative or technical achievement at a particular period;

- its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons; and
- its strong or special association with the life or work of a person, group, or organisation of importance in the history of South Africa.

Archaeological means –

- material remains resulting from human activity which are in a state of disuse and are in or on land and are older than 100 years, including artefacts, human and hominid remains and artificial features and structures;
- 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 is older than 100 years including any area within 10m of such representation;
- 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 culture zone of the Republic, as defined respectively in sections 3, 4 and 6 of the Maritime Zones Act 15 of 1994, 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;
- features, structures and artefacts associated with military history which are older than 75 years and the sites on which they are found.

Palaeontological means any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or trace.

A **place** is defined as:

- a site, area or region;
- a building or other structure which may include equipment, furniture, fittings and articles associated with or connected with such building or other structure;
- a group of buildings or other structures which may include equipment, furniture, fittings and articles associated with or connected with such group of buildings or other structures;
- an open space, including a public square, street or park; and
- in relation to the management of a place, includes the immediate surroundings of a place.

Public monuments and memorials mean all monuments and memorials:

- erected on land belonging to any branch of central, provincial, or local government, or on land belonging to any organization funded by or established in terms of the legislation of such a branch of government; or
- which were paid for by public subscription, government funds, or a public-spirited or military organization, and are on land belonging to any private individual.

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

Management of Graves and Burial Grounds

– Definitions

Grave

The NHRA defines a grave as a place of interment and includes the contents, headstone or other marker of such a place, and any other structure on or associated with such a place.

The KwaZulu-Natal Cemeteries and Crematoria 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.

Burial ground

The term 'burial ground' does not appear to have a legal definition. In common usage the term is used for management purposes to describe two or more graves that are grouped closely enough to be managed as a single entity.

Cemetery

The KwaZulu-Natal Cemeteries and Crematoria Act 1996 defines a cemetery as any place

- (a) where human remains are buried in an orderly, systematic and pre-planned manner in identifiable burial plots;
- (b) which is intended to be permanently set aside for and used only for the purposes of the burial of human remains.

– Protection of graves and cemeteries

No person may damage, alter, exhume, or remove from its original position any grave, as defined above, without permission from the relevant authority, as detailed below:

Table 3.

Grave type	Relevant legislation	Administrative authority – disinterment	Administrative authority – reburial
Graves located within a formal cemetery administered by a local authority	KwaZulu-Natal Cemeteries and Crematoria Act 12 of 1996 Human Tissue Act 65 of 1983	National and / or Provincial Departments of Health	If relocated to formal cemetery – relevant local authority.
Graves older than 60 years located outside a formal cemetery administered by a local authority and the graves of victims of conflict	KZN Amafa and Research Institute Act (5/2018) as per the NHRA (25/1999), as amended. Human Tissue Act 65 of 1983	KZN Amafa and Research Institute, the provincial heritage resources authority	If relocated to private or communal property – KZN Amafa. If relocated to formal cemetery – KZN Amafa and relevant local authority.

Procedures required for permission to disinter and rebury graves

The procedure for consultation regarding burial grounds and graves (Section 36 of the NHRA) is applicable to all graves located outside a formal cemetery administered by a local authority. The following extract from this legislation is applicable to this policy document:

SAHRA or Amafa may not issue a permit for any alteration to or disinterment or reburial of a grave unless it is satisfied that the applicant has, in accordance with regulations made by the responsible heritage resources authority—

- (a) made a concerted effort to contact and consult communities and individuals who by tradition have an interest in such grave or burial ground; and
- (b) reached agreements with such communities and individuals regarding the future of such grave or burial ground.

Any person who in the course of development or any other activity discovers the location of a grave, the existence of which was previously unknown, must immediately cease such activity and report the discovery to the responsible heritage resources authority which must, in co-operation with the South African Police Services and in accordance with regulations of the responsible heritage resources authority—

- (a) carry out an investigation for the purpose of obtaining information on whether or not such grave is protected in terms of this Act or is of significance to any community; and
- (b) if such grave is protected or is of significance, assist any person who or community which is a direct descendant to make arrangements for the exhumation and re-interment of the contents of such grave or, in the absence of such person or community, make any such arrangements as it deems fit.

The Vermillion Accord on Human Remains⁶ **Adopted in 1989 at WAC Inter-Congress, South Dakota, USA**

1. Respect for the mortal remains of the dead shall be accorded to all, irrespective of origin, race, religion, nationality, custom and tradition.
2. Respect for the wishes of the dead concerning disposition shall be accorded whenever possible, reasonable and lawful, when they are known or can be reasonably inferred.
3. Respect for the wishes of the local community and of relatives or guardians of the dead shall be accorded whenever possible, reasonable and lawful.
4. Respect for the scientific research value of skeletal, mummified and other human remains (including fossil hominids) shall be accorded when such value is demonstrated to exist.
5. Agreement on the disposition of fossil, skeletal, mummified and other remains shall be reached by negotiation on the basis of mutual respect for the legitimate concerns of communities for the proper disposition of their ancestors, as well as the legitimate concerns of science and education.
6. The express recognition that the concerns of various ethnic groups, as well as those of science are legitimate and to be respected, will permit acceptable agreements to be reached and honoured.

⁶ <http://www.worldarchaeologicalcongress.org/>

APPENDIX B ARCHAEOLOGICAL CONTEXT OF THE STUDY AREA

The Stone Age⁷

No systematic Early and Middle Stone Age research has been undertaken in the proposed development area, hence the general nature of this section. Open air scatters of stone artefacts, probably with low heritage significance, could be expected in areas with minimal environmental disturbance.

South Africa's prehistory has been divided into a series of phases based on broad patterns of technology. The primary distinction is between a reliance on chipped and flaked stone implements (the Stone Age) and the ability to work iron (the Iron Age). Spanning a large proportion of human history, the Stone Age in Southern Africa is further divided into the Early Stone Age, or Paleolithic Period (about 2 500 000–200 000 years ago), the Middle Stone Age, or Mesolithic Period (about 200 000–30 000 years ago), and the Late Stone Age, or Neolithic Period (about 30 000–200 years ago). The simple stone tools found with australopithecine fossil bones fall into the earliest part of the Early Stone Age.

The Early Stone Age

Most Early Stone Age sites in South Africa can probably be connected with the hominin species known as *Homo erectus*. Simply modified stones, hand axes, scraping tools, and other bifacial artifacts had a wide variety of purposes, including butchering animal carcasses, scraping hides, and digging for plant foods. Most South African archaeological sites from this period are the remains of open camps, often by the sides of rivers and lakes, although some are rock shelters, such as Montagu Cave in the Western Cape.

The Middle Stone Age

The long episode of cultural and physical evolution gave way to a period of more rapid change about 200 000 years ago. Hand axes and large bifacial stone tools (Large Cutting Tools) were replaced by stone flakes and blades that were fashioned into scrapers, spear points, and parts for hafted, composite implements. This technological stage, now known as the Middle Stone Age, is represented by numerous sites in KwaZulu- Natal, including Umhlathuzana Shelter, Sibudu Shelter and Border Cave.

Open camps and rock overhangs were used for shelter. Day-to-day debris has survived to provide some evidence of early ways of life, although plant foods have rarely been preserved. Middle Stone Age bands hunted medium-sized and large prey, including antelope and zebra, although they tended to avoid the largest and most dangerous animals, such as the elephant and the rhinoceros. They also ate seabirds and marine mammals that could be scavenged along the shoreline.

⁷ <http://www.britannica.com>; article authored by Colin J. Bundy, Julian R. D. Cobbing, Martin Hall, and Leonard Monteith Thompson

The Late Stone Age

Basic toolmaking techniques began to undergo additional change about 40 000 years ago. Small finely worked stone implements known as microliths became more common, while the heavier scrapers and points of the Middle Stone Age appeared less frequently. Archaeologists refer to this technological stage as the Late Stone Age. The numerous collections of stone tools from South African archaeological sites show a great degree of variation through time and across the subcontinent.

The remains of plant foods have been well preserved at such sites as Melkhoutboom Cave, De Hangen, and Diepkloof in the Cape region. Animals were trapped and hunted with spears and arrows on which were mounted well-crafted stone blades. Bands moved with the seasons as they followed game into higher lands in the spring and early summer months, when plant foods could also be found. When available, rock overhangs became shelters; otherwise, windbreaks were built. Shellfish, crayfish, scavenged marine mammals and seabirds, were also important sources of food, as were fish caught on lines, with spears, in traps, and with woven baskets and nets.

Dating from this period are numerous engravings on rock surfaces, mostly on the interior plateau, and paintings on the walls of rock shelters in the mountainous regions, such as the Maluti-Drakensberg and Stormberg and Sneeuberge ranges. The images were made over a period of at least 25 000 years. Although scholars originally saw the South African rock art as the work of exotic foreigners such as Minoans or Phoenicians or as the product of primitive minds, they now believe that the paintings were closely associated with the work of medicine men, shamans, who were involved in the well-being of the band and often worked in a state of trance. Specific representations include depictions of trance dances, metaphors for trance such as death and flight, rainmaking, and control of the movement of antelope herds.

Iron Age⁸

Archaeological evidence shows that Bantu-speaking agriculturists first settled in southern Africa around AD 300. Bantu-speakers originated in the vicinity of modern Cameroon from where they began to move eastwards and southwards, sometime after 400 BC, skirting around the equatorial forest. An extremely rapid spread throughout much of sub-equatorial Africa followed: dating shows that the earliest communities in Tanzania and South Africa are separated in time by only 200 years, despite the 3 000 km distance between the two regions. It seems likely that the speed of the spread was a consequence of agriculturists deliberately seeking iron ore sources and particular combinations of soil and climate suitable for the cultivation of their crops.

The earliest agricultural sites in KwaZulu-Natal date to between AD 400 and 550. All are situated close to sources of iron ore, and within 15 km of the coast. Current evidence suggests it may have been too dry further inland at this time for successful cultivation. From 650 onwards, however, climatic conditions improved and agriculturists expanded into the valleys of KwaZulu-Natal, where they settled close to rivers in savanna or bushveld environments. There is a considerable body of information available about these early agriculturists.

⁸ Whitelaw (1997). See also Whitelaw (1991, 2009).

Seed remains show that they cultivated finger millet, bulrush millet, sorghum and probably the African melon. It seems likely that they also planted African groundnuts and cowpeas, though direct evidence for these plants is lacking from the earlier periods. Faunal remains indicate that they kept sheep, cattle, goats, chickens and dogs, with cattle and sheep providing most of the meat. Men hunted, perhaps with dogs, but venison made only a limited contribution to the diet in the region.

Metal production was a key activity since it provided the tools of cultivation and hunting. The evidence indicates that people who worked metal lived in almost every village, even those that were considerable distances from ore sources.

Large-scale excavations in recent years have provided data indicating that first-millennium agriculturist society was patrilineal and that men used cattle as bride wealth in exchange for wives. On a political level, society was organized into chiefdoms that, in our region, may have had up to three hierarchical levels. The villages of chiefs tended to be larger than others, with several livestock enclosures, and some were occupied continuously for lengthy periods. Social forces of the time resulted in the concentration of unusual items on these sites. These include artefacts that originated from great distances, ivory items (which as early as AD 700 appear to have been a symbol of chieftainship), and initiation paraphernalia.

This particular way of life came to an end around AD 1000, for reasons that we do not yet fully understand. There was a radical change in the decorative style of agriculturist ceramics at this time, while the preferred village locations of the last four centuries were abandoned in favour of sites along the coastal littoral. In general, sites dating to between 1050 and 1250 are smaller than most earlier agriculturist settlements. It is tempting to see in this change the origin of the Nguni settlement pattern. Indeed, some archaeologists have suggested that the changes were a result of the movement into the region of people who were directly ancestral to the Nguni-speakers of today. Others prefer to see the change as the product of social and cultural restructuring within resident agriculturist communities.

Whatever the case, it seems likely that this new pattern of settlement was in some way influenced by a changing climate, for there is evidence of increasing aridity from about AD 900. A new pattern of economic inter-dependence evolved that is substantially different from that of earlier centuries, and is one that continued into the colonial period nearly 500 years later.

APPENDIX C METHODOLOGY

Site survey

eThembeni staff members inspected the proposed mine lease area (MLA) on numerous occasions in the course of 2022 and completed controlled-exclusive surface surveys when possible, where 'sufficient information exists on an area to make solid and defensible assumptions and judgements about where [heritage resource] sites may and may not be' and 'an inspection of the surface of the ground, wherever this surface is visible, is made, with no substantial attempt to clear brush, turf, deadfall, leaves or other material that may cover the surface and with no attempt to look beneath the surface beyond the inspection of rodent burrows, cut banks and other exposures that are observed by accident' (King 1978).

The site surveys comprised unsystematic walks across the activity areas, with the exception of wetlands. Geographic coordinates were obtained using a handheld Garmin global positioning unit (WGS 84).

Database and literature review

No archaeological site data was available for the immediate project area from the KwaZulu Natal Museum database. A concise account of the archaeology and history of the broader region was compiled from the authors own IP sources and those included in the bibliography and footnotes.

Assessment of heritage resource value and significance

Heritage resources are significant only to the extent that they have public value, as demonstrated by the following guidelines for determining site significance developed by Heritage Western Cape in 2007 and applied during this assessment.

Grade I Sites (National Heritage Sites)

Regulation 43 Government Gazette no 6820. 8 No. 24893 30 May 2003, Notice No. 694 states that:

Grade I heritage resources are heritage resources with qualities so exceptional that they are of special national significance should be applied to any heritage resource which is

- a) Of outstanding significance in terms of one or more of the criteria set out in section 3(3) of the NHRA;
- b) Authentic in terms of design, materials, workmanship or setting; and is of such universal value and symbolic importance that it can promote human understanding and contribute to nation building, and its loss would significantly diminish the national estate.

Grade II Sites (Provincial Heritage Sites)

Regulation 43 Government Gazette no 6820. 8 No. 24893 30 May 2003, Notice No. 694 states that:

Grade II heritage resources are those with special qualities which make them significant in the context of a province or region and should be applied to any heritage resource which -

- a) is of great significance in terms of one or more of the criteria set out in section 3(3) of the NHRA; and
- (b) enriches the understanding of cultural, historical, social and scientific development in the province or region in which it is situated, but that does not fulfil the criteria for Grade 1 status.

Grade II sites may include, but are not limited to -

- (a) places, buildings, structures and immovable equipment of cultural significance;
- (b) places to which oral traditions are attached or which are associated with living heritage;
- (c) historical settlements and townscapes;
- (d) landscapes and natural features of cultural significance;
- (e) geological sites of scientific or cultural importance;
- (f) archaeological and palaeontological sites; and

(g) graves and burial grounds.

The cultural significance or other special value that Grade II sites may have, could include, but are not limited to –

- (a) its importance in the community or pattern of the history of the province;
- (b) the uncommon, rare or endangered aspects that it possess reflecting the province's natural or cultural heritage
- (c) the potential that the site may yield information that will contribute to an understanding of the province's natural or cultural heritage;
- (d) its importance in demonstrating the principal characteristics of a particular class of the province's natural or cultural places or objects;
- (e) its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group in the province;
- (f) its importance in demonstrating a high degree of creative or technical achievement at a particular period in the development or history of the province;
- (g) its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons; and
- (h) its strong or special association with the life or work of a person, group or organization of importance in the history of the region or province.

Grade III (Local Heritage Resources)

Regulation 43 Government Gazette no 6820. 8 No. 24893 30 May 2003, Notice No. 694 states that:

Grade III heritage status should be applied to any heritage resource which

- (a) fulfils one or more of the criteria set out in section 3(3) of the NHRA; or
- (b) in the case of a site contributes to the environmental quality or cultural significance of a larger area which fulfils one of the above criteria, but that does not fulfill the criteria for Grade 2 status.

APPENDIX D Assessment of development impacts

A heritage resource impact may be defined broadly as the net change, either beneficial or adverse, between the integrity of a heritage site with and without the proposed development. Beneficial impacts occur wherever a proposed development actively protects, preserves or enhances a heritage resource, by minimising natural site erosion or facilitating non-destructive public use, for example. More commonly, development impacts are of an adverse nature and can include:

- destruction or alteration of all or part of a heritage site;
- isolation of a site from its natural setting; and / or
- introduction of physical, chemical or visual elements that are out of character with the heritage resource and its setting.

Beneficial and adverse impacts can be direct or indirect, as well as cumulative, as implied by the examples. Although indirect impacts may be more difficult to foresee, assess and quantify, they must form part of the assessment process. The following assessment criteria are used to assess the impacts of any proposed development on identified heritage resources:

Criteria	Rating Scales	Notes
Nature	Positive	An evaluation of the type of effect the construction, operation and management of the proposed development would have on the heritage resource.
	Negative	
	Neutral	
Extent	Low	Site-specific, affects only the development footprint.
	Medium	Local (limited to the site and its immediate surroundings, including the surrounding towns and settlements within a 10 km radius);
	High	Regional (beyond a 10 km radius) to national.
Duration	Low	0-4 years (i.e. duration of construction phase).
	Medium	5-10 years.
	High	More than 10 years to permanent.
Intensity	Low	Where the impact affects the heritage resource in such a way that its significance and value are minimally affected.
	Medium	Where the heritage resource is altered and its significance and value are measurably reduced.
	High	Where the heritage resource is altered or destroyed to the extent that its significance and value cease to exist.
Potential for impact on irreplaceable resources	Low	No irreplaceable resources will be impacted.
	Medium	Resources that will be impacted can be replaced, with effort.
	High	There is no potential for replacing a particular vulnerable resource that will be impacted.

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Criteria	Rating Scales	Notes
Consequence a combination of extent, duration, intensity and the potential for impact on irreplaceable resources).	Low	A combination of any of the following: - Intensity, duration, extent and impact on irreplaceable resources are all rated low. - Intensity is low and up to two of the other criteria are rated medium. - Intensity is medium and all three other criteria are rated low.
	Medium	Intensity is medium and at least two of the other criteria are rated medium.
	High	Intensity and impact on irreplaceable resources are rated high, with any combination of extent and duration. Intensity is rated high, with all of the other criteria being rated medium or higher.
Probability (the likelihood of the impact occurring)	Low	It is highly unlikely or less than 50 % likely that an impact will occur.
	Medium	It is between 50 and 70 % certain that the impact will occur.
	High	It is more than 75 % certain that the impact will occur or it is definite that the impact will occur.
Significance (all impacts including potential cumulative impacts)	Low	Low consequence and low probability. Low consequence and medium probability. Low consequence and high probability.
	Medium	Medium consequence and low probability. Medium consequence and medium probability. Medium consequence and high probability. High consequence and low probability.
	High	High consequence and medium probability. High consequence and high probability.

SLR METHODOLOGY USED IN DETERMINING THE SIGNIFICANCE OF ENVIRONMENTAL IMPACTS

The method to be used for the assessment of impacts is set out in the table below. This assessment methodology enables the assessment of environmental impacts including cumulative impacts, the intensity of impacts (including the nature of impacts and the degree to which impacts may cause irreplaceable loss of resources), the extent of the impacts, the duration and reversibility of impacts, the probability of the impact occurring, and the degree to which the impacts can be mitigated.

PART A: DEFINITIONS AND CRITERIA		
Definition of SIGNIFICANCE	Significance = consequence x probability	
Definition of CONSEQUENCE	Consequence is a function of intensity, spatial extent, and duration	
Criteria for ranking of the INTENSITY of environmental impacts	VH	Severe change, disturbance, or degradation. Associated with severe consequences. May result in severe illness, injury, or death. Targets, limits, and thresholds of concern continually exceeded. Habitats or ecosystems of high importance for maintaining the persistence of species or habitats that meet critical habitat thresholds. Substantial intervention will be required. Vigorous/widespread community mobilization against project can be expected. May result in legal action if impact occurs.
	H	Prominent change, disturbance, or degradation. Associated with real and substantial consequences. May result in illness or injury. Targets, limits, and thresholds of concern regularly exceeded. Habitats or ecosystems which are important for meeting national/provincial conservation targets. Will definitely require intervention. Threats of community action. Regular complaints can be expected when the impact takes place.
	M	Moderate change, disturbance, or discomfort. Associated with real but not substantial consequences. Targets, limits, and thresholds of concern may occasionally be exceeded. Habitats or ecosystems with important functional value in maintaining biotic integrity. Occasional complaints can be expected.
	L	Minor (Slight) change, disturbance, or nuisance. Associated with minor consequences or deterioration. Targets, limits, and thresholds of concern rarely exceeded. Habitats and ecosystems which are degraded and modified. Require only minor interventions or clean-up actions. Sporadic complaints could be expected.
	VL	Negligible change, disturbance, or nuisance. Associated with very minor consequences or deterioration. Targets, limits, and thresholds of concern never exceeded. Species or habitats with negligible importance. No interventions or clean-up actions required. No complaints anticipated.
	VL+	Negligible change or improvement. Almost no benefits. Change not measurable/will remain in the current range.
	L+	Minor change or improvement. Minor benefits. Change not measurable/will remain in the current range. Few people will experience benefits.
	M+	Moderate change or improvement. Real but not substantial benefits. Will be within or marginally better than the current conditions. Small number of people will experience benefits.

	H+	Prominent change or improvement. Real and substantial benefits. Will be better than current conditions. Many people will experience benefits. General community support.
	VH+	Substantial, large-scale change or improvement. Considerable and widespread benefit. Will be much better than the current conditions. Favourable publicity and/or widespread support expected.
Criteria for ranking the DURATION of impacts	Very Short term	Very short, always less than a year or may be intermittent. Quickly reversible.
	Short term	Short-term, occurs for more than 1 but less than 5 years. Reversible over time.
	Medium term	Medium-term, 5 to 10 years.
	Long term	Long term, between 10 and 20 years. Likely to cease at the end of the operational life of the activity or because of natural processes or by human intervention.
	Very long term/permanent	Very long, permanent, +20 years. Irreversible. Beyond closure or where recovery is not possible either by natural processes or by human intervention.
Criteria for ranking the EXTENT of impacts	Site	A part of the site/property. Impact is limited to the immediate footprint of the activity and within a confined area.
	Whole site	Whole site. Impact is confined to within the project area and its nearby surroundings.
	Beyond site	Beyond the site boundary, affecting immediate neighbours.
	Local	Local area, extending far beyond site boundary.
	Regional/national	Regional/National. Impact may extend beyond district or regional boundaries with national implications.

PART B: DETERMINING CONSEQUENCE – APPLIES TO POSITIVE OR ADVERSE IMPACTS						
		EXTENT				
		A part of the site/property	Whole site	Beyond the site, affecting neighbours	Local area, extending far beyond site	Regional/National
		VL	L	M	H	VH
INTENSITY = VL						
DURATION	Very long term /permanent	Low	Low	Medium	Medium	Medium
	Long term	Very Low	Low	Low	Medium	Medium
	Medium term	Very Low	Low	Low	Low	Medium
	Short term	Very low	Very Low	Low	Low	Low
	Very short term	Very low	Very Low	Very Low	Very Low	Low
INTENSITY = L						

DURATION	Very long term /permanent	Low	Medium	Medium	High	High
	Long term	Low	Medium	Medium	Medium	High
	Medium term	Low	Low	Medium	Medium	Medium
	Short term	Very low	Low	Low	Medium	Medium
	Very short term	Very low	Very low	Low	Low	Low
INTENSITY = M						
DURATION	Very long term /permanent	Medium	Medium	High	High	Very High
	Long term	Low	Medium	Medium	High	High
	Medium term	Low	Medium	Medium	Medium	High
	Short term	Low	Low	Medium	Medium	Medium
	Very short term	Very low	Low	Low	Low	Medium
INTENSITY = H						
DURATION	Very long term /permanent	Medium	High	High	Very High	Very High
	Long term	Medium	Medium	High	High	Very High
	Medium term	Low	Medium	Medium	High	High
	Short term	Low	Medium	Medium	Medium	High
	Very short term	Very low	Low	Low	Medium	Medium
INTENSITY = VH						
DURATION	Very long term /permanent	Medium	High	Very High	Very High	Very High
	Long term	Medium	High	High	Very High	Very High
	Medium term	Medium	Medium	High	High	Very High
	Short term	Low	Medium	Medium	High	High
	Very short term	Low	Low	Medium	Medium	Medium

PART C: DETERMINING SIGNIFICANCE - APPLIES TO POSITIVE OR ADVERSE IMPACTS							
PROBABILITY (of exposure to impacts)	Definite/ Continuous	VH	Very Low	Low	Medium	High	Very High
	Probable	H	Very Low	Low	Medium	High	Very High
	Possible/ frequent	M	Very Low	Very Low	Low	Medium	High
	Conceivable	L	Insignificant	Very Low	Low	Medium	High
	Unlikely/ improbable	VL	Insignificant	Insignificant	Very Low	Low	Medium
			VL	L	M	H	VH
CONSEQUENCE							

PART D: INTERPRETATION OF SIGNIFICANCE		
Significance		Decision guideline
Very High	Very High +	Represents a key factor in decision-making. Adverse impact would be considered a potential fatal flaw unless mitigated to lower significance.
High	High +	These beneficial or adverse impacts are considered to be very important considerations and must have an influence on the decision. In the case of adverse impacts, substantial mitigation will be required.
Medium	Medium +	These beneficial or adverse impacts may be important but are not likely to be key decision-making factors. In the case of adverse impacts, mitigation will be required.
Low	Low +	These beneficial or adverse impacts are unlikely to have a real influence on the decision. In the case of adverse impacts, limited mitigation is likely to be required.
Very Low	Very Low +	These beneficial or adverse impacts will not have an influence on the decision. In the case of adverse impacts, mitigation is not required.
Insignificant		Inconsequential, not requiring any consideration.

Criteria for DEGREE TO WHICH AN IMPACT CAN BE REVERSED	IRREVERSIBLE	Where the impact cannot be reversed and is permanent.
	PARTIALLY REVERSIBLE	Where the impact can be partially reversed and is temporary.
	FULLY REVERSIBLE	Where the impact can be completely reversed.
Criteria for DEGREE OF IRREPLACEABLE RESOURCE LOSS	NONE	Will not cause irreplaceable loss.
	LOW	Where the activity results in a marginal effect on an irreplaceable resource.
	MEDIUM	Where an impact results in a moderate loss, fragmentation or damage to an irreplaceable receptor or resource.
	HIGH	Where the activity results in an extensive or high proportion of loss, fragmentation or damage to an irreplaceable receptor or resource.
Criteria for DEGREE TO WHICH IMPACT CAN BE AVOIDED	NONE	Impact cannot be avoided, and consideration should be given to compensation and offsets.
	LOW	Impact cannot be avoided but can be mitigated to acceptable levels through rehabilitation and restoration.
	MEDIUM	Impact cannot be avoided, but the significance can be reduced through mitigation measures.
	HIGH	Impact can be avoided through the implementation of preventative mitigation measures.

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Criteria for the DEGREE TO WHICH IMPACT CAN BE MITIGATED	NONE	No mitigation is possible or mitigation even if applied would not change the impact.
	LOW	Some mitigation is possible but will have marginal effect in reducing the impact significance rating.
	MEDIUM	Mitigation is feasible and will/may reduce the impact significance rating.
	HIGH	Mitigation can be easily applied or is considered standard operating practice for the activity and will reduce the impact significance rating.

NEMA APPENDIX 6 Specialist report prepared in terms of the Environmental Impact Regulations of 2014 (as amended in 2017) must contain:	Relevant section in report
Details of the specialist who prepared the report	Pg 5
The expertise of that person to compile a specialist report including a curriculum vitae	Pg 5 - 7
A declaration that the person is independent in a form as may be specified by the competent authority	Pg 8
An indication of the scope of, and the purpose for which, the report was prepared	Pg 10
An indication of the quality and age of base data used for the specialist report;	Current Heritage Data Bases and Consultants IP
A description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change	Pg 20
The duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment	January to June 2022 Seasonality is of no relevance
A description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	Pg 37
Details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternative;	Pg 20
An identification of any areas to be avoided, including buffers	Not yet determined
A map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	Pg 14
A description of any assumptions made and any uncertainties or gaps in knowledge;	Pg 48
A description of the findings and potential implications of such findings on the impact of the proposed activity or activities	Pg 20 -22

Any mitigation measures for inclusion in the EMPr	Should the Mining Rights Application be approved this should be endorsed with the provisor that the requisite surveys will be finalised during the ESIA, and in the formulation of the Environmental Management Plan Report (EMPr), as prescribed by NEMA (107/1998), as amended.
Any conditions for inclusion in the environmental authorisation	Full survey of the MLA area for archaeological sites and a Graves Audit
Any monitoring requirements for inclusion in the EMPr or environmental authorisation	Monitoring by a Heritage Practitioner during inception and construction and thereafter by the appointed ECO during life-of-mine.
A reasoned opinion as to whether the proposed activity or portions thereof should be authorised	Yes, subject to full survey of heritage resources prior to start up and a full graves audit under FPIC.
Regarding the acceptability of the proposed activity or activities; and	As above
If the opinion is that the proposed activity or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan	As above
A specialist report prepared in terms of the Environmental Impact Regulations of 2014 (as amended in 2017) must contain:	Relevant section in report
Details of the specialist who prepared the report	Pg 5

The expertise of that person to compile a specialist report including a curriculum vitae	Pg 5 - 7
A declaration that the person is independent in a form as may be specified by the competent authority	Pg 8
An indication of the scope of, and the purpose for which, the report was prepared	Pg 10
An indication of the quality and age of base data used for the specialist report;	Current Heritage Data Bases and Consultants IP
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The duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment	January to June 2022 Seasonality is of no relevance
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	Environmental Management Plan Report (EMPr), as prescribed by NEMA (107/1998), as amended.
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Regarding the acceptability of the proposed activity or activities; and	As above
If the opinion is that the proposed activity or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan	As above

APPENDIX E Assumptions and limitations of this HIA

- The description of the proposed project, provided by the client, is assumed to be accurate.
- The public consultation process to be undertaken as part of the Environmental and Social Impact Assessment is sufficient and adequate and does not require repetition as part of the heritage impact assessment.
- Heritage resources might be present below the surface, and we remind the client that the NHRA requires that a developer cease all work immediately and observe the protocol in Section 10 any heritage resources, as defined in the Act, be discovered during the course of development activities.
- No subsurface investigation (including excavations or sampling) were undertaken, since a permit from Amafa is required to disturb a heritage resource.
- A key concept in the management of heritage resources is that of non-renewability: damage to or destruction of most resources, including that caused by bona fide research endeavours, cannot be reversed or undone. Accordingly, management recommendations for heritage resources in the context of development are as conservative as possible.
- Human sciences are necessarily both subjective and objective in nature. eThembeni staff members strive to manage heritage resources to the highest standards in accordance with national and international best practice but recognise that their opinions might differ from those of other heritage practitioners.
- Staff members involved in this project have no vested interest in it; are qualified to undertake the tasks as described in the appointment terms of reference; and comply at all times with the Codes of Ethics and Conduct of the Association of Southern African Professional Archaeologists.
- eThembeni staff members take no personal or professional responsibility for the misuse of the information contained in this report, although they will take all reasonable precautions against such misuse.