

**PHASE I HERITAGE IMPACT ASSESSMENT (INCLUDING
PALAEOLOGICAL DESKTOP ASSESSMENT) REQUESTED IN TERMS OF
SECTION 38 OF THE NATIONAL HERITAGE RESOURCES ACT NO 25/1999
FOR THE PROPOSED MINING PERMIT APPLICATION ON THE REMAINDER OF
PORTION 3 (BESTPAN), PORTION 14 (TIPPERARY) AND PORTION 15 (ANNEX
TIPPERARY) OF THE FARM ZOUTPANSFONTEIN NO. 34
IN THE DISTRICT OF KIMBERLEY**

Prepared by

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Thursday, 05 September 2019



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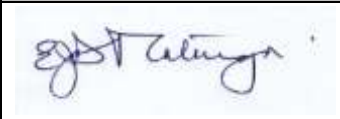
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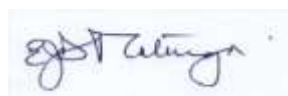
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DECLARATION OF INDEPENDENCE

AHSA Pty Ltd is an independent consultancy: I hereby declare that I have no interest, be it business, financial, personal or other vested interest in the undertaking of the proposed activity, other than fair remuneration for work performed, in terms the National Heritage Resources Act (No 25 of 1999).

DISCLAIMER

All possible care was taken to identify and document heritage resources during the survey in accordance with best practices in archaeology and heritage management. However it is always possible that some hidden or subterranean sites are overlooked during a survey. AHSA will not be held liable for such oversights and additional costs thereof.



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ABBREVIATIONS

EIA	Environmental Impact Assessment
HIA	Heritage Impact Assessment
LSA	Late Stone Age
LIA	Later Iron Age
PHRA	Provincial Heritage Resources Authority
MSA	Middle Stone Age
NHRA	National Heritage Resources Act
SAHRA	South African Heritage Resources Agency

DEFINITIONS

Archaeological material: remains older than 100 years, resulting from human activities left as evidence of their presence, which are in the form of structure, artefacts, food remains and other traces such as rock paintings or engravings, burials, fireplaces etc.

Artefact: Any movable object that has been used modified or manufactured by humans.

Catalogue: An inventory or register of artefacts and / or sites.

Conservation: All the processes of looking after a site or place including maintenance, preservation, restoration, reconstruction and adaptation.

Cultural Heritage Resources: refers to physical cultural properties such as archaeological sites, palaeontological sites, historic and prehistoric places, buildings, structures and material remains, cultural sites such as places of rituals, burial sites or graves and their associated materials, geological or natural features of cultural importance or scientific significance. These include intangible resources such as religious practices, ritual ceremonies, oral histories, memories, indigenous knowledge.

Cultural landscape: a stretch of land that reflects “the combined works of nature and man” and demonstrates “the evolution of human society and settlement over time, under the influence of the physical constraints and / or opportunities presented by their natural environment and of successive social, economic and cultural forces, both internal and external”.¹

Cultural Resources Management (CRM): the conservation of cultural heritage resources, management and sustainable utilization for present and future generations.

Cultural Significance: is the aesthetic, historical, scientific and social value for past, present and future generations.

Early Iron Age: refers to cultural remains dating to the first millennium AD associated with the introduction of metallurgy and agriculture.

Early Stone Age: a long and broad period of stone tool cultures with chronology ranging from around 3 million years ago up to the transition to the Middle Stone Age around 250 000 years ago.

Excavation: a method in which archaeological materials are extracted from the ground, which involves systematic recovery of archaeological remains and their context by removing soil and any other material covering them.

Historic material: means remains resulting from human activities, which are younger than 100 years and no longer in use; that include artefacts, human remains and artificial features and structures.

¹ This definition is taken from current terminology as listed on the World Heritage Convention website, URL: <http://whc.unesco.org/en/culturallandscape/#1> accessed 17 March 2016.

Historical: means belonging to the past, but often specifically the more recent past, and often used to refer to the period beginning with the appearance of written texts.

Intangible heritage: something of cultural value that is not primarily expressed in material form e.g. rituals, knowledge systems, oral traditions or memories, transmitted between people and within communities.

In situ material: means material culture and surrounding deposits in their original location and context, for instance archaeological remains that have not been disturbed.

Later Iron Age: The period from the beginning of the 2nd millennium AD marked by the emergence of complex state society and long-distance trade contacts.

Late Stone Age: The period from \pm 30 000 years ago up until the introduction of metals and farming technology around 2000 years ago, but overlapping with the Iron Age in many areas up until the historical period.

Middle Stone Age: a period of stone tool cultures with complex chronologies marked by a shift towards lighter, more mobile toolkit, following the Early Stone Age and preceding the Late Stone Age; the transition from the Early Stone Age was a long process rather than a specific event, and the Middle Stone Age is considered to have begun around 250 000 years ago, seeing the emergence of anatomically modern humans from about 150 000 years ago, and lasting until around 30 000 years ago.

Monuments: architectural works, buildings, sites, sculpture, elements, structures, inscriptions or cave dwellings of an archaeological nature, which are outstanding from the point of view of history, art and science.

Place: means site, area, building or other work, group of buildings or other works, together with pertinent contents, surroundings and historical and archaeological deposits.

Preservation: means the protecting and maintaining of the fabric of a place in its existing state and retarding deterioration or change, and may include stabilization where necessary.

Rock Art: various patterned practices of placing markings on rock surfaces, ranging in Southern Africa from engravings to finger paintings to brush-painted imagery.

Sherds: ceramic fragments.

Significance grading: Grading of sites or artefacts according to their historical, cultural or scientific value.

Site: a spatial cluster of artefacts, structures, organic and environmental remains, as residues of past human activity.

Site Recording Template: a standard document format for site recording.

EXECUTIVE SUMMARY

1. This document is a Heritage Impact Assessment report prepared in terms of Section 38(8) of the National Heritage Resources Act (25 of 1999) in respect of the proposed mining application on the Remainder of Portion 3 (Bestpan), Portion 14 (Tipperary) and Portion 15 (Annex Tipperary) of the farm Zoutpansfontein No. 34 in the District of Kimberley. The report complies with Section 38(8) of the National Heritage Resources Act (No 25 of 1999) and mitigation measures recommended herein will be considered as part of Environmental Impact Assessment.

The heritage sensitivity of the property is summarised as follows:

2. *The Stone Age*

There are scatters of lithics comprising scrapers, blades cores and flakes recorded in seven (7) places close to the Vaal River bank dating from the Middle Stone Age to the Late Stone Age. These suggest that the river was the locus of activity from ancient times although no concentrations of artefacts were seen.

3. *The Iron Age*

Potsherds found in three places also close to the river banks may be associated with Later Iron Age settlement in the area (ZTF07, ZTF08, ZTF10). None of these findings are of significance to warrant further action.

4. *Historic buildings*

The oldest building at the farmstead (ZTF01) is in a very poor state, although it is noted that efforts have been made to keep it standing by the introduction of timber supports. It is significant as an exemplar of the principal dwellings of early commercial farmers. The other building with a Dutch gable roof probably dating to the early 20th century has inspired the construction of four near replicas which now form a cluster and together they contribute to retaining the spirit and sense of the place (ZTF02). The reservoir and water feature with masonry walls are other structures worth retaining. There are no compelling circumstances for alteration or destruction of these buildings and structures.

5. *Cultural landscapes*

The circular irrigated fields form a cultural landscape of commercial farming which is a typical feature of agriculture along the Vaal and Orange Rivers (ZTF16). According to the landowner, the mining project will not encroach on the fields.

6. Table 1: Inventory of heritage sites

SITE NO	LATITUDE	LONGITUDE	PERIOD	DESCRIPTION	RANKING	MITIGATION
ZTF01	28°27'47.20"S	24°42'41.26"E	19th C	The oldest building at the farmstead possibly dating to the 19th century. Plastered fired earthen brick frame with a cross hipped corrugated iron roof. Skirted by a veranda facing south. Building in a poor state with broken walls, rusted roof and decayed timber.	Medium A	Building in a poor state, but will be protected
ZTF02	28°27'51.71"S	24°42'44.07"E	Modern	At the farmstead. Four buildings in a row are the principal dwellings at the farmstead. Dutch gable roof (gabled) which is a combination of a small gable at the top and hipped roof below. Skirted by verandas to the south and east (2 buildings), and to the south (2). The 2nd building from the east is the oldest (the prototype) which has inspired 3 recent near replicas 2010, 2018, 2019.	Medium A	Buildings will be protected.
ZTF03	28°27'51.50"S	24°42'40.10"E	Modern	An isolated building one of the principal dwellings at the farmstead. Dutch gable roof (gabled) which is a combination of gable at the top and hipped roof below. Skirted by verandas to the south and east.	Medium B	Building will be protected.
ZTF04	28°27'51.28"S	24°42'40.55"E	Modern	Situated at the farmstead. A rectangular structure possibly a water feature or pond 25 m x 15 m x 1.00 m deep. An island located at the centre with a revetment of mortar-bound dressed stone walling. Mature trees standing on the island. Circular water tank or reservoir, excavated into the ground and standing 1 m above the ground. Cladding with coursed (dressed) stones.	Medium B	Structures will be protected
ZTF05	28°28'34.20"S	24°41'40.10"E	MSA/LSA	Near the Vaal River bank. Bushes including acacia. 7 lithics: 2 cores, 2 blades, 2 scrapers and a flake.	Medium B	No further action required.

ZTF06	28°28'32.10"S	24°41'37.70"E	Modern	Abandoned building of earthen bricks and plaster, without roof.	Low	No further action required.
ZTF07	28°28'49.50"S	24°41'7.20"E	MSA/LSA, LIA	Near the banks of the Vaal River. 4 lithics: handaxe, scraper, 2 bladelets. LIA material comprising 4 potsheds and a polished stone.		No further action required.
ZTF08	28°28'49.00"S	24°41'9.10"E		Near the Vaal River bank. Sparse bushes. 2 potsherds.	Medium B	No further action required.
ZTF09	28°28'30.67"S	24°42'11.77"E	Modern	Near the Vaal River bank. Gabled building now used as staff quarters. Standing before 1994.	Medium B	No further action required.
ZTF10	28°28'37.20"S	24°42'6.30"E	MSA/LSA, LIA	Near the Vaal River bank. A core and small potsherd.	Medium B	
ZTF11	28°28'12.99"S	24°42'39.35"E	MSA/LSA	This shed has been refurbished with a new corrugated iron roof. It was the processing and dispatch centre of grapes produced at what was then the largest wine-fields in South Africa and in the southern hemisphere. Operations ceased in the 1990s.	Medium B	Building will not be affected.
ZTF12	28°27'40.00"S	24°42'45.00"E	MSA/LSA	North of the homestead, near the Vaal River bank. 7 lithics: 2 cores, 3 scrapers, 2 blades.	Medium B	No further action required.
ZTF13	28°27'28.58"S	24°42'56.22"E	MSA/LSA, Early Mining.	Overlooking the Vaal River. A ramp built from mining discard, concrete revetment on the east side. It was mounting processing equipment (separators). 1 lithic, a scraper found on the surface.	Medium B	No further action required.
ZTF14	28°27'42.90"S	24°44'8.00"E	MSA/LSA	Eastern area of the property, southern foot of the ridge, conglomerate stones and bedrock. 3 lithics – scrapers including 2 quartz.	Medium B	No further action required.
ZTF15	28°28'3.10"S	24°43'31.40"E	MSA/LSA	Eastern foot of a dolerite ridge, eastern part of the property. Haakbos. 3 lithics – scrapers.	Medium B	No further action required.
ZTF16	28°28'4.26"S	24°42'26.23"E	MSA/LSA	Green fields under pivot irrigation.	Medium B	Mining will not encroach into the fields

7. Ranking of Findings

	RANKING	SIGNIFICANCE	No of sites
1	High	National and Provincial heritage sites (Section 7 of NHRA). All burials including those protected under Section 36 of NHRA. They must be protected.	0
2	Medium A	Substantial archaeological deposits, buildings protected under Section 34 of NHRA. Footprint of early modern mining. These may be protected at the recommendations of a heritage expert.	2
3	Medium B	Sites exhibiting archaeological characteristics of the area, but do not warrant further action after they have been documented.	13
4	Low	Heritage sites which have been recorded, but considered of minor value relative to the proposed development.	1
		TOTAL	16

8. Recommendations and conclusions

The mining application can be considered in light of the low cultural significance of material found apart from the historic buildings which will not be affected. However it is a standard precaution that in the event of other heritage resources being discovered in future phases of the project, the Provincial Heritage Resources Authority or SAHRA must be alerted immediately and an archaeologist or heritage expert called to attend.

1. INTRODUCTION

This document is a Heritage Impact Assessment (HIA) report which has been prepared at the behest of B E Potgieter (Pty) Ltd to support a mining permit application on the Remainder of Portion 3 (Bestpan), Portion 14 (Tipperary) and Portion 15 (Annex Tipperary) of the farm Zoutpansfontein No. 34 in the District of Kimberley. A site visit and ground survey was conducted on 21-22 August 2019 for the identification and documentation of any archaeological and historical material that might occur on the property. The report complies with Section 38(8) of the National Heritage Resources Act (No 25 of 1999) and mitigation measures recommended in this report will be considered as part of Environmental Impact Assessment.

1.1. Nature of development and expected impacts

The target mineral are diamonds in alluvial gravel deposits in an area stretching east from the eastern bank of the Vaal River. Prospecting and mining carry the risk of damaging or destroying heritage resources in the footprint of such operations, as these are physical works including opencast stripping processes, test excavations, opening of access roads, establishment of plant and other support infrastructure. The aim of the heritage impact assessment is to screen the area for the possible occurrence of heritage resources and to prescribe appropriate mitigation measures.

2. LOCATION AND PHYSICAL SETTING

The farm Zoutpansfontein is set against the east bank of the Vaal River (28°28'19.89"S, 24°42'31.95"E approximate centre of property). Modern geographical landmarks of important reference in relation to the location of the farm are Windsorton and Riverton Villages situated on the Vaal River banks 15 km and 5 km upstream (north) and downstream (south) respectively, and the city of Kimberley a distance of 30 km to the south. The Vaal River trends south in this area in a sharply meandered course. Remarkably there is a pronounced loop in which the river course appears to be going backwards (north), and in the midsection of the bend the channel forks and joins again creating the much treasured Bird Island. The Vaal River is well known for a long course west across the semi-arid highveld plains to the Atlantic Ocean from a source on the western foot of the Drakensberg Mountains, only 240km from the Indian

Ocean. A short distance downstream from the farm Zoutpansfontein the Vaal dramatically changes course trending northwest and then southwest to its confluence with the Orange River a distance of 120 km. The river flows in a plain which should give some clues about its old age. The alluvial gravels which flank the present channel is evidence of a long process of erosion, deposition and shifting channels. On the edges of the river the clay rich silt is an alluvial deposition. Further from the river the superficial geology appears to be varied. There are ridges representing dolerite mantles. Soft red soil cover indicates windblown Kalahari sands. Further away east from the river superficial clay deposits overlie a thick layer of calcrete.

The river channel is flanked by mixed indigenous vegetation of the Kimberley Thornveld biome, thick in some areas with undergrowth and impenetrable. The western half portion of the property set against the river is farmland under pivot irrigation, while the eastern area still retains the natural karoo biome of mixed tree species with acacias predominating. There are areas covered by *haakbos* (or *swarthaak*) (*Senegalia mellifera*), isolated patches of *vaalbos* (*Tarchonanthus camphoratus*) and scatters of camel thorn (*Vachllia erioloba*) (Figures 1-6)



Figure 1: Google-Earth map shows the location of the farm Zoutpansfontein 34 on the banks of the Vaal River.



Figure 2: A close-up Google-Earth view of the farm Zoutpansfontein 36 shows circular green fields under pivot irrigation.



Figure 3: The Vaal River channel west of the farmstead.



Figure4: Profile of the eastern bank of the Vaal River shows clay rich silt.



Figure 5: Dolerite ridge and scattered swarthaak (or haakbos) (*Senegalia mellifera*)



Figure 6: Overlay of red Kalahari sands and scatters of Vaalbos (*Tarchonanthus camphoratus*).



Figure 7: The western area set against the Vaal River is under pivot irrigation.



Figure 8: Mature Camel Thorn (*Vachllia erioloba*) on the bank of the Vaal River.



Figure 9: Thick ribbon of trees and undergrowth on the Vaal River banks, and scattered acacia growing on red sandy soils (Kalahari sands) in the eastern area of the farm.

3. LEGAL FRAMEWORK

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

Thresholds of the impact of development which trigger a Heritage Impact Assessment are stated in Section 38 of the National Heritage Resources Act (No 25 1999):

Section 38. (1) *Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as—*

- (a) the construction of a road, wall, power line, 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 50m in length;*
- (c) 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;*
- (d) the re-zoning of a site exceeding 10 000 m² in extent; or*
- (e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority.*

Other Sections of the **National Heritage Resources Act** (No. 25 of 1999) NHRA of relevant application are:

Section 34 of the NHRA for provisional protection of all structures and features older than 60 years.

Section 35 (4) of the **NHRA** prohibits the destruction of archaeological, palaeontological and meteorite sites. A palaeontological desktop assessment is appended to this HIA report as one of the requirements to comply with this clause.

Section 36 of the **NHRA** gives priority for the protection of Graves and Burial Grounds graves and burial grounds more than 60 years old, and graves and burial ground of victims of conflict.

3.2. International principles and policies on graves

Heritage management advocates respect of the sanctity of all graves regardless of their age wherever possible preservation *in situ*. The the **Vermillion Accord on Human Remains** adopted by the **World Archaeological Congress (WAC** at the WAC Inter-Congress in South Dakota (USA) is a code of ethics which urges “*respect for the mortal remains of the dead shall be accorded to all, irrespective of origin, race, religion, nationality, custom and tradition.*”

3.3. The National Environmental Management Act (No 107/1998)

This Act states that a survey and evaluation of cultural resources must be done in areas where development projects that will affect the environment will be undertaken. The impact of the development on these resources should be determined and proposals for the mitigation thereof are made. Environmental management is a much broader undertaking to cater for cultural and social needs of people. Any disturbance of landscapes and sites that constitute the nation’s cultural heritage should be avoided as far as possible and where this is not possible the disturbance should be minimized and remedied.

3.4. The Burra Charter

The **Burra Charter, the Australia Charter for the Conservation of Places of Cultural Significance** contains generic principles and standards for the protection of heritage resources which have been adopted in heritage practice in South Africa.

4. APPROACH AND METHODOLOGY

5.1. Literature Survey

This report informed by a literature survey encompassing geography, the cultural sequence and known heritage potential of the area. Significantly we note that there was a heritage impact assessment undertaken before on the whole property: A number of reports generated through heritage impact assessment studies in the area were available as reference material.

Fourie, W. 2011. *Concentrated Solar Power EIA - Droogfontein heritage impact assessment.* Low density scatters of Middle Stone Age material were exposed around an existing quarry and dry pans were reported (p3).

Engelbrecht, J & H. Fivaz. 2019. *Phase 1 HIA report on housing development, Lethabo Park, Kimberley, Northern Cape.* They recorded sparse distribution of lithics – flakes, chips and scrapers (p24).

Morris 2018: *Proposed construction of a 132kV powerline associated with the Photovoltaic Solar Plants on the Farm Droogfontein, Northern Cape Province: Walk-Down Heritage Impact Survey of the Final Alignment and Tower Positions.* Low density occurrence of stone tools were reported (p15).

This author has carried out a number of heritage impact surveys in the broader area which confirm the wide distribution of MSA/LSA artefacts in low concentrations.

Matenga, E. 2017: *Phase I Heritage Impact Assessment Requested in terms of Section 38 of the National Heritage Resources Act No 25/1999 for a Mining right on Vaalbos Island on the Vaal River near Longlands, Barkly West District, Northern Cape Province:*

Matenga, E. 2018. *Phase I Heritage Impact Assessment (including Palaeontological Assessment) requested in terms of Section 38 of the National Heritage Resources Act No 25/1999 for Mining Permit and Related Infrastructural Activities on a Piece of the*

Farm Longlands 350 Situated in the Magisterial District of Barkly West, Northern Cape Province.

Matenga, E. 2018. *Phase I Heritage Impact Assessment (including palaeontological assessment) requested in terms of Section 38 of the National Heritage Resources Act No 25/1999 for the proposed mine prospecting on the Remainder of the Farm Schimtdrift 248, Pixley Ka Seme District Municipality, Northern Cape Province* (Among the findings were potsherds possibly dating to the Later Iron Age).

5.2. Ground Survey

A ground survey was conducted by an archaeologist and field assistant on 21 and 22 August 2019. Data was collected by means of walking surveys. To a large extent the surveys were random, but locales seen as promising to yield material were also targeted. It was deemed not necessary to walk through the irrigated fields aware of the grubbing, disturbance of topsoil and removal of stones when the fields were prepared. This notwithstanding, the circular green fields are recognized as a modern cultural landscape.

5.3. Significance ranking of findings

Heritage sites have been ranked to show potential risks relative to their cultural significance and the expected impact of the proposed development.

Ranking of Findings

	RANKING	SIGNIFICANCE	No of sites
1	High	National and Provincial heritage sites (Section 7 of NHRA). All burials including those protected under Section 36 of NHRA. They must be protected.	
2	Medium A	Substantial archaeological deposits, buildings protected under Section 34 of NHRA. Footprint of early modern mining. These may be protected at the recommendations of a heritage expert.	
3	Medium B	Sites exhibiting archaeological characteristics of the area, but do not warrant further action after they have been documented.	
4	Low	Heritage sites which have been recorded, but considered of minor value relative to the proposed development.	
		TOTAL	

6. ARCHAEOLOGICAL AND HISTORICAL CONTEXT

6.1. Cultural Sequence Summary

PERIOD	EPOCH	ASSOCIATED CULTURAL GROUPS	TYPICAL MATERIAL EXPRESSIONS
Early Stone Age 2.5m – 250 000 YCE	Pleistocene	Early Hominids: <i>Australopithecines</i> <i>Homo habilis</i> <i>Homo erectus</i>	Typically large stone tools such as hand axes, choppers and cleavers.
Middle Stone Age 250 000 – 25 000 YCE	Pleistocene	First <i>Homo sapiens</i> species	Typically smaller stone tools such as scrapers, blades and points.
Late Stone Age 20 000 BC – present	Pleistocene / Holocene	<i>Homo sapiens</i> including San people	Typically small to minute stone tools such as arrow heads, points and bladelets.
Early Iron Age / Early Farmer Period c300 – 900 AD (or earlier)	Holocene	Iron Age Farmers	Typically distinct ceramics, bead ware, iron objects, grinding stones.
Later Iron Age 900ADff	Holocene	Iron Age Farmers, emergence of complex state systems	Typically distinct ceramics, evidence of long distance trade and contacts
(ii) Mapungubwe (K2)	1350AD		Metals including gold, long distance exchanges
(ii) Historical period	Nguni / Sotho/Venda people	Iron Age Farmers	Mfecance / Difaqane
(iii) Colonial period	19 th Century	European settlers / farmers / missionaries/ industrialisation	Buildings, Missions, Mines, metals, glass, ceramics

6.2. Appearance of Hominids

The cultural sequence begins with the appearance of hominids, proto-humans which appeared in South Africa more than 3 million years ago. The hominid site nearest to the study area is Taung near Vryburg, 100km to the north. This is a UNESCO World Heritage Site proclaimed together with the Sterkfontein Caves (Krugersdorop) and Makapans Valley (Mokopane) in a serial nomination. No hominid sites have been reported along the Vaal River.

6.3. The Early Stone Age (2 million to 250 000 years BP)

The Stone Age dates back more than 2 million years representing a more explicit beginning of the cultural sequence divided into three epochs, the Early, Middle and Late Stone Ages. These early people made stone and bone implements. Material

evidence is found in caves, rock-shelters and on river sides and edges of streams, and very rarely seen in open country. Such tools bore a consistent shape such as the pear-shaped handaxe, cleavers and core tools.² These tool industries have been called Oldowan and Acheulian and were probably used to butcher large animals such as elephants, rhinoceros and hippopotamus. Acheulian artefacts are usually found near sites where they were manufactured and thus in close proximity to the raw material or at kill sites. Early hunters are classified as hominids meaning that they had not evolved to the present human form. Progressively a good profile of the Stone Age in the Northern Cape Province has been constructed from many heritage impact assessments that have been conducted in recent years. Early (ESA) and Middle Stone Age (MSA) lithics occur over most of area with a more recent find of Later Stone Age (LSA) occupations.³ The Wonderwerk Cave has become a benchmark for the characterisation of the Stone Age. Excavations reveal a long sequence of occupation spanning the Early (ESA), Middle (MSA) and Later Stone Ages.⁴

6.4. Middle Stone Age (MSA) [250 000 yrs – 30 000 yrs BP]

The Middle Stone Age (MSA), appeared 250 000 years ago and is marked by the introduction of a new tool kit which included prepared cores, parallel-sided blades and triangular points hafted to make spears. By then humans had become skilful hunters, especially of large grazers such as wildebeest, hartebeest and eland. By humans had evolved significantly to become anatomically modern. Caves were used for shelter suggesting permanent or semi-permanent settlement. There is archaeological evidence from some of the caves indicating the making of fire.⁵

A number of field surveys have been carried confirming significant hunter gatherer activity in the broader area from the MSA onwards.

² Deacon, H.J. & Deacon, J. 1999. Human Beginnings in South Africa: Uncovering the Secrets of the Stone Age. Cape Town: David Philip.

³ Schalkwyk, J. 2015. Heritage Scoping Assessment for the Proposed Perseus-Kronos 765KV Transmission Power Line and Substations Upgrade, Northern Cape and Free State Provinces, p6.

⁴ Humphreys, A.J.B. & Thackeray, A.I. 1983. Ghaap and Gariep. Later Stone Age Studies in the Northern Cape. Cape Town: South African Archaeological Society Monograph Series 2.

⁵ Deacon, J & H. Deacon. 1999. Human Beginnings in South Africa. Cape Town: David Philip.

6.5. Later Stone Age (LSA)[40 000 yrs to ca2000 yrs BP]

By the beginning of the LSA, humans had evolved to *Homo sapiens* which refer to the modern physical form and thinking capabilities. Several behavioural traits are noticed, such as rock art and purposeful burials with ornaments, became a regular practice. LSA technology is characterised by microlithic scrapers and segments made from very fine-grained rock. Spear hunting continued, but LSA people also hunted small game with bows and poisoned arrows. Practitioners of rock art were ancestors of the San and sites abound in the whole of Southern Africa. Wildebeest Kuil Rock Art Centre is a rock engraving site now with an interpretation centre on land owned by the !Xun and Khwe San situated c. 22km to the southwest from the study area along the R31 road from Kimberley to Barkly West. The site was first known to the public in modern times by the renowned 19th century researcher, George William Stow.⁶ There are more rock engravings on the farm Nooitgedacht located 18km west of the study area which contain 3 sections of glaciated pavement with over 250 San and Khoi-khoi rock engravings (Fourie 2011:23)

6.6. Early Iron Age

The Iron Age was a gradual spread or expansion of settlement of different groups of speakers of Bantu languages over a period that could have spanned more than 2 millennia. These communities indigenous to the continent brought with them domestic animals, crops, pottery and metal technology. However there are few if any sites attributed to the EIA in the western parts of the country.⁷ Most Iron Age settlements are concentrated in the eastern part of the country. The woodland zone was preferred for settlement, but there is strong possibility that transhumant pastoralism was practiced and seasonal hunting camps were established in the inhospitable western regions of the country.

There is however increasing evidence that sheep and probably cattle as well might have moved into the area much earlier than the Iron Age.⁸

⁶ Wildebeest Kuil Rock Art Centre, at: <http://www.kimberley.co.za/city/wildebeest-kuil-rock-art-centre/> (Consulted 3 May 2017).

⁷ Phillipson, D. W. 2005. *African Archaeology*. Cambridge: University of Cambridge Press.

⁸ 7 Evers, T. M. 1988. *Recognition of Groups in the Iron Age of Southern Africa*. Unpublished PhD Thesis, University of Witwatersrand. Huffman 2007. *A Handbook on the Iron Age*. Scottsville: UKZN Press

6.7. The Later Iron Age

The LIA is marked by the presence of extensive stonewalled settlements such as the Tlhaping capital at Dithakong near Kuruman.⁹

6.8. Historical context

The study area is historically home to the Tlhaping segment of the Tswana, who descended from the Iron Age people and probably with roots in the Stone Age. The early 19th century was a political turning point with an increasingly uncertain security situation and internal displacements. The first of these episodes was the Difaqane characterised by inter-tribal raids. During the late 18th and early 19th centuries Griqua herders (people of Coloured stock from the southwest) settled near the confluence of the Vaal and Orange Rivers establishing a town called Klaarwater and subsequently renamed Griquatown. Meanwhile white hunters, traders and missionaries also entered the area. A little later the Afrikaners arrived bringing their stock as part of a mass exodus from the Cape called the Great Trek. The discovery of diamonds at Kimberley sparked the “rush”. The area which became known as Griqualand West was subsequently incorporated into the Cape Colony in the 1880s.¹⁰

6.9. The Anglo Boer War (South African War)(1899-1902)

Kimberley and its surrounds witnessed much action during the Anglo-Boer War. Quite frightening for the 50 000 residents was the Boer commandos siege of the town from 14 October 1899 until 15 February 1900 when it was relieved by General French (four months lockdown). To effect the siege the Boers established many redoubts and encampments around the town with a command centre located to the north of Kimberley (Fourie 2011: 24-25). A heritage impact study on the farm Droogfontein revealed these positions to be south of Droogfontein, thus several kilometres to south of Zoutpansfontein (Fourie 2011).

⁹ De Jong 2010: De Jong, R.C. 2010. Heritage impact assessment report: proposed manganese and iron ore mining right application in respect of the remainder of the farm Paling 434, Hay Registration Division, Northern Cape. Unpublished report prepared for Kai Batla Minerals Industry Consultants. Pretoria: Cultmatrix, p 36.

¹⁰ De Jong, R.C. 2010. Heritage impact assessment report: proposed manganese and iron ore mining right application in respect of the remainder of the farm Paling 434, Hay Registration Division, Northern Cape. Unpublished report prepared for Kai Batla Minerals Industry Consultants. Pretoria: Cultmatrix.

6.10. Vaal River alluvial diamond diggings

The mining of alluvial diamonds in the Vaal River Valley started in 1869 carried out by a party of prospectors from Natal organised by the British Army. As they continued the search for the gemstones along the valley they struck good finds at Klipdrift (Barkly West). These finds sparked South Africa's first diamond rush. Following the news men began to flock from Britain and elsewhere to the new diggings. By April 1871 c. 5000 men had swarmed the Vaal, Modder, and Orange Rivers. The alluvial stones from the region proved to be of high quality. The miners staked claims while the local Griqua chiefs and the Boer Republics of the Transvaal and Orange Free State also joined in the fray. Ownership rights were initially given to local chiefs and Boer Trekkers. But the diggers proclaimed the Klip Drift Republic on 30th July 1870 with Stafford Parker as its elected president. In 1872, the British annexed the diamond fields and proclaimed Griqualand West as a crown state. It was subsequently incorporated into the Cape Colony in 1880. The majority of the prospectors abandoned the various Vaal River claims in the wake of richer finds at Kimberley in 1871. Mining of the river gravels has been going on sparking sporadic rushes over the last nearly one and half centuries.¹¹

The above forms the archaeological and historical context for the identification of heritage resources in the study area.

7. FINDINGS OF THE SURVEY

The heritage sensitivity of the property is summarised as follows:

7.1. The Stone Age

There are scatters of lithics comprising scrapers, blades cores and flakes recorded in seven (7) places close to the Vaal River bank dating from the Middle Stone Age to the Late Stone Age. These suggest the river has been the locus of activity from ancient times although no concentrations of artefacts were seen. None of the sites warrant any further action. Further east of the river there were only two occurrences of lithics.

¹¹ The Barkly West & Vaal River Diggings. Found at: <http://www.on-the-rand.co.uk/Diamond%20Grounds/Barkly%20West.htm>

7.2. The Iron Age

Potsherds found in three places also close to the Vaal River bank may be associated with Later Iron Age settlement in the area (ZTF07, ZTF08, ZTF10). None of these findings are of significance to warrant further action.

7.3. Historic buildings

The oldest building at the farmstead (ZTF01) is in a very poor state although it is noted that efforts have been made to keep it standing by the introduction of timber supports. It is significant as an exemplar of principal dwellings of early commercial farmers. The other building with a Dutch gable roof probably dating to the early 20th century (ZTF02) has inspired the construction of four near replicas which now form a cluster and together they contribute to retaining the spirit and sense of the place. The reservoir and water feature with coursed masonry walls are other structures worth retaining (ZTF04). There are no compelling circumstances for alteration or destruction of these buildings.

7.4. Aspects of cultural landscapes

Cultural Landscapes are “cultural properties that represent the combined works of nature and of man” They are illustrative of the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both external and internal.”¹²

The fields under pivot irrigation form a cultural landscape of commercial farming which is typical feature of agriculture along the Vaal and Orange River banks (ZTF16). According to the landowners, the mining project will not encroach on the fields.

¹² Paragraph 47 of the Operational Guidelines for the Implementation of the World Heritage Convention (UNESCO 2016).

Table 1: Inventory of heritage sites

SITE NO	LATITUDE	LONGITUDE	PERIOD	DESCRIPTION	RANKING	MITIGATION
ZTF01	28°27'47.20"S	24°42'41.26"E	19th C	The oldest building at the farmstead possibly dating to the 19th century. Plastered fired earthen brick frame with a cross hipped corrugated iron roof. Skirted by a veranda facing south. Building in a poor state with broken walls, rusted roof and decayed timber.	Medium A	Building in a poor state, but will be protected
ZTF02	28°27'51.71"S	24°42'44.07"E	Modern	At the farmstead. Four buildings in a row are the principal dwellings at the farmstead. Dutch gable roof (gabiet) which is a combination of a small gable at the top and hipped roof below. Skirted by verandas to the south and east (2 buildings), and to the south (2). The 2nd building from the east is the oldest (the prototype) which has inspired 3 recent near replicas 2010, 2018, 2019.	Medium A	Buildings will be protected.
ZTF03	28°27'51.50"S	24°42'40.10"E	Modern	An isolated building one of the principal dwellings at the farmstead. Dutch gable roof (gabiet) which is a combination of gable at the top and hipped roof below. Skirted by verandas to the south and east.	Medium B	Building will be protected.
ZTF04	28°27'51.28"S	24°42'40.55"E	Modern	Situated at the farmstead. A rectangular structure possibly a water feature or pond 25 m x 15 m x 1.00 m deep. An island located at the centre with a revetment of mortar-bound dressed stone walling. Mature trees standing on the island. Circular water tank or reservoir, excavated into the ground and standing 1 m above the ground. Cladding with coursed (dressed) stones.	Medium B	Structures will be protected
ZTF05	28°28'34.20"S	24°41'40.10"E	MSA/LSA	Near the Vaal River bank. Bushes including acacia. 7 lithics: 2 cores, 2 blades, 2 scrapers and a flake.	Medium B	No further action required.

ZTF06	28°28'32.10"S	24°41'37.70"E	Modern	Abandoned building of earthen bricks and plaster, without roof.	Low	No further action required.
ZTF07	28°28'49.50"S	24°41'7.20"E	MSA/LSA, LIA	Near the banks of the Vaal River. 4 lithics: handaxe, scraper, 2 bladelets. LIA material comprising 4 potsheds and a polished stone.		No further action required.
ZTF08	28°28'49.00"S	24°41'9.10"E		Near the Vaal River bank. Sparse bushes. 2 potsherds.	Medium B	No further action required.
ZTF09	28°28'30.67"S	24°42'11.77"E	Modern	Near the Vaal River bank. Gabled building now used as staff quarters. Standing before 1994.	Medium B	No further action required.
ZTF10	28°28'37.20"S	24°42'6.30"E	MSA/LSA, LIA	Near the Vaal River bank. A core and small potsherd.	Medium B	
ZTF11	28°28'12.99"S	24°42'39.35"E	MSA/LSA	This shed has been refurbished with a new corrugated iron roof. It was the processing and dispatch centre of grapes produced at what was then the largest wine-fields in South Africa and in the southern hemisphere. Operations ceased in the 1990s.	Medium B	Building will not be affected.
ZTF12	28°27'40.00"S	24°42'45.00"E	MSA/LSA	North of the homestead, near the Vaal River bank. 7 lithics: 2 cores, 3 scrapers, 2 blades.	Medium B	No further action required.
ZTF13	28°27'28.58"S	24°42'56.22"E	MSA/LSA, Early Mining.	Overlooking the Vaal River. A ramp built from mining discard, concrete revetment on the east side. It was mounting processing equipment (separators). 1 lithic, a scraper found on the surface.	Medium B	No further action required.
ZTF14	28°27'42.90"S	24°44'8.00"E	MSA/LSA	Eastern area of the property, southern foot of the ridge, conglomerate stones and bedrock. 3 lithics – scrapers including 2 quartz.	Medium B	No further action required.
ZTF15	28°28'3.10"S	24°43'31.40"E	MSA/LSA	Eastern foot of a dolerite ridge, eastern part of the property. Haakbos. 3 lithics – scrapers.	Medium B	No further action required.
ZTF16	28°28'4.26"S	24°42'26.23"E	MSA/LSA	Green fields under pivot irrigation.	Medium B	Mining will not encroach into the fields



Figure 11: Location of heritage sites.

7.5. Ranking of Findings

	RANKING	SIGNIFICANCE	No of sites
1	High	National and Provincial heritage sites (Section 7 of NHRA). All burials including those protected under Section 36 of NHRA. They must be protected.	0
2	Medium A	Substantial archaeological deposits, buildings protected under Section 34 of NHRA. These may be protected at the recommendations of a heritage expert.	2
3	Medium B	Sites exhibiting archaeological characteristics of the area, but do not warrant further action after they have been documented.	13
4	Low	Heritage sites which have been recorded, but considered of minor value relative to the proposed development.	1
		TOTAL	16

7.6. Assessment of Impacts using the Statutory Framework

Section 38 of the NHRA

Section 38 (Subsection 3) of the National Heritage Resources Act also provides a schedule of tasks to be undertaken in an HIA process:

Section 38(3) The responsible heritage resources authority must specify the information to be provided in a report required in terms of subsection (2)(a): Provided that the following must be included:

(a) The identification and mapping of all heritage resources in the area affected

Sixteen sites (16) sites were recorded of which historic buildings were ranked as culturally important. There irrigated green fields were identified as a cultural landscape (ZTF16). The remainder of the sites are medium value and no further action was considered necessary.

(b) An assessment of the significance of such resources in terms of the heritage assessment criteria set out in section 6(2) or prescribed under section 7

There are no Grade I or Grade II.

(c) An assessment of the impact of the development on such heritage resources

The risk ranking is a definition of potential risks based on perceived value of the heritage and potential threats posed by the proposed development. As mentioned the buildings must be protected.

(i) 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

Mining is an important lever of economic development for the South African economy. The mineral wealth can provide stimulus for rapid socio-economic development in the Northern Cape Province in particular and the country as a whole. Mining is labour intensive and can contribute immensely to alleviate the

current high rate of employment. General improvement in the quality of livelihoods in local communities and the country at large is expected.

(f) If heritage resources will be adversely affected by the proposed development, the consideration of alternatives

The buildings that have been flagged will not be affected by the proposed mining operations.

(g) Plans for mitigation of any adverse effects during and after the completion of the proposed development.

In the event of discovery of other heritage resources during site preparation and mining phase, the Provincial Heritage Resources Authority or SAHRA will be informed immediately and an archaeologist or heritage expert called to attend.

7.7. Risk Assessment of the findings


EVALUATION CRITERIA	RISK ASSESSMENT
Description of potential impact	Negative impacts range from partial to total destruction of surface and under-surface movable/immovable relics.
Nature of Impact	Negative impacts can both be direct or indirect.
Legal Requirements	Sections 34, 35, 36, 38 of National Heritage Resources Act No. 25 (1999)
Stage/Phase	Prospecting for minerals (test pits, drilling); Mining Phase
Extent of Impact	Test pits, excavations and ground clearing, opencast mining can result in damage and destruction of archaeological resources above and below the surface not seen during the survey.
Duration of Impact	Any accidental destruction of surface or subsurface relics is not reversible, but can be mitigated.
Intensity	Uncertain.
Probability of occurrence	Medium.
Confidence of assessment	High.
Level of significance of impacts before mitigation	High.

Mitigation measures	Protect the sites that have been flagged. If archaeological or other heritage relics are found during the construction phase, heritage authorities will be advised immediately and a heritage specialist will be called to attend. This is standard precaution in view of inherent limitations of archaeological fieldwork.
Level of significance of impacts after mitigation	Low.
Cumulative Impacts	None.
Comments or Discussion	None.

8. RECOMMENDATIONS AND CONCLUSIONS

The mining application can be considered in light of the low cultural significance of material found apart from the historic buildings which will not be affected. However it is a standard precaution that in the event of other heritage resources being discovered in future phases of the project, the Provincial Heritage Resources Authority or SAHRA must be alerted immediately and an archaeologist or heritage expert called to attend.

9. CATALOGUE OF HERITAGE SITES

SITE NO	COORDINATES		PERIOD
ZTF01	28°27'47.20"S	24°42'41.26"E	Early Commercial Farming
			
<p>DESCRIPTION: The oldest building at the farmstead possibly dating to the 19th century. Plastered fired earthen brick frame with a cross hipped corrugated iron roof. Skirted by a veranda facing south. Building in a poor state with broken walls, rusted roof and decayed timber.</p>			
HERITAGE SIGNIFICANCE		Association with early commercial farmers.	
MITIGATION		Building in a poor state, but will be protected.	

SITE NO	COORDINATES		PERIOD
ZTF02	28°27'51.71"S	24°42'44.07"E	Modern



DESCRIPTION: At the farmstead. Four buildings in a row are the principal dwellings at the farmstead. Dutch gable roof (gabled) which is a combination of a small gable at the top and hipped roof below. Skirted by verandas to the south and east (2 buildings), and to the south (2). The 2nd building from the east is the oldest (the prototype) which has inspired 3 recent near replicas 2010, 2018, 2019.

HERITAGE SIGNIFICANCE	Buildings associated commercial farmsteads. The additions contribute to aesthetics and sense of place.
MITIGATION	Buildings will be protected.

SITE NO	COORDINATES		PERIOD
ZTF03	28°27'51.50"S	24°42'40.10"E	Modern



DESCRIPTION: An isolated building one of the principal dwellings at the farmstead. Dutch gable roof (gabled) which is a combination of gable at the top and hipped roof below. Skirted by verandas to the south and east.

HERITAGE SIGNIFICANCE	Building associated commercial farmsteads. Though it is a recent addition, it contribute to aesthetics and sense of place.
MITIGATION	Building will be protected.

SITE NO	COORDINATES		PERIOD
ZTF04	28°27'51.28"S	24°42'40.55"E	Modern





DESCRIPTION: Situated at the farmstead. A rectangular structure possibly a water feature or pond 25 m x 15 m x 1.00 m deep. An island located at the centre with a revetment of mortar-bound dressed stone walling. Mature trees standing on the island. Circular water tank or reservoir, excavated into the ground and standing 1 m above the ground. Cladding with coursed (dressed) stones.


HERITAGE SIGNIFICANCE	Structures associated with commercial farmsteads
MITIGATION	Structures will be protected.

SITE NO	COORDINATES		PERIOD
ZTF05	28°28'34.20"S	24°41'40.10"E	MSA/LSA



DESCRIPTION: Near the Vaal River bank. Bushes including acacia. 7 lithics: 2 cores, 2 blades, 2 scrapers and a flake.

HERITAGE SIGNIFICANCE	Evidence of hunter-gatherer activities during the MSA/LSA.
MITIGATION	No further action required.

SITE NO	COORDINATES		PERIOD
ZTF06	28°28'32.10"S	24°41'37.70"E	MSA/LSA
			
<p>DESCRIPTION: Abandoned building of earthen bricks and plaster, without roof.</p>			
HERITAGE SIGNIFICANCE		Building associated with farming activities.	
MITIGATION		Low significance. No further action required.	

SITE NO	COORDINATES		PERIOD
ZTF07	28°28'49.50"S	24°41'7.20"E	MSA/LSA, LIA





DESCRIPTION: Near the banks of the Vaal River. 4 lithics: handaxe, scraper, 2 bladelets. LIA material comprising 4 potsheds and a polished stone.

HERITAGE SIGNIFICANCE	Evidence of hunter-gatherer activities during the MSA/LSA. LIA occupation.
MITIGATION	No further action required.

SITE NO	COORDINATES		PERIOD
ZTF08	28°28'49.00"S	24°41'9.10"E	LIA




DESCRIPTION: Near the Vaal River bank. Sparse bushes. 2 potsherds.

HERITAGE SIGNIFICANCE

LIA occupation.

MITIGATION

No further action required.

SITE NO	COORDINATES		PERIOD
ZTF09	28°28'30.67"S	24°42'11.77"E	MSA/LSA
			
<p>DESCRIPTION: Near the Vaal River bank. Gabled building now used as staff quarters. Standing before 1994.</p>			
HERITAGE SIGNIFICANCE		Association with commercial farming.	
MITIGATION		Building will be protected.	

SITE NO	COORDINATES		PERIOD
ZTF10	28°28'37.20"S	24°42'6.30"E	MSA/LSA. LIA



DESCRIPTION: Near the Vaal River bank. A core and small potsherd.

HERITAGE SIGNIFICANCE	Evidence of hunter-gatherer activities during the MSA/LSA. LIA artefact.
MITIGATION	No further action required.

SITE NO	COORDINATES		PERIOD
ZTF11	28°28'12.99"S	24°42'39.35"E	MSA/LSA



DESCRIPTION: This shed has been refurbished with a new corrugated iron roof. It was the processing and dispatch centre of grapes produced at what was then the largest wine-fields in South Africa and in the southern hemisphere. Operations ceased in the 1990s.

HERITAGE SIGNIFICANCE	Associated with commercial farming
MITIGATION	Building will not be affected.

SITE NO	COORDINATES		PERIOD
ZTF12	28°27'40.00"S	24°42'45.00"E	MSA/LSA





DESCRIPTION: North of the homestead, near the Vaal River bank. 7 lithics: 2 cores, 3 scrapers, 2 blades.

HERITAGE SIGNIFICANCE	Evidence of hunter-gatherer activities during the MSA/LSA
MITIGATION	No further action required.

SITE NO	COORDINATES		PERIOD
ZTF13	28°27'28.58"S	24°42'56.22"E	MSA/LSA, Early Mining.





DESCRIPTION: Overlooking the Vaal River. A ramp built from mining discard, concrete revetment on the east side. It was mounting processing equipment (separators). 1 lithic, a scraper found on the surface.

HERITAGE SIGNIFICANCE	MSA/LSA evidence, and early diamond mining and processing
MITIGATION	No further action required.

SITE NO	COORDINATES		PERIOD
ZTF14	28°27'42.90"S	24°44'8.00"E	MSA/LSA



DESCRIPTION: Eastern area of the property, southern foot of the ridge, conglomerate stones and bedrock. 3 lithics – scrapers including 2 quartz.

HERITAGE SIGNIFICANCE	Evidence of hunter-gatherer activities during the MSA/LSA
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MITIGATION	No further action required.
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SITE NO	COORDINATES		PERIOD
ZTF15	28°28'3.10"S	24°43'31.40"E	MSA/LSA



DESCRIPTION: Eastern foot of a dolerite ridge, eastern part of the property. Haakbos. 3 lithics – scrapers.

HERITAGE SIGNIFICANCE

Evidence of hunter-gatherer activities during the MSA/LSA

MITIGATION

No further action required.

SITE NO	COORDINATES		PERIOD
ZTF16	28°28'4.26"S	24°42'26.23"E	MSA/LSA



DESCRIPTION: Green fields under pivot irrigation.

HERITAGE SIGNIFICANCE	Cultural landscape of modern commercial farming
MITIGATION	Mining will not encroach into the fields

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