

**MONTHLY HERITAGE SURVEY OF THE
FAIRBREEZE MINE**

FOR TRONOX KZN SANDS

DATE: 11 OCTOBER 2017

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Abbreviations

HP	Historical Period
IIA	Indeterminate Iron Age
LIA	Late Iron Age
EIA	Early Iron Age
ISA	Indeterminate Stone Age
ESA	Early Stone Age
MSA	Middle Stone Age
LSA	Late Stone Age
HIA	Heritage Impact Assessment
PIA	Palaeontological Impact Assessment

INTRODUCTION

Umlando was appointed by Tronox KZN Sands (Pty) Ltd to undertake the heritage management of the Fairbreeze mine during the operational phase. The last survey was undertaken in 2015 during the pre-operational phase. Since then the mine has moved to the operational phase. The current area being mined has been surveyed by Umlando; however, all of the Amafa KZN permits relating to the mine have expired in early 2017.

The mine is located south of Mtunzini and was previously under afforestation and limited sugar cane (fig. 1).

The initial HIA for the Fairbreeze mine was undertaken in 2010 (Anderson 2010). The management plan was as follows:

1. Several buildings will require monitoring during/after demolition
2. Monthly monitoring will occur for archaeological sites
3. Human graves to be affected require mitigation

The aim of this report is to:

- Summarise the known heritage sites and their required mitigation
- Confirm which permits need to be renewed
- Confirm which permits, and related work, is no longer valid
- Confirm what heritage has been undertaken, or needs to be undertaken
- Assess the current mining process and submit a management plan
- Discuss the results of the first 2017 survey

It is important to note that all Heritage permits for the mine have expired

FIG. 1 GENERAL LOCATION OF THE STUDY AREA

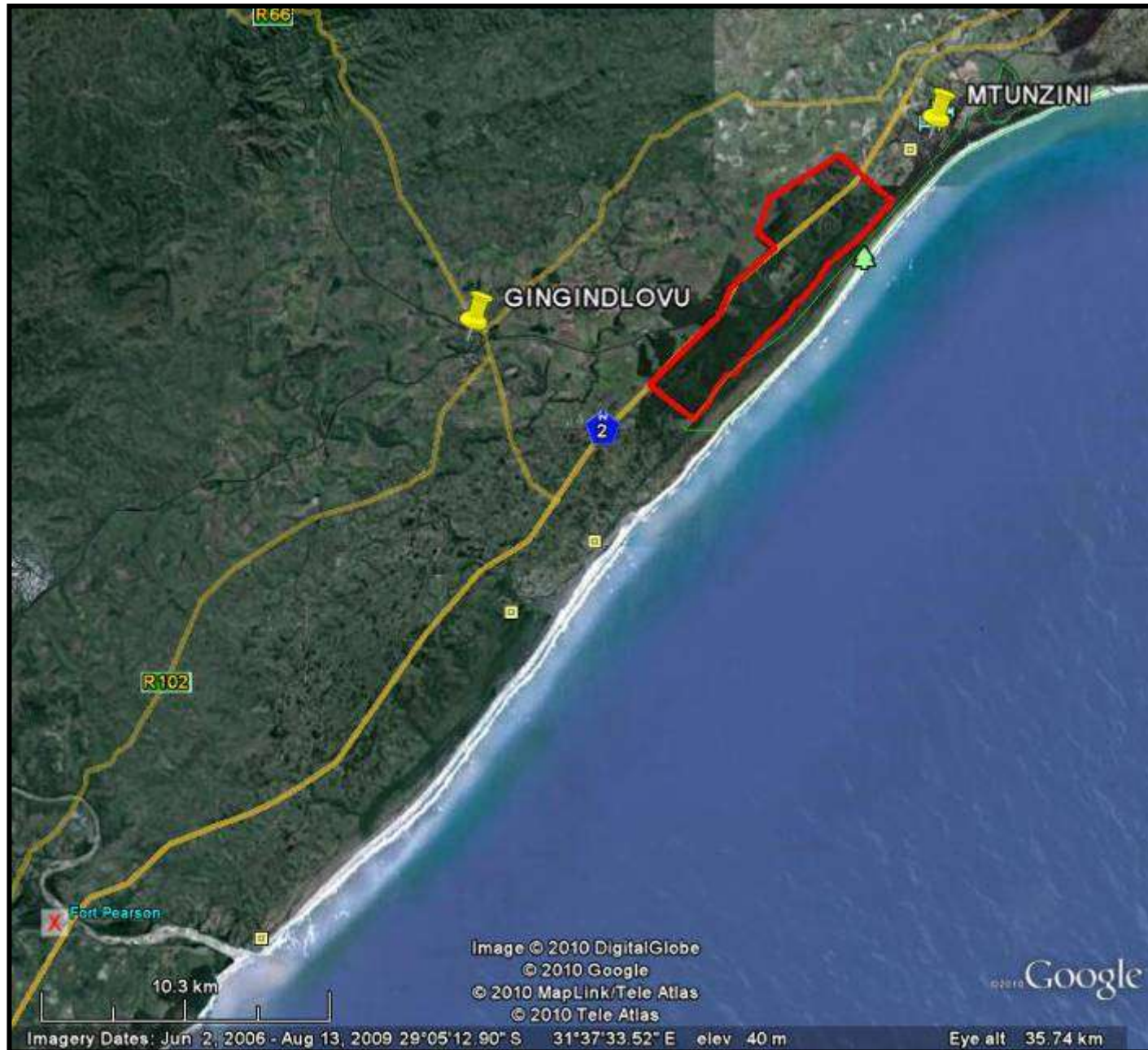
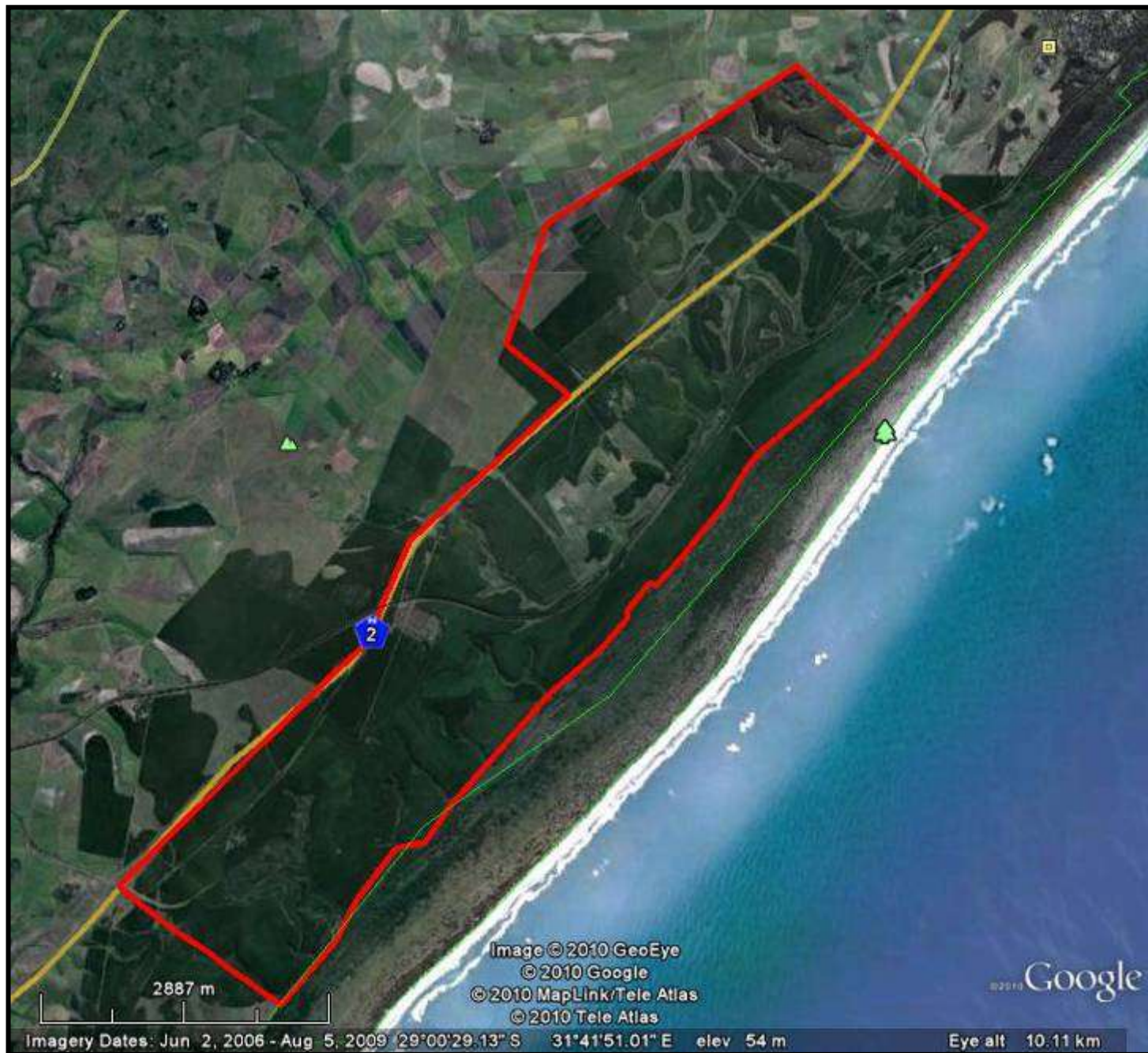


FIG. 2: AERIAL OVERVIEW OF THE STUDY AREA



KWAZULU-NATAL HERITAGE ACT NO. 4 OF 2008

“General protection: Structures.—

- No structure which is, or which may reasonably be expected to be older than 60 years, may be demolished, altered or added to without the prior written approval of the Council having been obtained on written application to the Council.
- Where the Council does not grant approval, the Council must consider special protection in terms of sections 38, 39, 40, 41 and 43 of Chapter 9.
- The Council may, by notice in the *Gazette*, exempt—
- A defined geographical area; or
- defined categories of sites within a defined geographical area, from the provisions of subsection where the Council is satisfied that heritage resources falling in the defined geographical area or category have been identified and are adequately protected in terms of sections 38, 39, 40, 41 and 43 of Chapter 9.
- A notice referred to in subsection (2) may, by notice in the *Gazette*, be amended or withdrawn by the Council.

General protection: Graves of victims of conflict.—No person may damage, alter, exhume, or remove from its original position—

- the grave of a victim of conflict;
- a cemetery made up of such graves; or
- any part of a cemetery containing such graves, without the prior written approval of the Council having been obtained on written application to the Council.
- General protection: Traditional burial places.—
- No grave—
- not otherwise protected by this Act; and
- not located in a formal cemetery managed or administered by a local authority, may be damaged, altered, exhumed, removed from its original position, or otherwise disturbed without the prior written approval of the Council having been obtained on written application to the Council.

The Council may only issue written approval once the Council is satisfied that—

- the applicant has made a concerted effort to consult with communities and individuals who by tradition may have an interest in the grave; and
- the applicant and the relevant communities or individuals have reached agreement regarding the grave.

General protection: Battlefield sites, archaeological sites, rock art sites, palaeontological sites, historic fortifications, meteorite or meteorite impact sites.—

- No person may destroy, damage, excavate, alter, write or draw upon, or otherwise disturb any battlefield site, archaeological site, rock art site, palaeontological site, historic fortification, meteorite or meteorite impact site without the prior written approval of the Council having been obtained on written application to the Council.
- Upon discovery of archaeological or palaeontological material or a meteorite by any person, all activity or operations in the general vicinity of such material or meteorite must cease forthwith and a person who made the discovery must submit a written report to the Council without delay.
- The Council may, after consultation with an owner or controlling authority, by way of written notice served on the owner or controlling authority, prohibit any activity considered by the Council to be inappropriate within 50 metres of a rock art site.
- No person may exhume, remove from its original position or otherwise disturb, damage, destroy, own or collect any object or material associated with any battlefield site, archaeological site, rock art site, palaeontological site, historic fortification, meteorite or meteorite impact site without the prior written approval of the Council having been obtained on written application to the Council.
- No person may bring any equipment which assists in the detection of metals and archaeological and palaeontological objects and material, or excavation equipment onto any battlefield site, archaeological site, rock art site, palaeontological site, historic fortification, or meteorite impact site, or use similar detection or excavation equipment for the recovery of

- meteorites, without the prior written approval of the Council having been obtained on written application to the Council.
- The ownership of any object or material associated with any battlefield site, archaeological site, rock art site, palaeontological site, historic fortification, meteorite or meteorite impact site, on discovery, vest in the Provincial Government and the Council is regarded as the custodian on behalf of the Provincial Government.” (KZN Heritage Act of 2008)

METHOD

The method for Heritage assessment consists of several steps.

The first step forms part of the desktop assessment. Here we would consult the database that has been collated by Umlando. These databases contains archaeological site locations and basic information from several provinces (information from Umlando surveys and some colleagues), most of the national and provincial monuments and battlefields in Southern Africa (<http://www.vuvuzela.com/googleearth/monuments.html>) and cemeteries in southern Africa (information supplied by the Genealogical Society of Southern Africa). We use 1st and 2nd edition 1:50 000 topographical and 1937 aerial photographs where available, to assist in general location and dating of buildings and/or graves. The database is in Google Earth format and thus used as a quick reference when undertaking desktop studies. Where required we would consult with a local data recording centre, however these tend to be fragmented between different institutions and areas and thus difficult to access at times. We also consult with an historical architect, palaeontologist, and an historian where necessary.

The survey results will define the significance of each recorded site, as well as a management plan.

All sites are grouped according to low, medium, and high significance for the purpose of this report. Sites of low significance have no diagnostic artefacts or features. Sites of medium significance have diagnostic artefacts or features and these sites tend to be sampled. Sampling includes the collection of artefacts for future analysis. All diagnostic pottery, such as rims, lips, and decorated sherds are sampled, while bone, stone, and shell are mostly noted. Sampling usually occurs on most sites. Sites of high significance are excavated and/or extensively sampled. Those sites that are extensively sampled have high research potential, yet poor preservation of features.

Defining significance

Heritage sites vary according to significance and several different criteria relate to each type of site. However, there are several criteria that allow for a general significance rating of archaeological sites.

These criteria are:

1. State of preservation of:

- 1.1. Organic remains:
 - 1.1.1. Faunal
 - 1.1.2. Botanical
- 1.2. Rock art
- 1.3. Walling
- 1.4. Presence of a cultural deposit
- 1.5. Features:
 - 1.5.1. Ash Features
 - 1.5.2. Graves
 - 1.5.3. Middens
 - 1.5.4. Cattle byres
 - 1.5.5. Bedding and ash complexes

2. Spatial arrangements:

- 2.1. Internal housing arrangements

2.2. Intra-site settlement patterns

2.3. Inter-site settlement patterns

3. Features of the site:

3.1. Are there any unusual, unique or rare artefacts or images at the site?

3.2. Is it a type site?

3.3. Does the site have a very good example of a specific time period, feature, or artefact?

4. Research:

4.1. Providing information on current research projects

4.2. Salvaging information for potential future research projects

5. Inter- and intra-site variability

5.1. Can this particular site yield information regarding intra-site variability, i.e. spatial relationships between various features and artefacts?

5.2. Can this particular site yield information about a community's social relationships within itself, or between other communities?

6. Archaeological Experience:

6.1. The personal experience and expertise of the CRM practitioner should not be ignored. Experience can indicate sites that have potentially significant aspects, but need to be tested prior to any conclusions.

7. Educational:

7.1. Does the site have the potential to be used as an educational instrument?

7.2. Does the site have the potential to become a tourist attraction?

7.3. The educational value of a site can only be fully determined after initial test-pit excavations and/or full excavations.

8. Other Heritage Significance:

8.1. Palaeontological sites

8.2. Historical buildings

8.3. Battlefields and general Anglo-Zulu and Anglo-Boer sites

8.4. Graves and/or community cemeteries

8.5. Living Heritage Sites

8.6. Cultural Landscapes, that includes old trees, hills, mountains, rivers, etc related to cultural or historical experiences.

The more a site can fulfill the above criteria, the more significant it becomes. Test-pit excavations are used to test the full potential of an archaeological deposit. This occurs in Phase 2. These test-pit excavations may require further excavations if the site is of significance (Phase 3). Sites may also be mapped and/or have artefacts sampled as a form of mitigation. Sampling normally occurs when the artefacts may be good examples of their type, but are not in a primary archaeological context. Mapping records the spatial relationship between features and artefacts.

The above significance ratings allow one to grade the site according to SAHRA's grading scale. This is summarised in Table 1.

TABLE 1: SAHRA GRADINGS FOR HERITAGE SITES

SITE SIGNIFICANCE	FIELD RATING	GRADE	RECOMMENDED MITIGATION
High Significance	National Significance	Grade 1	Site conservation / Site development
High Significance	Provincial Significance	Grade 2	Site conservation / Site development
High Significance	Local Significance	Grade 3A / 3B	
High / Medium Significance	Generally Protected A		Site conservation or mitigation prior to development / destruction
Medium Significance	Generally Protected B		Site conservation or mitigation / test excavation / systematic sampling / monitoring prior to or during development / destruction
Low Significance	Generally Protected C		On-site sampling monitoring or no archaeological mitigation required prior to or during development / destruction

PREVIOUS MANAGEMENT PLAN

The management plan from the 2010 HIA is summarised below.

“Buildings:

Several buildings were surveyed, but only one building is of high significance and should not be damaged. All buildings should be adequately recorded before demolition, in the form photographs and basic measurements, indicating the various additions. The buildings may have historical middens and these need to be sampled and partially excavated.

Archaeological sites:

The area is of low archaeological significance, mostly due to afforestation. The entire area needs to be monitored on a regular basis during mining activity. This would occur after vegetation clearance and before actual mining. Any earthmoving activity should be monitored for archaeological sites.

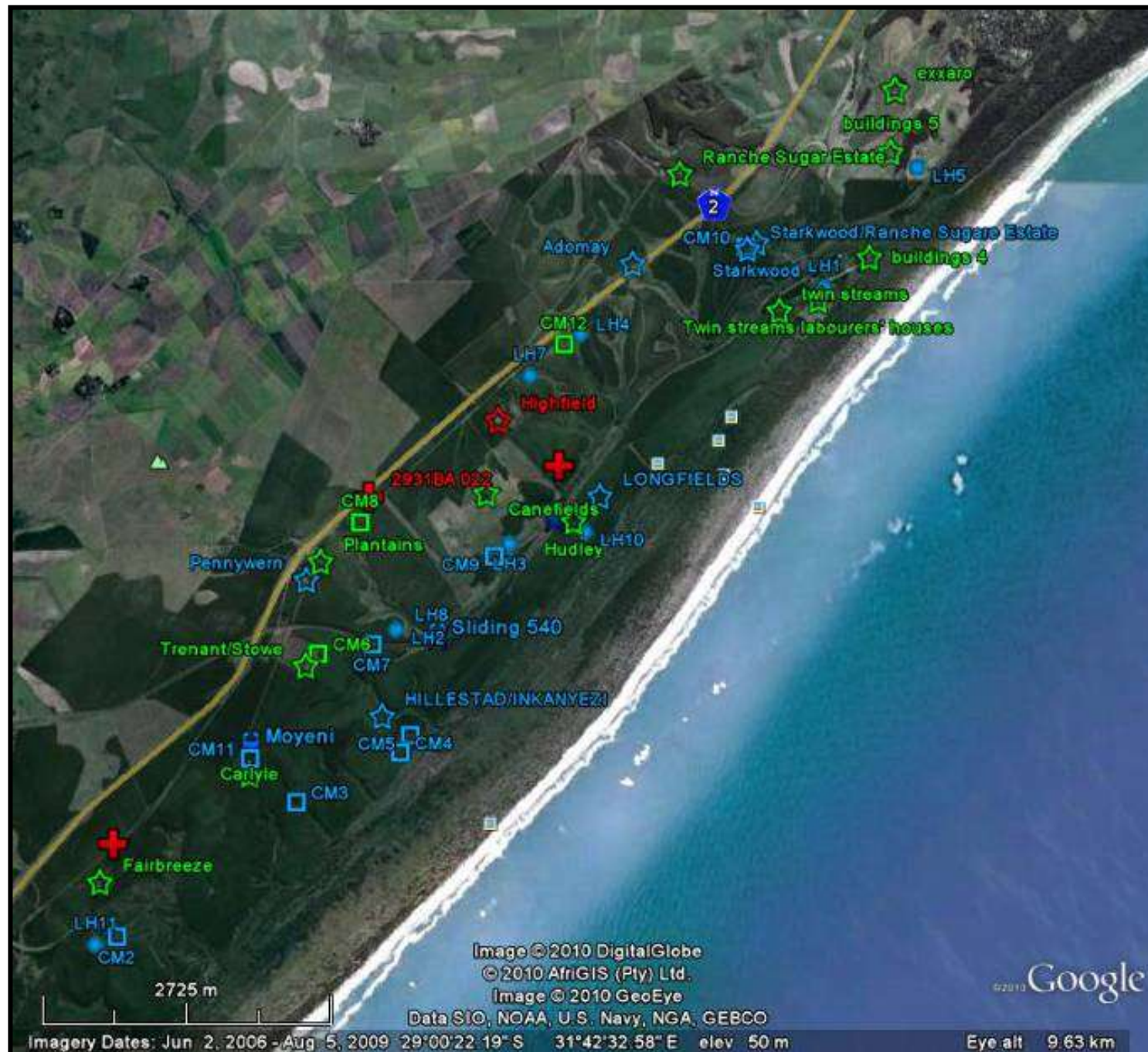
Graves:

Several known graves exist in the mining lease. I suggest a social impact assessment is undertaken dealing specifically with the graves for the entire mining lease. I also suggest that a general letter is sent to all landowners requesting information regarding potential graves known to them in the mining lease. It is likely that more graves will be found in the mining lease during the operational phase, and thus social impact assessment would already be in place to deal with these remains, and save money.

Palaeontology:

The mining lease is unlikely to yield palaeontological remains unless the mining operations reach the original seabed levels (Dr. Gideon Groenewald pers. comm.)” (Anderson 2011)

The location of these sites and their significance is summarised in Fig. 4 and Table 2

FIG. 4: LOCATION OF HERITAGE SITES AND THEIR SIGNIFICANCE¹

¹ Blue = low significance; Green = medium significance (requires basic mitigation if affected) Red = High significance (can mitigate)

TABLE 2: SUMMARY OF HERITAGE SITES AND REQUIRED MITIGATION

Name	Description	South	East	Requires mitigation	Type of mitigation	Requires permit	Work Completed
2831DC 010	Archaeological site: HP	28°58'55.94"	31°41'35.53"	Yes	Monitor	Yes	No
Bridge	Bridge for pipeline	28°56'8.38"	31°46'44.62"	No	N/A	Yes	Yes
Trenant/Stowe	buildings	29° 1'3.40"	31°40'52.62"	Yes	Monitor/record before demolition	Yes	No
Pennywern Road	buildings	29° 0'36.75"	31°40'53.03"	No	N/A	No	No
Plantains	buildings	29° 0'31.11"	31°40'58.06"	Yes	Monitor/record before demolition	Yes	No
Highfield	buildings	28°59'47.36"	31°42'0.93"	Yes	No destruction	Yes	Yes
Fairbreeze	buildings	29° 2'10.20"	31°39'39.87"	Yes	Monitor/record before demolition	Yes	No
Baton Rouge	buildings	29° 2'38.19"	31°39'14.41"	Yes	Architectural Assessment/record before demolition	Yes	No
Starkwood	buildings	28°58'52.31"	31°43'32.60"	Yes	Architectural Assessment/record before demolition	Yes	Yes
Canefields	buildings	29° 0'10.01"	31°41'56.52"	Yes	Monitor/record before demolition	No	No
LONGFIELDS	buildings	29° 0'10.90"	31°42'36.90"	Yes	Monitor/record before demolition	No	No
Inkanyezi/Hillestad	buildings	29° 1'19.30"	31°41'19.30"	Yes	Monitor/record before demolition	No	No
Carlyle	buildings	29° 1'37.02"	31°40'32.59"	Yes	Monitor/record before demolition	Yes	No
Starkwood B	buildings	28°58'54.36"	31°43'29.33"	Yes	Monitor/record before demolition	No	Yes
Twin Streams	buildings	28°59'13.27"	31°43'40.83"	Yes	Monitor/record before demolition	Yes	No
Adomay	buildings	28°58'58.61"	31°42'48.59"	No	N/A	No	No
Ranche Sugar Estate	buildings	28°58'30.86"	31°43'5.37"	Yes	Monitor/record before demolition	Yes	No
CM10	Compound 10	28°58'53.79"	31°43'28.54"	Yes	Monitor	No	No

CM11	Compound 11	29° 1'32.19"	31°40'32.74"	Yes	Monitor	No	Yes
CM12	Compound 12	28°59'23.67"	31°42'24.14"	Yes	Monitor	No	No
CM2	Compound 2	29° 2'27.40"	31°39'45.40"	Yes	Monitor	No	No
CM3	Compound 3	29° 1'46.20"	31°40'48.60"	Yes	Monitor	No	No
CM4	Compound 4	29° 1'30.80"	31°41'25.60"	Yes	Monitor	No	No
CM5	Compound 5	29° 1'25.40"	31°41'29.10"	Yes	Monitor	No	No
CM6	Compound 6	29° 0'59.73"	31°40'56.92"	Yes	Monitor	No	No
CM7	Compound 7	29° 0'56.92"	31°41'15.98"	Yes	Monitor	No	No
CM8	Compound 8 graves?	29° 0'19.07"	31°41'11.91"	Yes	Grave removals?	Yes for graves	No
CM9	Compound 9	29° 0'29.63"	31°41'59.20"	Yes	Monitor	No	No
Fairbreeze	Graves	29° 2'5.07"	31°39'44.47"	Yes	Removal?	Yes	No
Canefields	Graves	29° 0'8.20"	31°42'22.20"	Yes	Removal	Yes	No
2931BA 022	Graves:	29° 0'17.85"	31°41'14.92"	Yes	Removal	Yes	No
LH2	Labourer's house(s)	29° 0'52.27"	31°41'24.35"	Yes	Monitor	No	No
LH3	Labourer's house(s)	29° 0'25.70"	31°42'4.70"	Yes	Monitor	No	No
LH4	Labourer's house(s)	28°59'20.40"	31°42'30.10"	Yes	Monitor	No	No
LH7	Labourer's house(s)	28°59'33.45"	31°42'12.03"	Yes	Monitor	No	No
LH8	Labourer's house(s)	29° 0'54.37"	31°41'36.89"	Yes	Monitor	No	No
Sliding 540	Sliding	29° 0'58.82"	31°41'38.85"	No	N/A	N/A	N/A
Moyeni	Sliding	29° 1'32.43"	31°40'32.82"	No	N/A	N/A	N/A
Hudley Station	train station	29° 0'22.44"	31°42'20.42"	No	N/A	N/A	N/A

Only Starkwood had been demolished while the permit was valid. All of the other buildings that require a permit for destruction will require a new permit from Amafa KZN. These permits are only valid for one year.

Tronox KZN Sands will need to apply for a permit for each house as and when it is demolished, or apply for a permit and demolish the relevant buildings within that year. The latter might be the better option.

The permit to alter the interior of Highfield expired in 2017. Tronox has moved into the building and I presume the relevant work was undertaken. Tronox needs to supply the report by the architect and/or the confirmation by Amafa KZN that the correct work was undertaken.

The general permit to destroy archaeological sites has expired in 2017. I have initiated a permit renewal for Tronox and Umlando. Tronox is currently destroying two archaeological sites; however, these sites would have been affected just before the permit expired. The sites were recorded during the monitoring program in October 2017.

There has been no grave removal process.

The permits from Amafa KZN form part of the general mining permit and need to be kept updated.

FIELD SURVEY

A field survey was undertaken on 9 October 2017. A general reconnaissance around the mine was undertaken. The current mining process only allows for a small area to be cleared ahead of the mine face.

Two new sites were recorded (fig. 5; table 3). Both sites are open scatter of artefacts and are of low significance.

FIG 5: LOCATION OF RECORDED SITES



TABLE 3: LOCATION OF RECORDED SITES

Name	South	East	Description	Requires Mitigation
TRON02	28°59'18.46"	31°43'15.83"	LSA & Pottery scatter	No
TRON03	28°58'45.05"	31°43'41.83	Pottery scatter	No

TRON02

TRON02 is located along the southern side of the current main mining pit. The sites were previously under afforestation and thus the deposit is disturbed. The site consists of a scatter of artefacts over a 30m area. The artefacts consist of:

- Undecorated pottery shards (fig. 6)
- 1 quartz flake (LSA?)
- Upper grinding stones

Significance: the site is of low significance

Mitigation: no further mitigation is required.

FIG. 6: ARTEFACTS AT TRON02

TRON03

TRO03 is located at the northern end of the current mining pit the Site consists of an ephemeral scatter of pottery shards. The shards are thin-walled and undecorated and are probably related to the Historical Period (fig. 7)

Significance: the site is of low significance

Mitigation: no further mitigation is required.

FIG. 7: ARTEFACTS AT TRON02²



² Pottery Shards are ~4cm in width

MANAGEMENT PLAN

The current management plan is to survey the mine once a month. The last survey indicates that there are unrecorded archaeological sites in the mining lease and this lease need to be continuously assessed. Some of these sites will date to the Historical Period and would thus still have subsurface human remains.

I would suggest that the clearance needs to be wider in those areas that have buildings, ruins, labourers' houses, as these cannot be assessed in small areas. This does not mean that topsoil needs to be removed; rather the general area is cleared of vegetation. If mitigation is required at these sites, then smaller cleared areas will delay mining as there is a safety buffer fort eh mine face. These sites are listed in Table 2.

The sites listed in Table 2 need to be given to the mine planning department. They need to indicate which sites will not be affected by mining and also give some form of projection when sites will be affected. This will assist in the heritage planning of the mine and the permit applications.

All permits need to be renewed via Amafa KZN, where mining activity will still occur These are separate permits to:

- Destroy archaeological sites
- Demolish historical buildings
- Sample and/or excavate archaeological sites
- Remove human graves (if needs be).

CONCLUSION

A heritage survey was undertaken for the Tronox KZN Sands Fairbreeze mine. The heritage management is now active after several months of inactivity. Several permits from Amafa KZN have expired and the report noted those sites.

The report noted the existing management plan and that archaeological sites still occur in the mining lease. These tend to be of low significance and were missed during the survey due to dense afforestation.

Monthly surveys with the aim of monitoring the mines movement will be undertaken for the duration of the contract.

REFERENCES

Anderson, G. 2010. Heritage Survey Of The Proposed Fairbreeze Mine. Report for Tronox KZN Sands.

EXPERIENCE OF THE HERITAGE CONSULTANT

Gavin Anderson has a M. Phil (in archaeology and social psychology) degree from the University of Cape Town. Gavin has been working as a professional archaeologist and heritage impact assessor since 1995. He joined the Association of Professional Archaeologists of Southern Africa in 1998 when it was formed. Gavin is rated as a Principle Investigator with expertise status in Rock Art, Stone Age and Iron Age studies. In addition to this, he was worked on both West and East Coast shell middens, Anglo-Boer War sites, and Historical Period sites.

DECLARATION OF INDEPENDENCE

I, Gavin Anderson, declare that I am an independent specialist consultant and have no financial, personal or other interest in the proposed development, nor the developers or any of their subsidiaries, apart from fair remuneration for work performed in the delivery of heritage assessment services. There are no circumstances that compromise the objectivity of my performing such work.

A handwritten signature in black ink, appearing to read 'Anderson', with a large, stylized initial 'A' that loops around the rest of the name. The signature is written over a faint horizontal line.

Gavin Anderson
Archaeologist/Heritage Impact Assessor