HERITAGE SURVEY OF THE HLULEKA ROAD, WILD COAST, EASTERN CAPE

EIA REFERENCE: 15/2/1/1/NEMA/50/09-025: DEDEA MTHATHA

FOR COASTAL & ENVIRONMENTAL SERVICES

DATE: 6 April 2009

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INTRODUCTION

Umlando cc was contracted by Coastal & Environmental Services to undertake a heritage impact assessment for the borrow pits and quarries of the Hluleka Road. A heritage impact assessment had already been undertaken for the road itself. The study area begins at Ntlaza (Eastern Cape) on the R61, approx. 40km east of Umtata (fig. 1). The turnoff is at St Barnabas and the road continues to the Hluleka Nature Reserve. Several existing borrow pits are being reused or expanded, while others appear to be new.

The aim of this survey was to locate and assess the borrow pits and quarries in terms of heritage significance. The co-ordinates of the borrow pits and quarries were given, and these areas were surveyed.

The main types of geological formations are shale, mudstone, sandstone and dolerite. The occurrence of shale and mudstone deposits, in the Beaufort and Ecca Formations, may be palaeontologically sensitive.

METHOD

The method for Heritage assessment consists of several steps. The first step forms part of the desktop assessment. Here we would consult Umlando's databases and use Google Earth maps to obtain an idea of the terrain. I would consult with an historical architect, palaeontologist, and an historian where necessary. A desktop palaeontological assessment was undertaken by analysing geological maps in relation to known formations that have known palaeontological material – See Appendix B.

I was given a rough sketch of each borrow pit (see fig. 2 as an example). This sketch consisted of the following:

1. the extent of the borrow pit

2. the mileage from the St Barnabas turn-off
3. the south and east co-ordinates

These diagrams were useful except for three sketches where there was either no co-ordinate (Sketch 6), or the co-ordinate was inconsistent with the mileage (Sketches 10 and 13). Sketches 10 and 13 were omitted from the survey as they were presumed to be incorrectly placed and their mileage did not match the actual scenery. I presumed the co-ordinates for the quarries are correct even if the one quarry was in the middle of several houses. This was not of major concern as the annexure listed the geology that in turn informs about the palaeontology.

The initial archaeological survey (i.e. fieldwork) consists of a foot survey where the selected area was covered. 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, especially pottery. Sites of medium significance have diagnostic artefacts and these are 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. We attempt to recover as many artefacts from these sites by means of systematic sampling, as opposed to sampling diagnostic artefacts only.

Defining significance

Archaeological 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, i.e. a site that has the first diagnostic material of its kind?
   - 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

FIG. 1: LOCATION OF THE HLULEKA ROAD

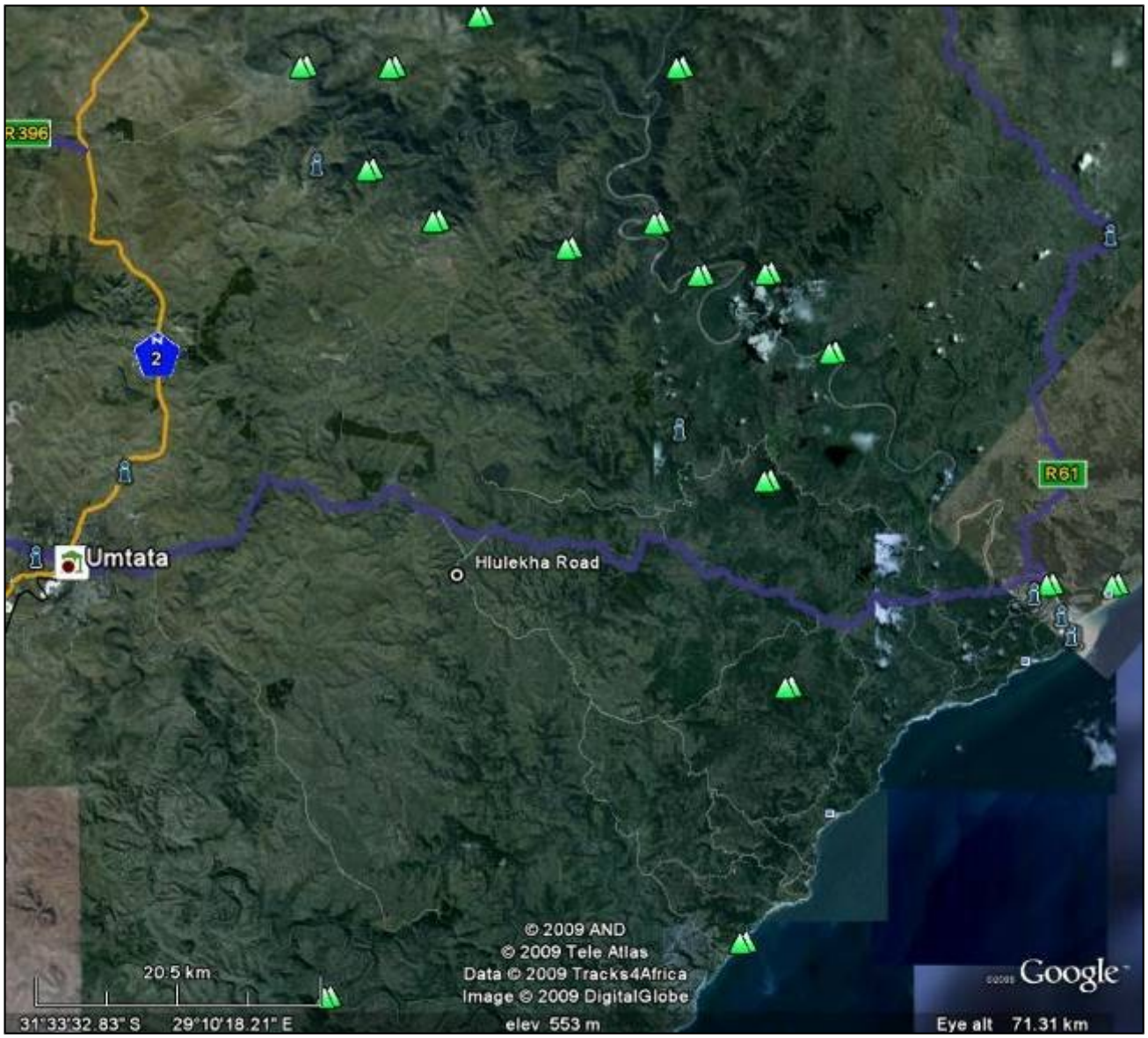
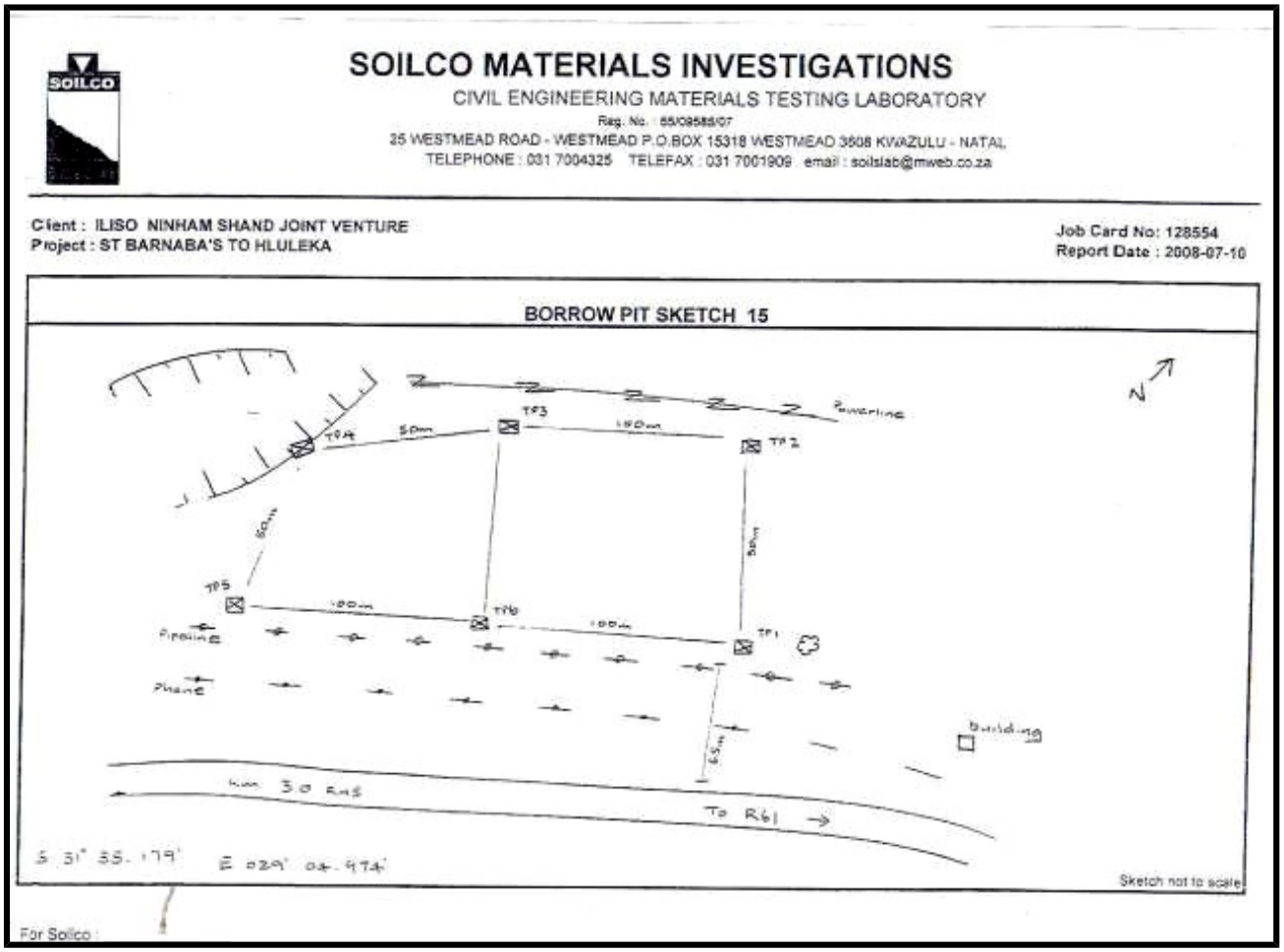


FIG. 2: EXAMPLE OF SKETCH USED FOR LCOATING BORROW PITS



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
   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.

RESULTS

Fourteen sites were proposed for borrow pits and/or quarries. Five archaeological and six possible palaeontologically sensitive areas were recorded during the survey. Each site has a prefix of BP for 'borrow pit or Q for 'quarry'. A number that is related to the sketch number (see fig. 2) follows this prefix.

I normally define archaeological sites in terms of requiring five or more stone tools or more than two pots. However, during the course of the survey, there was heavy rain (and mud) and the grass was very thick in some areas. I thus assumed that if one stone tool occurs, then there should be more in the immediate vicinity.

All sites that have mudstone and/or shale are presumed to be palaeontologically sensitive (see Appendix B).

BP1

BP1 is located near the 43.2km mark. It is a small hill with sandstone outcrop. Two Middle Stone Age (MSA) flakes were observed in the road cutting.

Significance: The site is of low significance

Mitigation: No further mitigation is required.

BP2

BP2 is located near the 42.6.2km mark (fig. 4). It is a small hill with dolerite outcrop. A single MSA flakes was observed in the road cutting.

Significance: The site is of low significance.

Mitigation: No further mitigation is required.

FIG. 3: LOCATION OF BORROW PITS AND QUARRIES

FIG. 4: LOCATION OF BP 1 - 3

FIG. 5: LOCATION OF BP 4 - 5

BP3

BP3 is located near the 41.4km mark (fig. 4). There is an existing borrow pit to the west of the proposed borrow pit. Two Middle Stone Age flakes were observed on the surface of the old borrow pit. These have presumably washed down for the hill above.

Significance: The site is of low significance

Mitigation: No further mitigation is required. Palaeontological assessment will be required.

BP4

BP4 is located near the 38.1km mark (fig. 5). It is a small hill with a dolerite outcrop. No artefacts were observed.

Significance: The site is of no significance

Mitigation: No further mitigation is required.

BP5

BP5 is located near the 36km mark (fig. 5). The direction of the road on the sketch was misleading as it indicated the direction to Port St. Johns instead of the R61. Nonetheless, the co-ordinates were accurate. It is a small hill with a disused house along the southwestern part of the borrow pit. No artefacts were observed.

Significance: The site is no significance

Mitigation: No further mitigation is required.

BP6

No co-ordinates were given for BP Sketch 6. There is a reference to the mileage; however, it is unclear from where it is taken. The proposed borrow pit

was not surveyed. According to the Google Earth image it may occur near BP5; however the sketch does not 'fit' the scenery. It is unlikely to have archaeological material, but should have an palaeontological assessment.

BP7

BP7 is located near the 30.0km mark (fig. 6). There is an existing borrow pit to the northwest of BP7. The borrow pit is in a small hill with a shale deposit. No artefacts were observed.

Significance: The site is of low significance

Mitigation: No further mitigation is required. Palaeontological assessment will be required.

BP9

BP9 is located near the 17.8km mark, and about 1km from the road (fig. 7). The borrow pit is on a large hill. The Old Bunting Mission is located near the entrance to the borrow pit. There appears to have been agricultural activity on the land suggesting that homesteads may have occurred here as well. I did not observe any old homesteads.

Significance: The site is of low significance. The mission may be of high significance.

Mitigation: No further mitigation is required. The mission should not be affected.

BP10

BP10 is supposed to be located near the 14.6m mark. The co-ordinates place the site off the Hluleka Road, and ~12km northeast of Libode. I could not locate the area on the map, as it was not near the mileage mark. I did however notice an existing soccer field nearby with a shale borrow pit. If the proposed borrow pit

is an extension of this borrow pit, then it may be sensitive in terms of palaeontology

Significance: The site is of low significance; however, the shale layers may be sensitive.

Mitigation: No further mitigation is required. Palaeontological assessment will be required.

BP13

BP13 is supposed to be located near the 6.8m mark. The co-ordinates place the site off the Hluleka Road, and ~12km northeast of Libode, and adjacent to several houses. I could not locate the area on the map, as it was not near the mileage mark.

Significance: N/A

Mitigation: N/A

BP14

BP14 is supposed to be located 2.7km from the 3.2m mark (fig. 8). The site is next to an existing borrow pit that has sandstone, dolerite and shale layers. These layers may be palaeontologically significant.

Significance: The area was not assessed

Mitigation: Palaeontological assessment will be required.

BP15

BP15 is located near the 3.0km mark (fig. 8). The site consists of a few MSA tools. There are shale and dolerite layers in the borrow pit as well.

Significance: The site is of low significance

Mitigation: No further mitigation is required. Palaeontological assessment will be required.

FIGURE 6: LOCATION OF BP7

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FIGURE 7: LOCATION OF BP9

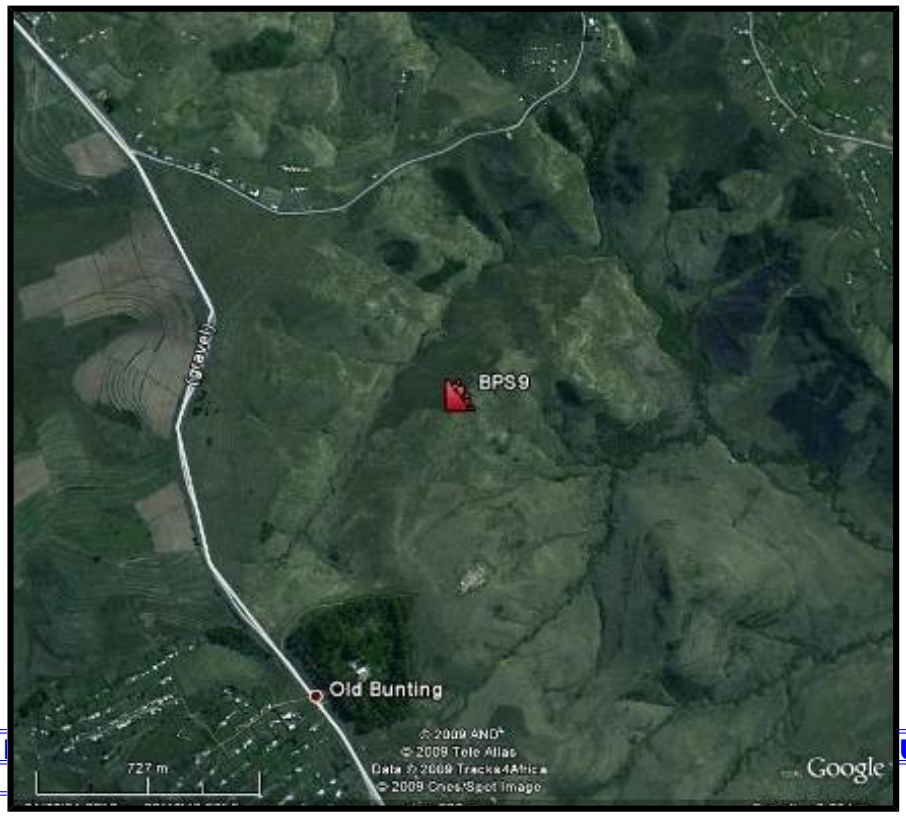

FIGURE 8: LOCATION OF BP14 - 15

FIGURE 9: LOCATION OF Q4

Q4

Q4 is located between BP7 and BP9 (fig. 9). It is a large hill with a sandstone outcrop, as well as shale and dolerite layers. I noticed Middle Stone Age flakes in the road cutting. The shale layers are sensitive.

Significance: The site is of low significance

Mitigation: No further mitigation is required. Palaeontological assessment will be required.

Q3

Q3 is located near the ~7km southwest of Libode, and ~6km west of BP14. It is an elongated hill with a lot of housing. I believe that the co-ordinates are incorrect as they place quarry in the middle of a mealie field amongst houses. No artefacts were observed.

Significance: The area is possibly incorrect

Mitigation: Palaeontological assessment may be required.

PALAEONTOLOGICAL REMAINS

The various borrow pits and quarries appear to impact on the Ecca Group and Beaufort Group. These formations have potential significant palaeontological remains. According to the desktop analysis, this area is sensitive in terms of palaeontological remains (See Appendix B). A palaeontological assessment will need to be undertaken to assess these areas thoroughly.

MANAGEMENT PLAN

The archaeological remains that will be affected by the borrow pits and quarries are all of low significance and require no further mitigation. The

developer will need to obtain a destruction permit from SAHRA prior to beginning the borrow pits and/or quarries.

The borrow pits and quarries need to be assessed by a palaeontologist to confirm the desktop work. The desktop report notes that there are potential palaeontological remains in the area. The developer will need to apply to SAHRA for a permit to damage, or destroy, the palaeontological sites.

CONCLUSION

A heritage survey of the proposed borrow pits and quarries of the Hluleka Road upgrade was undertaken in February 2009. The heritage survey for the road was undertaken by another company and I have not seen that report.. The borrow pits and quarries were identified prior to the survey.

A heritage and palaeontological desktop survey was undertaken, followed by a heritage field survey. Five archaeological sites were recorded at the borrow pits and/or quarries. These are all Middle Stone Age sites of low significance and no further mitigation is required. A permit for the damage/destruction of these sites will be needed from SAHRA.

The palaeontological study identified two geological formations that have potential to yield significant finds. The borrow pits and quarries will need to be surveyed and assessed by a palaeontologist. A permit for the damage/destruction of these sites will be needed from SAHRA.

APPENDIX A

SITE RECORD FORMS

UMLANDO ARCHAEOLOGICAL SITE RECORD FORM

Umlando: Archaeological Tourism
& Resource Management
P.O. Box 102532, Meer-en-See, 3901
Ph: 035-7531785 / 0836585362 / 0723481327

SITE CATEGORY: (X where applicable)
Stone Age: MSA
Early Iron Age:
Late Iron Age
Historical Period:

Recorder's Site No.: BP1
Official Name:
Local Name:
Map Sheet:
Map Reference: (alt = m)

DIRECTIONS TO SITE: SKETCH OR DESCRIPTION.

BP1 is located near the 43.2km mark from the turn-off . It is a small hill with sandstone outcrop.

SITE DESCRIPTION:

Type of Site: Surface.
Merits conservation: No
Threats: yes
What threats: Possible development

RECORDING:
Graphic record: None
Digital pictures: Tracings : Re-drawings:

Recorder/Informant: Name: Gavin Anderson
Address: PO Box 102532, Meerensee, 3901
Date:February 2009
Owner: State
References:

Description of site and artefactual content.

Two Middle Stone Age (MSA) flakes were observed in the road cutting.

Significance: The site is of low significance

Mitigation: No further mitigation is required.

UMLANDO ARCHAEOLOGICAL SITE RECORD FORM

SITE CATEGORY: (X where applicable)
Stone Age: MSA
Early Iron Age:
Late Iron Age
Historical Period:

Recorder's Site No.: BP2
Official Name:
Local Name:
Map Sheet:
Map Reference: (alt = m)

DIRECTIONS TO SITE: SKETCH OR DESCRIPTION.

BP2 is located near the 42.6.2km mark. It is a small hill with dolerite outcrop.

SITE DESCRIPTION:

Type of Site: Surface.
Merits conservation: No
Threats: yes
What threats: Possible development

RECORDING:
Graphic record: None
Digital pictures: Tracings : Re-drawings:

Recorder/Informant: Name: Gavin Anderson
Address: PO Box 102532, Meerensee, 3901
Date:February 2009
Owner: State
References:

Description of site and artefactual content.

A single MSA flakes was observed in the road cutting.

Significance: The site is of low significance.

Mitigation: No further mitigation is required. Palaeontological assessment will be required.

UMLANDO ARCHAEOLOGICAL SITE RECORD FORM

Umlando: Archaeological Tourism
& Resource Management
P.O. Box 102532, Meer-en-See, 3901
Ph: 035-7531785 / 0836585362 / 0723481327

SITE CATEGORY: (X where applicable)
Stone Age
Early Iron Age:
Late Iron Age
Historical Period:

Recorder's Site No.: BP3
Official Name:
Local Name:
Map Sheet:
Map Reference: (alt = m)

DIRECTIONS TO SITE: SKETCH OR DESCRIPTION.

BP3 is located near the 41.4km mark. There is an existing borrow pit to the west of the proposed borrow pit.

SITE DESCRIPTION:

Type of Site: Surface.
Merits conservation: No
Threats: yes
What threats: Possible development

RECORDING:
Graphic record: None
Digital pictures: Tracings : Re-drawings:

Recorder/Informant: Name: Gavin Anderson
Address: PO Box 102532, Meerensee, 3901
Date:February 2009
Owner: State
References:

Description of site and artefactual content.

Two Middle Stone Age flakes were observed on the surface of the old borrow pit. These have presumably washed down for the hill above. There is a dolerite strata in the cutting and this may be palaeontologically sensitive.

Significance: The site is of low significance

Mitigation: No further mitigation is required. Palaeontological assessment will be required.

UMLANDO ARCHAEOLOGICAL SITE RECORD FORM

Umlando: Archaeological Tourism
& Resource Management
P.O. Box 102532, Meer-en-See, 3901
Ph: 035-7531785 / 0836585362 / 0723481327

SITE CATEGORY: (X where applicable)
Stone Age: MSA
Early Iron Age:
Late Iron Age
Historical Period:

Recorder's Site No.: BP15
Official Name:
Local Name:
Map Sheet:
Map Reference: (alt = m)

DIRECTIONS TO SITE: SKETCH OR DESCRIPTION.

BP15 is supposed to be located near the 3.0km mark.

SITE DESCRIPTION:

Type of Site: Surface.
Merits conservation: No
Threats: yes
What threats: Possible development

RECORDING:
Graphic record: None
Digital pictures: Tracings : Re-drawings:

Recorder/Informant: Name: Gavin Anderson
Address: PO Box 102532, Meerensee, 3901
Date:February 2009
Owner: State
References:

Description of site and artefactual content.

The site consists of a few MSA tools. There are shale and dolerite layers in the borrow pit as well.

Significance: The site is of low significance

Mitigation: No further mitigation is required. Palaeontological assessment will be required.

UMLANDO ARCHAEOLOGICAL SITE RECORD FORM

Umlando: Archaeological Tourism
& Resource Management
P.O. Box 102532, Meer-en-See, 3901
Ph: 035-7531785 / 0836585362 / 0723481327

SITE CATEGORY: (X where applicable)
Stone Age
Early Iron Age:
Late Iron Age
Historical Period:

Recorder's Site No.: Q4
Official Name:
Local Name:
Map Sheet:
Map Reference: (alt = m)

DIRECTIONS TO SITE: SKETCH OR DESCRIPTION.

Q4 is located between BP7 and BP9. It is a large hill with sandstone outcrop as well as shale and dolerite layers.

SITE DESCRIPTION:

Type of Site: Surface.
Merits conservation: No
Threats: yes
What threats: Possible development

RECORDING:
Graphic record: None
Digital pictures: Tracings : Re-drawings:

Recorder/Informant: Name: Gavin Anderson
Address: PO Box 102532, Meerensee, 3901
Date:February 2009
Owner: State
References:

Description of site and artefactual content.

I noticed Middle Stone Age flakes in the road cutting. The shale layers are palaeontologically sensitive.

Significance: The site is of low significance

Mitigation: No further mitigation is required. Palaeontological assessment will be required.

APPENDIX B

PALAEONTOLOGICAL REPORT

Clarens Dinosaur Hunting Expeditions CC
Dr Gideon Groenewald (PhD; Nat Dip Nat Con; Pr Sci Nat Earth Scientist)

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9700, RSA

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3 April 2009

Mr Gavin Anderson
Project Archaeologist
Hluleka Road Project

Gavin

POTENTIAL PALAEONTOLOGY ALONG THE PROPOSED HLULEKA ROAD DEVELOPMENT

From the information I have of this request I was able to identify the main route of this road (Fig 1).

Fig 1. Start and end of the Hluleka Road development

From this information a desktop study indicates the following regarding possible palaeontological finds along the route.

1. **Geology**

The road will transect geology ranging from Ecca Age sedimentary rocks closer to the sea to possibly lower Beaufort Group sediments in the higher inland areas. From the information on the borrow pits provided it is also clear that extensive dolerite sill and dolerite dyke igneous rocks are abundantly present in the area. This geological setting is well-known for this part of South Africa.

It is also a known fact that several very important "trap-door" faults as well as some "horst and graben" fault structures are present. These faults can lead to displacement of younger geology to very low altitudes in the region, making it essential for any responsible developer, Public or Private, to ensure that the specific geological formation that occurs at a site is properly recorded and examined for Palaeontological content.

2. **Palaeontology and its potential importance in the this area**

Ecca Group – it is known that this group of rocks represent a deep water deposit and that the most important palaeontological information is present as "trace fossils" or the remains of the tracks of animals and plants that lived in relatively deep water environments, with an important transition to shallow water environments where the resulting rocks reveal information about the shallow water living creatures of the time.
Beaufort Group – it is well known that this group of rocks presents us with a unique opportunity to discover some of the oldest terrestrial (land-living) animals on earth. Fossils from the Lower Beaufort or Adelaide Subgroup include the formidable Gorgonopsian predators and the large plant eaters (Dicynodonts) that lived with them, albeit being their food. The route of the road dissects all the important Lower Beaufort (Adelaide Subgroup) strata and it is possible that severe faulting in the region could have resulted in the down-faulting of younger geology such as the Triassic aged Middle Beaufort (Tarkastad Subgroup) rocks. The Tarkastad Subgroup is well-known for the Lystosaurus and related animals with the important discovery of casts of vertebrate burrows, possibly made by the Lystrosaurus animals.
Younger travertine and other geological formations – due to the uplift of this part of South Africa about 15000 years ago the present river systems show clear indications of very fast incision into the old flows of the river channels. In situations like this it is possible to find small remnants of more recent geological deposits with remains of related aged animals (and possibly humans) in these small outcrops of very young rock on the mountain sides and even on the top of some of the hills in the area.
Older rocks predating the Karoo Age - It is known that much older rock formations, dating to the same age as the rocks building Table Mountain near Cape Town, occur in the area as a result of Gondwana Faulting. These rocks do contain fossils of marine animals that lived about 450 million years ago and it is always good practise to be on the lookout for these important remains of life in the rocks of South Africa.

Dolerite Intrusions - dolerite sills and dykes are obviously not important for palaeontology and will not contain any fossils.

I trust that this information is useful for the initial phase of the study. It will obviously be necessary for a trained palaeonotologist to inspect the route of the road to confirm (ground proof) these desktop survey results. It is important to ensure that the developer of this project obtains a permit from SAHRA for the disturbance of palaeontological remains during the construction phase of this project.

Thank you very much for your request.

Greetings

GIDEON GROENEWALD (PhD; Pr Sci Nat Earth Scientist)
Geologist