

**HERITAGE SURVEY OF THE SERVICED
STANDS FOR THE PROPOSED MIXED-USE
DEVELOPMENT ON ERF 15990 LADYSMITH, ALFRED
DUMA LOCAL MUNICIPALITY KWAZULU-NATAL
PROVINCE**

FOR SCN GROUP (PTY) LTD

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Executive summary

SCN Group (Pty) Ltd have been appointed by Alfred Duma Local Municipality to be the Implementing Agent for Undertaking Planning Activities and Servicing of Sites on Erf 15990. The activities are for a mixed development that includes housing, light industrial, commercial premises and related infrastructure. The existing land is mostly unused and consists of dolerite hills and shallow soils on a shale floor.

Umlando was contracted to undertake the Heritage Impact Assessment of the proposed development. A desktop study noted that the development was part of 'No Man's Land' during the 2nd Anglo-Boer War and the two hills in the southwestern corner were part of the British fortifications. These fortifications are provincial monuments and form part of a battlefield. These are protected by heritage legislation and cannot be developed.

The desktop also noted that the non-dolerite areas within the development are of very high palaeontological significance. A previous study at the Sumitomo factory was undertaken in 2016 and this was used as an example of what can be expected. Any excavations deeper than 1.5m would require a qualified palaeontologist before and during construction.

The heritage field survey noted that the 2nd Anglo-Boer War fortifications were well preserved and merit conservation. The study area also had many Late iron Age settlements in the forms of stone walled cattle byres, house and granary floors and human graves. All of these structures are protected by the heritage legislation. The late Iron Age and 2nd Anglo-Boer War sites occur on the top of the hills.

After the initial report, KZN Amafa & Research Institute contacted Umlando and requested a meeting to discuss the area and development in detail before

they would make a comment. We agreed to the existing buffer and to make it slightly larger to accommodate other features. We both agree that there would be a negative visual impact.

The proposed development of this area requires heritage management plan. The two hills related to the Anglo-Boer War cannot be developed, as these are provincial monuments and battlefields. Any development in front of the hills will have a negative visual impact since these hills look onto all of the areas occupied by the Boer Forces during the Siege of Ladysmith. This is the last “clear” view in Ladysmith for these locations, since other areas have been developed. The development should remain below the skyline on the opposite hills.

The area in front of Cemetery Hill should not be developed, as it will have a negative impact on the monument. There would be an increase in human activity and possible damage to the existing structures and it will have a negative visual impact. This area has many Late Iron Age stone walled settlements, with human graves, that will require mitigation in the form of excavations and exhumations. There is also a Transnet servitude running across this hill. These hills should rather be developed and made accessible for tourism.

The Late Iron Age and/or Historical Period sites on the main hill will require excavations and exhumations if they are allowed to be affected. A land surveyor will be required to accurately map all these features with the assistance of a qualified archaeologist. The exhumations of historical and/or archaeological graves are a lengthy process, especially if there are ancestral claims. This is a lengthy process and can take a minimum of 65 months to complete. These sites however, do fall in the buffer zone.

The ‘No Man’s Land’ will require some form of mitigation in the form of a metal detector survey.

A Shembe Temple occurs in the southeastern corner of the development. The users of the temple will need to be consulted if the temple needs to be moved. This also falls in the buffer zone so it is unlikely to be moved.

Several permits will need to be issued if there is any development at this site.

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INTRODUCTION

“SCN Group (Pty) Ltd has been appointed by Alfred Duma Local Municipality to be the Implementing Agent for Undertaking Planning Activities and Servicing of Sites on Erf 15990. The aim of this project is also aimed at encouraging an efficient provision and use of social, engineering and economic resources/services.

The subject property is located approximately 7km in the east direction from Emnambithi Central Business District as illustrated on the image to the right. The proposed property is situated and bounded by the N11 to the West, by Mandela Drive/Steadville township to the South, a river stream to the East and St. Chads/Ezakheni road to the North” (SCN Group planning report 2019).

The re-zoning will be as follows and include related infrastructures

LAND USE TABLE			
Land Use Zone	Sites	Area (Ha)	%
Special Residential 1	3012	118.38	57.27
General Residential 1	4	0.78	0.38
Limited Commercial 1	9	1.52	0.74
Institutional	8	1.16	0.56
Educational	5	4.17	2.02
Light Industrial 1	76	3.70	1.79
Open Space	9	31.6	15.29
Roads		45.39	21.95
Total	3123	206.70	100

Umlando was contracted by SCN Group to undertake the heritage survey. Figures 1 – 4 show the location of the proposed project area.

FIG. 1 GENERAL LOCATION OF THE PROPOSED DEVELOPMENT

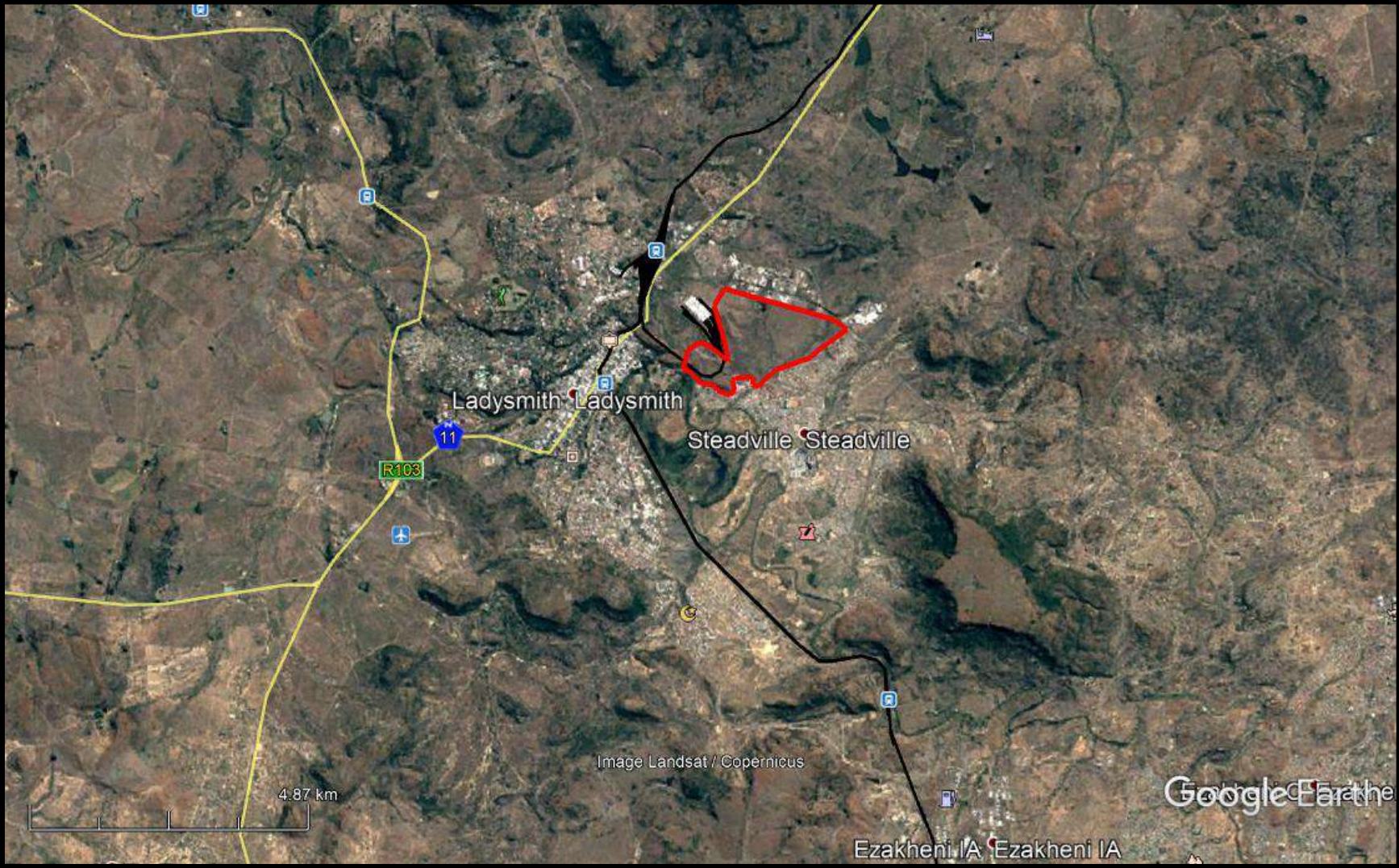


FIG. 2: AERIAL OVERVIEW OF THE PROPOSED DEVELOPMENT



FIG. 3: TOPOGRAPHICAL MAP OF THE PROPOSED DEVELOPMENT

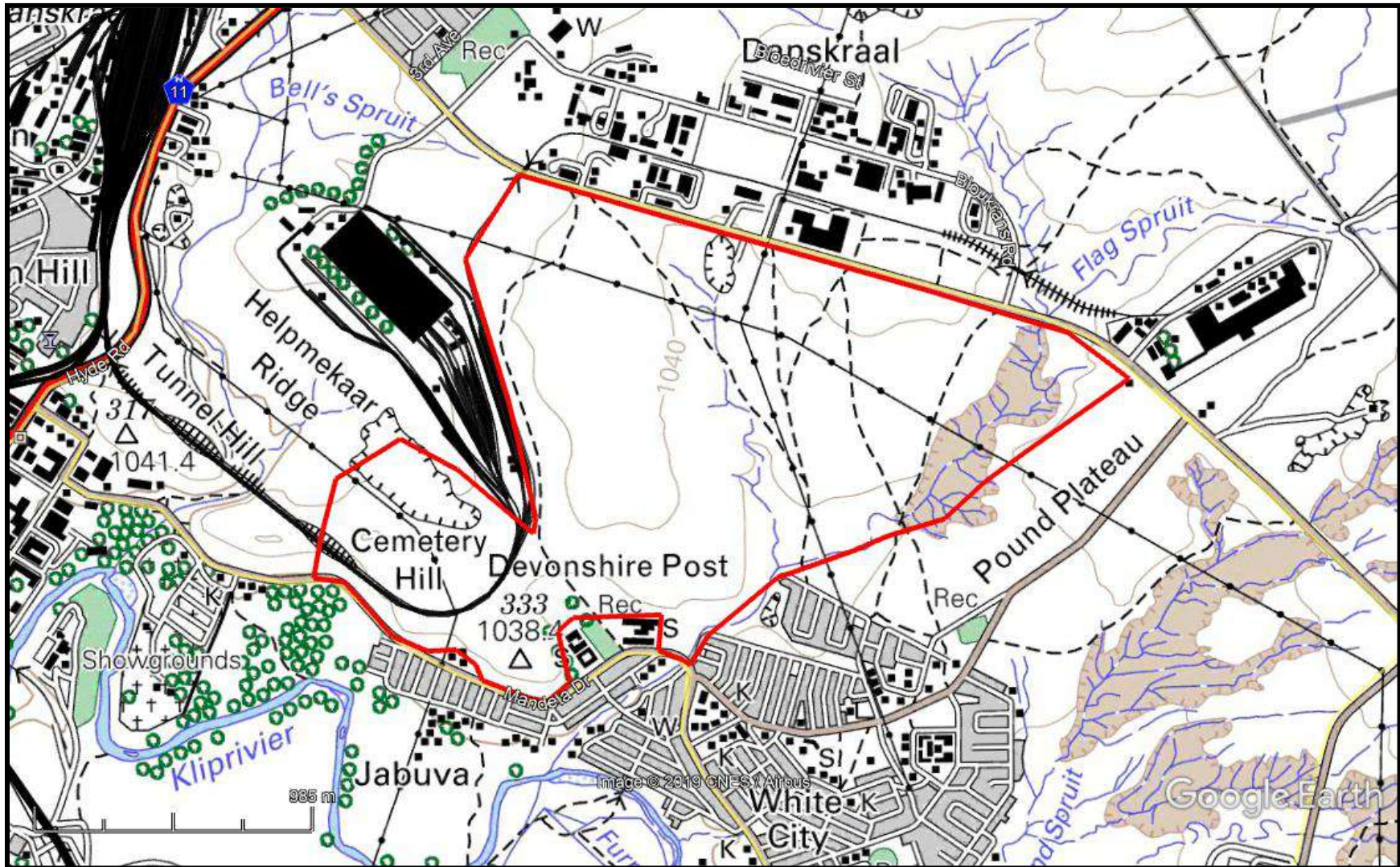


FIG. 4 SCENIC VIEWS OF THE STUDY AREA



KWAZULU NATAL AMAFA AND RESEARCH INSTITUTE, ACT 05, 2018

“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.”

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. This 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.

RESULTS

DESKTOP STUDY

The desktop study consisted of analysing various maps for evidence of prior habitation in the study area, as well as for previous archaeological surveys. Fig. 5 indicates that there are many archaeological sites in the general area. These date to the Early, Middle and Late Stone Ages, the Late Iron Age, Historical Period and the 2nd Anglo Boer War (2nd ABW).

Umlando has undertaken several surveys in the general area (Anderson 2011, 2016a-b).

Two known sites, or provincial monuments, occur in the study area: Cemetery Hill and Devonshire Post. These are British occupations during the Siege of Ladysmith. Most of the study area is in 'No Man's Land' during the

Siege of Ladysmith and thus there will be no fortifications. The 'No Man's Land' had a lot of British troop activity at the beginning of the Siege of Ladysmith. Figure 6 shows the troop positions once the Siege had settled in. The Heritage Legislation automatically protects all Battlefields and related sites. They are considered of very high significance, and should not be developed. Given the amount of battlefield sites that have already been destroyed by development around Ladysmith, the few remaining ones need full protection.

The 1937 map shows that there are no structures in the study area (fig. 7). The walling from the Devonshire Post is visible.

The 1953 1:50 000 topographical map indicates Cemetery Hill and Devonshire Post. No other features are noted on the map.

FIG. 5: LOCATION OF KNOWN HERITAGE SITES IN THE GENERAL AREA

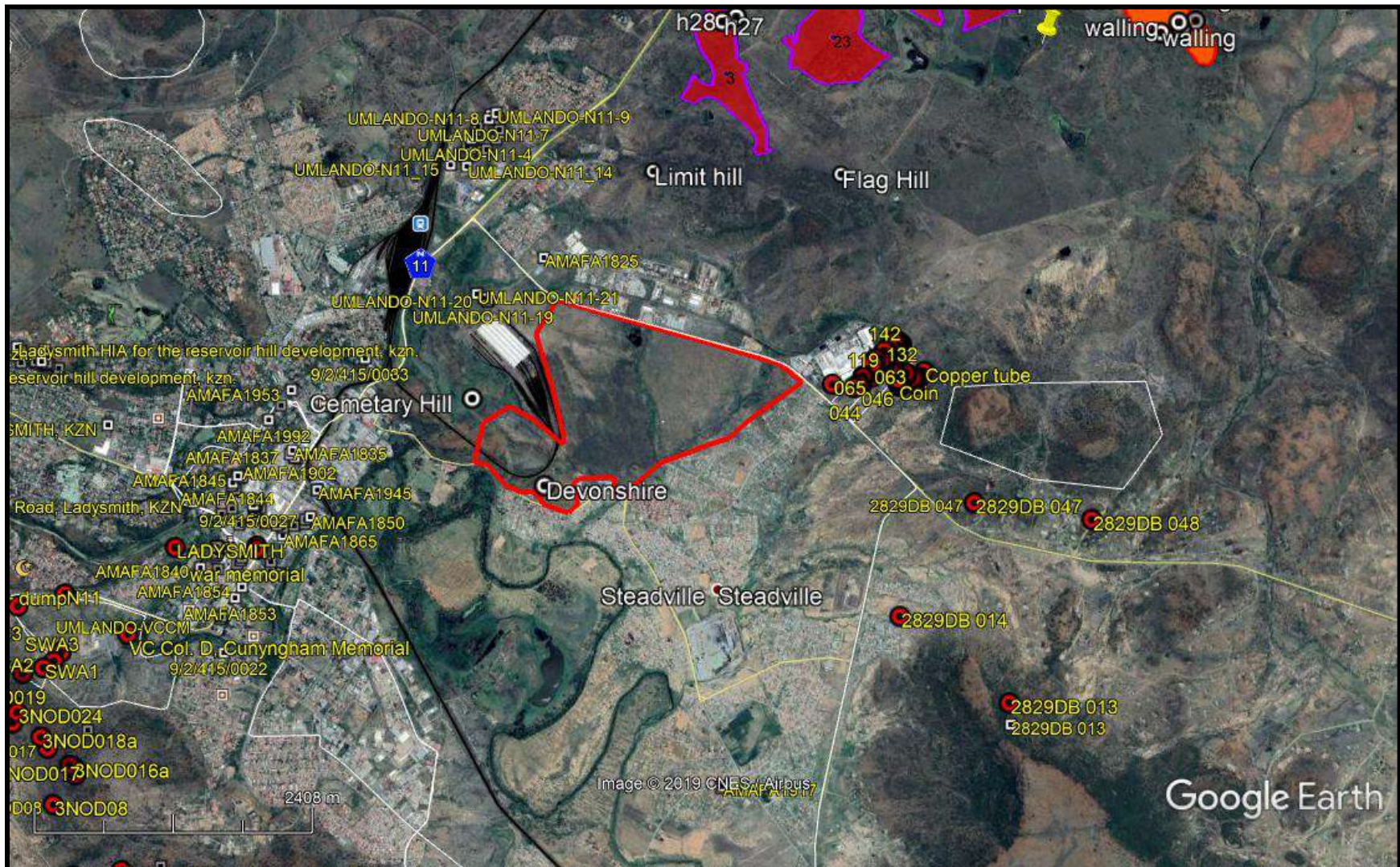


FIG. 6: LOCATION OF ARMY TROOPS DURING THE SIEGE OF LADYSMITH

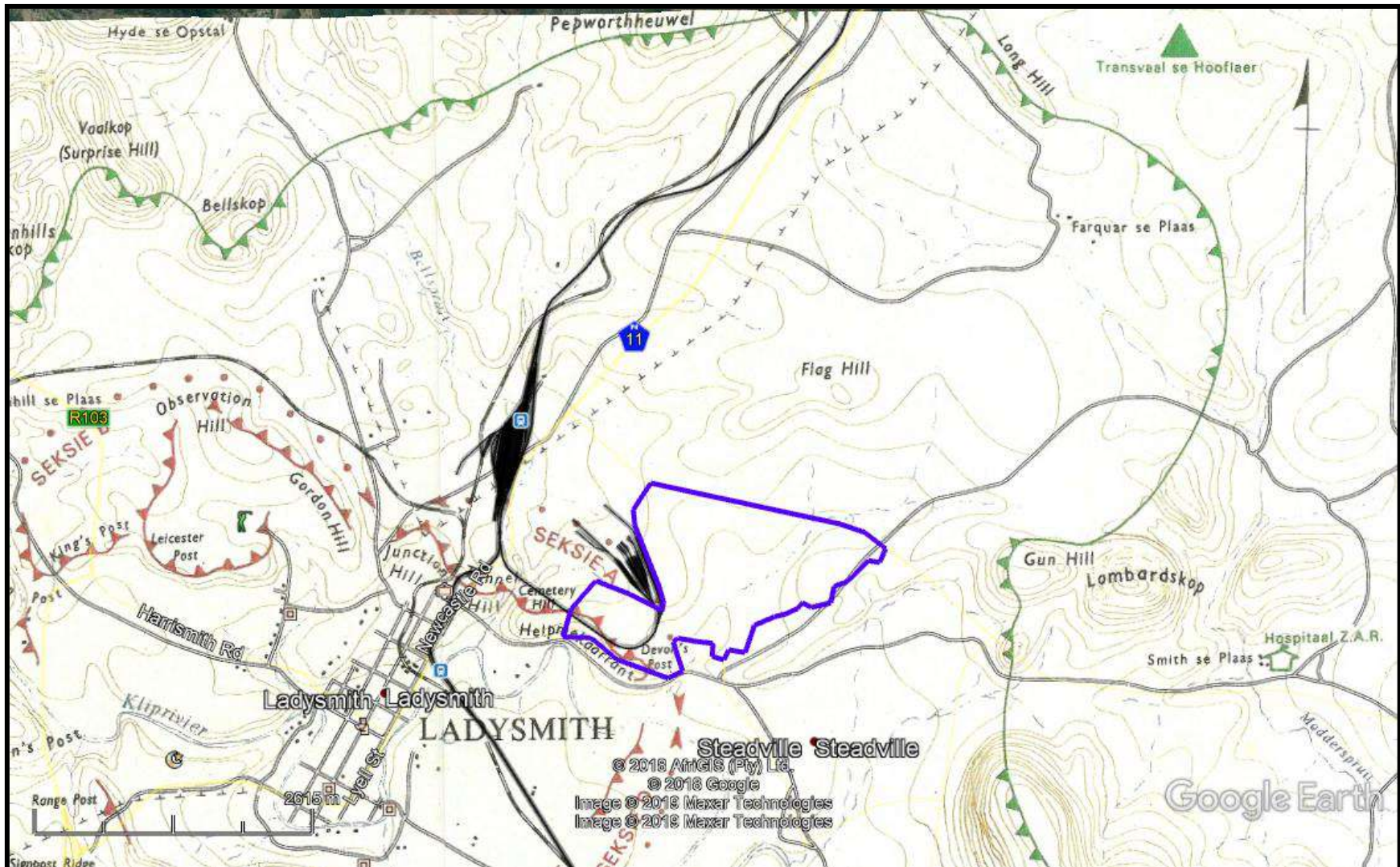


FIG. 7: LOCATION OF DEVELOPMENT IN 1937

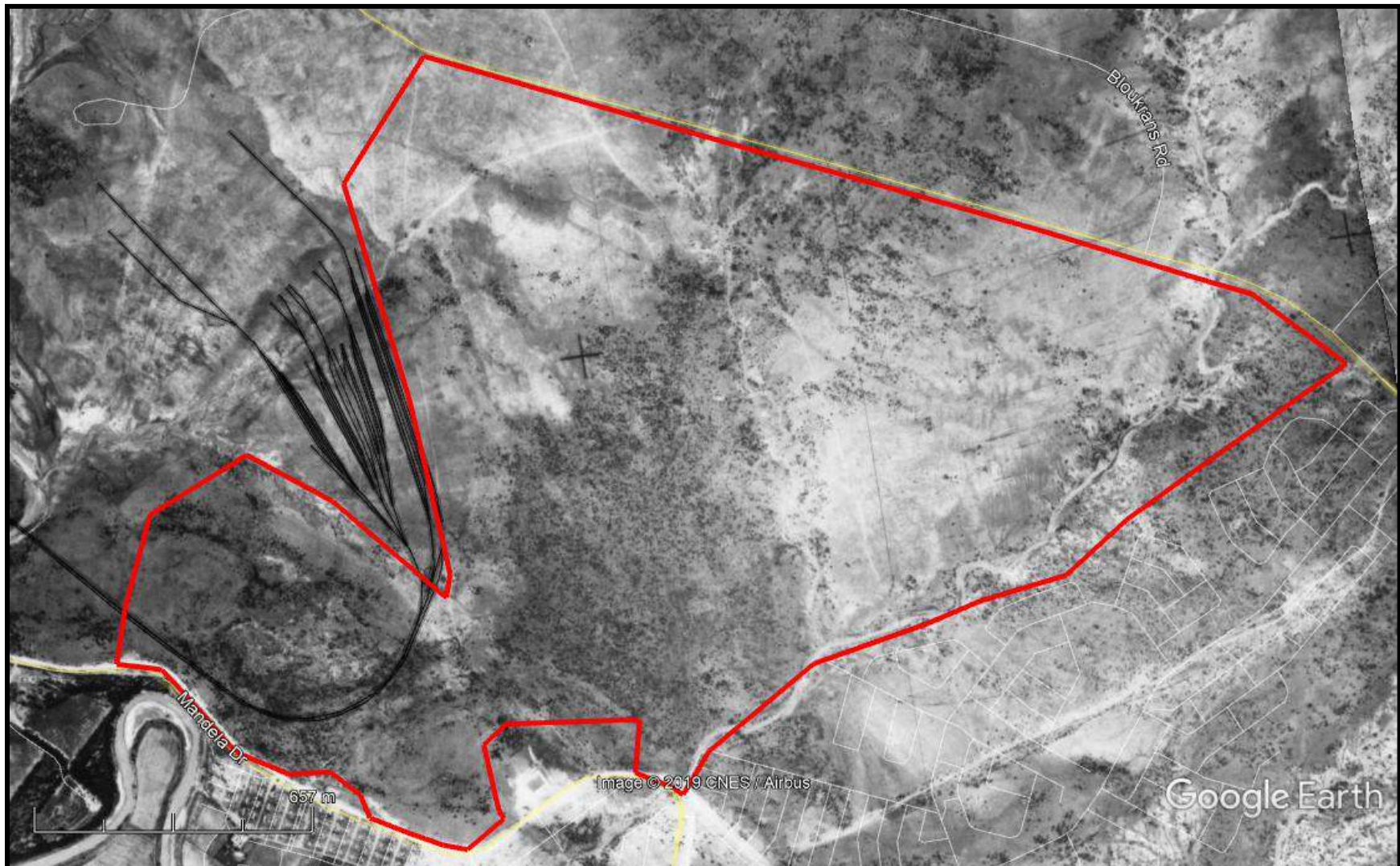
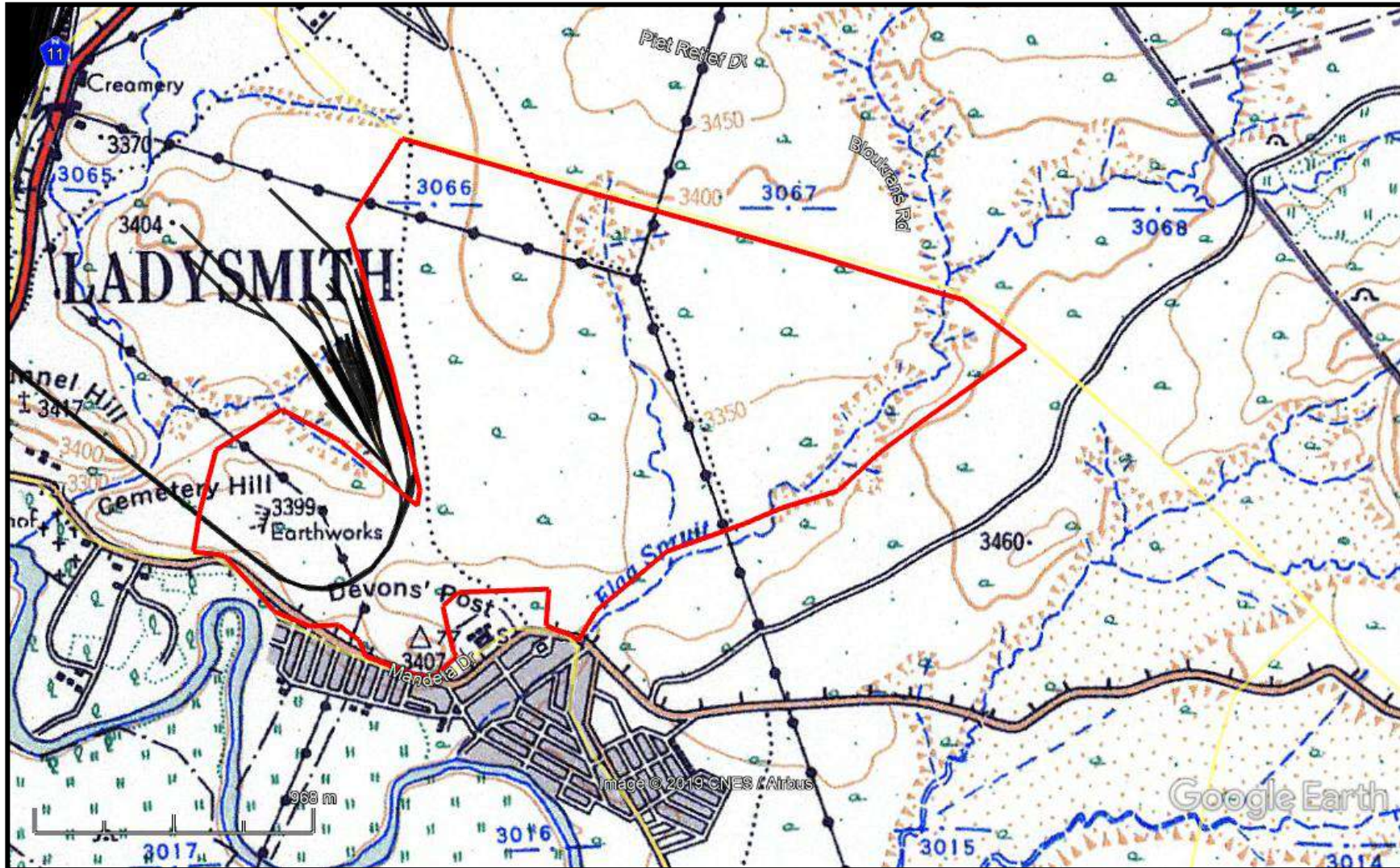


FIG. 8: STUDY AREA IN 1953



PALAEONTOLOGICAL SURVEY

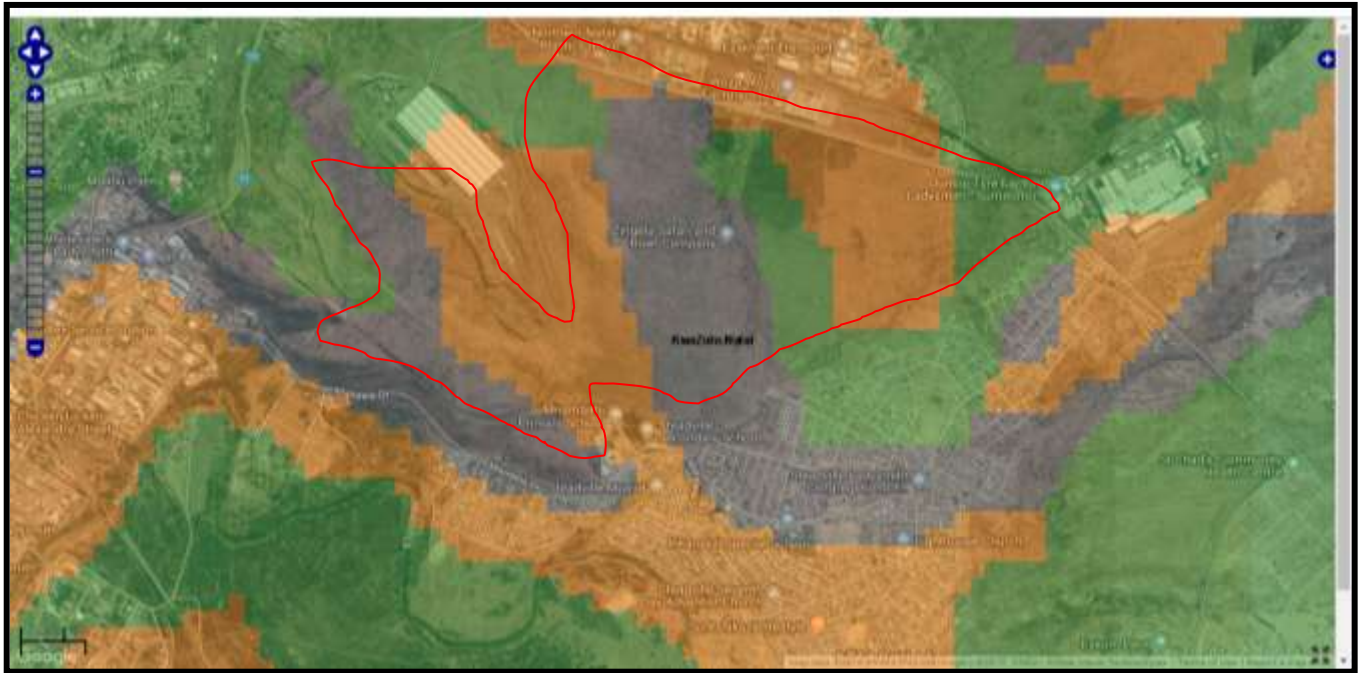
The palaeontological Phase 1 survey was undertaken at the Sumitumo Factory in 2016 by Dr G. Groenewald. The factory borders the northern part of the development and the two properties share the same geology, and thus palaeontological sediments. The only difference to the study area is that it has dolerite outcrops that will not contain any palaeontological remains. The Phase 1 survey recorded several fossils in the Volksrust Formation. The fossils were found in the fine-grained sandstone and shale deposits. The fossils included fish, plants, and concretions from coprolites, trace fossils and general bones.

The survey concentrated on existing excavations on the border of the development where excavations had occurred, and had thus exposed fossils. Some fossils were also noted in the proposed footprint. The excavations for the factory will expose significant fossil remains that are considered to be of high palaeontological significance.

Any excavations deeper than 1.5m will require further investigation. A qualified palaeontologist will be required to inspect these deposits during the course of construction. The inspection and probable collection of fossils will not hinder construction activity.

The main portion of the proposed development falls in the sensitive area (fig. 9). This means all areas that are orange or green in fig. will require PIA mitigation.

FIG. 9: PALAEOANTHROPOLOGICAL SENSITIVITY MAP



FIELD SURVEY

The field survey was undertaken over two days in September 2019. Ground visibility was very good as much of the area was recently burnt. Parts of Cemetery Hill and Devonshire Post had dense grass, especially next to the stone walling. The rest of the area tended to be rocky with shallow soils. A kml file the location of the various sites/features will be sent to the client.

There are seven main clusters of archaeological sites (fig. 10). There are 75+ individual features in the clusters – some features are several joined features. Appendix B lists the locations of these features. These sites all occur on the dolerite hills. These clusters are associated with three distinct phases:

1. Late Iron Age and Historical Period settlements (ACE 1250 – early 1900)
2. British Army fortifications (ACE 1899 – 1902)
3. More recent 20th century structures (post ACE 1920)

FIG. 10: LOCATION OF HERITAGE CLUSTERS



FIG. 11: TYPES OF ARCHAEOLOGICAL SITES IN THE STUDY AREA¹



¹Red = British fortifications; White = 20th century features; Dark Green = LIA/HP walling; Yellow = LIA/HP graves

Late Iron Age and Historical Period Settlements

The Late Iron Age/Historical Period sites occur in Clusters 2, 3, 6, and 7. Examples of the sites will be shown, as there are too many to insert into the report. Photographs that are more detailed will occur in the Phase 2, if it occurs.

The main dolerite hill, on the western side of the development has two areas that have been cleared of large rocks on the top of the hill, and the northern slope. These two areas appear to be old agricultural fields and there are piles and/or rows of rocks that resemble field clearance in several areas (fig. 12). These predate 1937. The stone walling in this area is on the edge of the cleared area and is probably related. They are the following in size:

- 100m x 40m
- 520m x 140m (widest) or 35m (narrowest)

The main part of the LIA/HP settlements consist of stone walled cattle byres (often with secondary walling), house floors and human graves. The graves tend to be oval and sunken. There are no headstones. These form typical Late Iron Age/HP housing patterns.

Cluster 2 consists of:

- seven stone walled features
- three graves.

Cluster 3 is approximately 300m in diameter and consists of:

- 20+ stone walled features that include house floors (with a fireplace), granary floors, and cattle byres. Several of the cattle byres have secondary walling.
- ~6 human graves.
- Amongst these Iron Age features is a long low stone wall that could relate to the 2nd ABW.

Cluster 6 consists of:

- at least six human graves

- two stone walled features,
- a wall from field clearance.

Cluster 7 consists of:

- eight stone walled features
- at least three human graves.

The cattle byres vary in size, but are between 3m – 11m in diameter (fig. 13). House floors are between 3m – 4m in diameter (fig. 14). The human graves are often difficult to note as they have sunken through time. The grave begins as a stone cairn normally 1m x 1.8m in width and length (fig. 15). Through time, the stones are knocked off the main cairn and all that is left is an oval shape, level with the ground. Older graves would be subsurface and not visible at all. Clusters 2, 3 and 6 had several pottery sherds; however, none were diagnostic (fig. 16). These clusters also have an archaeological deposit. All of these sites predate 1900, and most appear to be Late Iron Age, rather than Historical Period. Cluster 7 could date to the Historical Period.

Significance: The LIA clusters are of medium and high significance. The walling is not well preserved, however enough remains to see settlement patterns. There is thus a spatial component and an archaeological deposit. The human graves increase the significance of these clusters.

Mitigation: If any of the sites and/or features is disturbed, then they will require mitigation. The mitigation for grave removals and/or archaeological excavations can each take 6 months to complete. This is an expensive process. These clusters do, however fall within the buffer zone requested by KAARI. It is unlikely that permits will be issued for their destruction and/or removal of human remains. KAARI has suggested the sites are used for tourism instead as it is rare to have sites from different periods in the same area.

SAHRA Rating: 3A

FIG. 12: FIELD CLEARANCE AREAS



FIG. 13: LATE IRON AGE CATTLE BYRES AND HOUSES



FIG. 14: LATE IRON AGE HOUSE FLOORS



FIG. 15: HUMAN GRAVES



FIG. 16: POTTERY SHERDS



2nd Anglo-Boer War Fortifications

As noted in the desktop study, Cemetery Hill and Devonshire Post occur in the southwestern part of the proposed development or Clusters 3 and 5, and Cluster 4, respectively. A single dugout for a sentry occurs in Cluster 1. Both Cemetery Hill (fig. 17) and Devonshire Post (fig. 18) have very well preserved stone wall fortifications. Both hills formed the outer perimeter of the British troops during the Siege of Ladysmith. The area to the north was No-Man's Land and then the Boer Forces. It is surprising that no fortifications occur on the main hill, where Clusters 2, 6 and 7 occur, as these would have given a better view of Boer activity. No graves related to the 2nd ABW were noted in the study area.

No-Man's Land is part of the cultural landscape and the last piece of land that has not been developed in Ladysmith. Any development in No-Man's Land would thus have a negative visual impact when viewing the landscape from Cemetery Hill and Devonshire Post. However, if development were kept below the skyline to the north of the main dolerite hill, then the visual impact would not be less negative. This will also lessen the impact on Clusters 1, 2, 6, and 7. Two old horseshoes were recorded at Clusters 6 and 7.

Cluster 3 contains some 2nd ABW walling and should be subsumed with Cluster 5.

In Cluster 1, there is an area that has been excavated, and then rocks have been piled up around the excavated hole (fig. 19). These tend to be used for sentries who would then stand in the dugout and be protected while they observe the "enemy". This is referred to as a Defensive Fighting Position, gun-pit or a sangar. The location of this feature makes sense as it is on top of a hill looking overlooking No-Man's Land and towards Lombardskop and Gun Hill that was occupied by the Boer Forces during the Siege.

Significance: Both hills are protected battlefield sites and provincial monuments. They are of high significance. The 2nd ABW is one of the main features of Ladysmith and provides various forms of income to the city through tourism. There has been a

significant loss of 2nd ABW sites over the century in the Ladysmith area through various developments, and these two sites are too well preserved to be demolished. The dugout is of low significance but still part of the battlefield.

Mitigation: No development should occur on Clusters 1 - 7. Any development in Clusters 1, 2, 3, 4, 6 and 7 will have a negative visual impact on the 2ABW fortifications. There would also be an increase in human pressure on these two sites. The sangar -out is considered part of the battlefield and is protected. At least a 500m buffer should be placed between the 2nd ABW fortifications and the development. This is almost the distance of the Visual Impact zone, except it is longer in some areas. The municipality with KAARI should rather develop the two hills to be more accessible for tourism. For this, an access road will be required to the sites. The access road would be parallel with the railway tracks.

20TH -21ST CENTURY FEATURES AND ARTEFACTS

Cluster 1 has several recent features that date to the 20th or 21st centuries. The main feature is a Shembe Temple (fig. 20). The Temple is still in use and has a track to the entrance. Along this track, on each side and at intervals, are stone cairns of various sizes (fig. 21). These are probably a result of clearance for the track, although it would not explain why smaller rocks were removed. They are not graves or *isivivane*.

Uphill from the Shembe Temple is a rectangular stone wall, with secondary and tertiary walling (fig. 22). There are two entrances: south and east. It is a cattle byre with walling at least 1m high. The cattle byres from the other clusters were virtually ground level indicating the greater age. Rectangular cattle byres tend to be Colonial in origin and do not conform to LIA/HP patterns. Alternatively, they tend to be late 19th century onwards.

Significance: The Shembe temple is considered as a place of worship and is thus protected by heritage legislation. The stone walled cattle byre is of low significance.

Mitigation: The people who use the Shembe Temple need to be consulted if the Temple is going to be removed/destroyed. The cattle byre needs to be accurately surveyed and photographed.

SAHRA Rating: The Shembe Temple is rated as 3a, while the cattle byre is 3c.

General Finds

Four artefacts were noted during the survey that requires comment:

1. 2 x horseshoe fragments – possible 2ABW (fig. 23)
2. 1 x handgun cartridge (fig. 24)
3. 1 x rifle cartridge (fig. 25)

The horseshoe fragments appear to be very weathered; however, there are no identifying features on them to obtain some date.

The pistol cartridge appears to be 20th century, as it does not have a significant patina. The casing markings are unclear.

The rifle cartridge has the marking FN 61 on it with a cross in a circle. The FN refers to Fabrique Nationale d'Armes de Guerre (FN), Herstal, Belgium. The 61 refers to 1961 and the symbol means it was made according to NATO standards, which were adopted in 1958. The cartridge is ~60mm in length and appears to be a blank.

The No-Man's Land had no heritage sites; however, it will probably have artefacts related to the 2nd ABW. I would suggest a metal detector survey is undertaken for this area. The survey should be staged with sample areas targeted at first. If artefacts are found in these areas then the survey should continue. If no 2nd ABW artefacts are found then it should be discontinued.

FIG. 17: WALLING AT CEMETERY HILL



FIG. 18: WALLING AT DEVONSHIRE POST



FIG. 19: RIFLE PIT IN CLUSTER 1



FIG. 20: SHEMBE TEMPLE



FIG. 21: STONE CAIRNS



FIG. 22: RECTANGULAR CATTLE BYRE



FIG. 23: HORSESHOE FRAGMENTS



FIG. 24: HANDGUN CARTRIDGE



FIG. 25: RIFLE CARTRIDGE



MANAGEMENT PLAN

The original report and its management plan have been slightly changed after discussion with KAARI. This is after the 'final layout plan' was submitted.

Some parts of the proposed study area need to be removed from the housing plan. **The two 2nd ABW hills are provincial monuments and may not be affected.** Any areas directly in front of these sites should be kept clear so as not to create a negative visual impact. Furthermore, an increase in human occupation in the direct area will probably lead to the sites being damaged. A minimum 500m buffer around these sites should be kept. While this might seem like it is depriving people the opportunity to have housing, there are alternative options, such as the unused Transnet land on the northwestern boundary. This means that the ridge in front of the 2nd ABW fortifications is a buffer zone and cannot be developed.

The Late Iron Age clusters would require more mitigation if they are to be affected. Mitigation would be in the form of professional land surveyors and archaeologists to map the various features in relation to the landscape. Moreover, the human graves would need to be excavated. While most of the graves date to the late Iron Age, the Traditional Authority might claim the ancestral remains. However, since this area is in the buffer zone, it is unlikely that KAARI will allow for excavations and/or grave removals.

Any development on the top of the main hill will result in a negative visual impact for the 2nd ABW sites. If the project must go ahead then I suggest it occurs in the area where no heritage sites were found and below the 1040m contour line. This will keep it out of the visual impact. This will be the no-man's land area.

The Shembe Temple is in the buffer zone and thus will not be affected.

FIG. 26 SENSITIVITY MAP FOR THE STUDY AREA²



² Red = no development; Light blue = Phase 1 PIA & metal detector survey

A phased metal detector survey will be required for No-Mans Land. This will be to salvage any 2nd ABW artefacts that may occur in the area. Battlefield artefacts are protected by the heritage legislation and may not be removed without a permit.

The developer will require the following permits from Amafa KZN:

- Permission to disturb/damage a battlefield (for No-Mans Land)
- Permission to use a metal detector on a Battlefield (No-Mans Land).
- No permits should be given for Clusters 1, 2, 3, 4, 5, 6 and 7.
- Permit to impact on a palaeontological site
- Permits are legal documents and binding

All areas of the study area that is not on dolerite will require a Phase 1 palaeontological survey and on site inspections during construction. This will be required where excavations are deeper than 1.5m.

Fig. 26 illustrates the areas that require mitigation.

CONCLUSION

A heritage survey was undertaken for the proposed low cost housing at Steadville, Ladysmith. The heritage survey noted that the area formed part of the general Siege of Ladysmith and two specific hills had well preserved British fortifications. The rest of the area was considered No-Mans Land; however, there was significant troop activity in this area during the onset of the Siege of Ladysmith. Cemetery Hill and Devonshire Post should not be affected in any manner; rather it should be developed for tourism, as it is currently inaccessible to most people. The proposed development will have a Negative Visual Impact if development occurs on the ridge. The dolerite ridge should also serve as a buffer against human encroachment onto the battlefield sites.

A phased metal detector survey would be required in some of the areas prior to development.

The upper parts of the hills in the study area had many Late Iron Age and Historical Period stone walled settlements. These included cattle byres, houses and human graves. These sites fall within the buffer zone and will not be affected.

A single active Shembe Temple was recorded in the study area. Members will need to be consulted if the Temple is to be moved.

Several types of heritage permits will be required by the development

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APPENDIX A
PIA DESKTOP ASSESSMENT

**PHASE 1 PALAEOLOGICAL
ASSESSMENT FOR THE PROPOSED
EXTENSION OF THE SUMITOMO RUBBER
FACTORY, EMNAMBITHI LOCAL
MUNICIPALITY, UTHUKELA DISTRICT
MUNICIPALITY, KWAZULU-NATAL
PROVINCE.**

FOR

Umlando

DATE: 22 April 2016

By

Gideon Groenewald

Cell: 078 713 6377

EXECUTIVE SUMMARY

Gideon Groenewald was appointed to undertake a Phase 1 Palaeontological field survey, assessing the potential Palaeontological Impact of the proposed extension of the Sumitomo Rubber Factory, Emnambithi Local Municipality, and Uthukela District Municipality, KwaZulu-Natal Province.

The purpose of this Phase 1 Palaeontological Impact Assessment is to identify exposed and potential Palaeontological Heritage on the site of the proposed development, to assess the impact the development may have on this resource, and to make recommendations as to how this impact might be mitigated.

This Palaeontological Assessment forms part of the Heritage Impact Assessment (HIA) and complies with the requirements of the South African National Heritage Resource Act No 25 of 1999 as well as the KwaZulu-Natal Heritage Act No 4 of 2008. In accordance with Section 38 of the National Resources Act No 25 of 1999 (Heritage Resources Management), a HIA is required to assess any potential impacts to palaeontological heritage within the development footprint.

Dr Gideon Groenewald, experienced fieldworker, visited the site of the proposed extension of the Sumitomo Rubber Factory, Emnambithi Local Municipality, and Uthukela District Municipality, KwaZulu-Natal Province on Wednesday 20th April 2016.

The development site for the proposed extension of the Sumitomo Rubber Factory, Emnambithi Local Municipality, and Uthukela District Municipality, KwaZulu-Natal Province is underlain by Permian aged sedimentary rocks of the Volksrust Formation, Eccca Group and Dolerite of the Karoo Supergroup as well as a minor section on the very north western corner underlain by Masotcheni Formation clays.

Several poorly defined fossils were observed during the field investigation. The potential for finding significant fossils in any excavation into sediments of the Volksrust Formation is high. No fossils will be associated with areas underlain by dolerite.

It is recommended that:

- The EAP and ECO must be informed of the fact that a High Palaeontological Sensitivity was allocated to the western part of the development and although highly weathered, fossils were recorded during the Phase 1 field investigation.
- A suitably qualified palaeontologist must be appointed to inspect all areas where excavation of deeper than 1,5m is made into sediments of the Volksrust Formation. A protocol for the chance find of fossils must be developed and discussed with the contractor on site.
- These recommendations must be included in the EMPr of this project.

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INTRODUCTION

Gideon Groenewald was appointed to undertake a Phase 1 Palaeontological field survey, assessing the potential Palaeontological Impact of the proposed extension of the Sumitomo Rubber Factory, Emnambithi Local Municipality, and Uthukela District Municipality, KwaZulu-Natal Province.

The purpose of this Phase 1 Palaeontological Impact Assessment is to identify exposed and potential Palaeontological Heritage on the site of the proposed development, to assess the impact the development may have on this resource, and to make recommendations as to how this impact might be mitigated.

Legal Requirements

This Palaeontological Assessment forms part of the Heritage Impact Assessment (HIA) and complies with the requirements of the South African National Heritage Resource Act No 25 of 1999 as well as the KwaZulu-Natal Heritage Act No 4 of 2008. In accordance with Section 38 of the National Resources Act No 25 of 1999 (Heritage Resources Management), a HIA is required to assess any potential impacts to palaeontological heritage within the development footprint.

Categories of heritage resources recognised as part of the National Estate in Section 3 of the Heritage Resources Act, and which therefore fall under its protection, include:

- geological sites of scientific or cultural importance;
- objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens; and
- objects with the potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage.

Aims and Methodology

A Phase 1 investigation is often the last opportunity to record the fossil heritage within the development footprint. These records are very important to understand the past and form an important part of South Africa's National Estate.

Following the "SAHRA APM Guidelines: Minimum Standards for the Archaeological &

Palaeontological Components of Impact Assessment Reports" the aims of the palaeontological impact assessment are:

- to identifying exposed and subsurface rock formations that are considered to be palaeontologically significant;
- to assessing the level of palaeontological significance of these formations;
- to comment on the impact of the development on these exposed and/or potential fossil resources and
- to make recommendations as to how the developer should conserve or mitigate damage to these resources.

Prior to the field investigation, a preliminary assessment (desktop study) of the topography and geology of the study area was made using appropriate 1:250 000 geological maps (2828 Harrismith) in conjunction with Google Earth. Potential fossiliferous rock units (groups, formations etc) were identified within the study area and the known fossil heritage within each rock unit was inventoried from the published scientific literature, previous palaeontological impact studies in the same region and the author's field experience.

Priority palaeontological areas were identified within the development footprint to focus the field investigator's time and resources. The aim of the fieldwork was to document any exposed fossil material and to assess the palaeontological potential of the region in terms of the type and extent of rock outcrop in the area.

The likely impact of the proposed development on local fossil heritage was determined based on the palaeontological sensitivity of the rock units concerned and the nature and scale of the development itself, most notably the minimal extent of fresh bedrock excavation envisaged. The different sensitivity classes used are explained in Table 2.1 below.

The likely impact of the proposed development on local fossil heritage is determined on the basis of the palaeontological sensitivity of the rock units concerned and the nature and scale of the development itself, most notably the extent of bedrock excavation envisaged. The different sensitivity classes used are explained in Table 1 below.

Table 1 Palaeontological sensitivity analysis outcome classification

PALAEONTOLOGICAL SIGNIFICANCE/VULNERABILITY OF ROCK UNITS	
The following colour scheme is proposed for the indication of palaeontological sensitivity classes. This classification of sensitivity is adapted from that of Almond et al (2008, 2009) (Groenewald et al., 2014).	
RED	Very High Palaeontological sensitivity/vulnerability. Development will most likely have a very significant impact on the Palaeontological Heritage of the region. Very high possibility that significant fossil assemblages will be present in all outcrops of the unit. Appointment of professional palaeontologist, desktop survey, phase I Palaeontological Impact Assessment (PIA) (field survey and recording of fossils) and phase II PIA (rescue of fossils during construction) as well as application for collection and destruction permit compulsory.
ORANGE	High Palaeontological sensitivity/vulnerability. High possibility that significant fossil assemblages will be present in most of the outcrop areas of the unit. Fossils most likely to occur in associated sediments or underlying units, for example in the areas underlain by Transvaal Supergroup dolomite where Cenozoic cave deposits are likely to occur. Appointment of professional palaeontologist, desktop survey and phase I Palaeontological Impact Assessment (field survey and collection of fossils) compulsory. Early application for collection permit recommended. Highly likely that a Phase II PIA will be applicable during the construction phase of projects.

GREEN	<p>Moderate Palaeontological sensitivity/vulnerability. High possibility that fossils will be present in the outcrop areas of the unit or in associated sediments that underlie the unit. For example areas underlain by the Gordonia Formation or undifferentiated soils and alluvium. Fossils described in the literature are visible with the naked eye and development can have a significant impact on the Palaeontological Heritage of the area. Recording of fossils will contribute significantly to the present knowledge of the development of life in the geological record of the region. Appointment of a professional palaeontologist, desktop survey and phase I PIA (ground proofing of desktop survey) recommended.</p>
BLUE	<p>Low Palaeontological sensitivity/vulnerability. Low possibility that fossils that are described in the literature will be visible to the naked eye or be recognized as fossils by untrained persons. Fossils of for example small domal Stromatolites as well as micro-bacteria are associated with these rock units. Fossils of micro-bacteria are extremely important for our understanding of the development of Life, but are only visible under large magnification. Recording of the fossils will contribute significantly to the present knowledge and understanding of the development of Life in the region. Where geological units are allocated a blue colour of significance, and the geological unit is surrounded by highly significant geological units (red or orange coloured units), a palaeontologist must be appointed to do a desktop survey and to make professional recommendations on the impact of development on significant palaeontological finds that might occur in the unit that is allocated a blue colour. An example of this scenario will be where the scale of mapping on the 1:250 000 scale maps excludes small outcrops of highly significant sedimentary rock units occurring in larger alluvium deposits. Collection of a representative sample of potential fossiliferous material is recommended.</p>
GREY	<p>Very Low Palaeontological sensitivity/vulnerability. Very low possibility that significant fossils will be present in the bedrock of these geological units. The rock units are associated with intrusive igneous activities and no life would have been possible during emplacement of the rocks. It is however essential to note that the geological units mapped out on the geological maps are invariably overlain by Cenozoic aged sediments that might contain significant fossil assemblages and archaeological material. Examples of significant finds occur in areas underlain by granite, just to the west of Hoedspruit in the Limpopo Province, where significant assemblages of fossils and clay-pot fragments are associated with large termite mounds. Where geological units are allocated a grey colour of significance, and the geological unit is surrounded by very high and highly significant geological units (red or orange coloured units), a palaeontologist must be appointed to do a desktop survey and to make professional recommendations on the impact of development on significant palaeontological finds that might occur in the</p>

	<p>unit that is allocated a grey colour. An example of this scenario will be where the scale of mapping on the 1:250 000 scale maps excludes small outcrops of highly significant sedimentary rock units occurring in dolerite sill outcrops. It is important that the report should also refer to archaeological reports and possible descriptions of palaeontological finds in Cenozoic aged surface deposits.</p>
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When rock units of moderate to high palaeontological sensitivity are present within the development footprint, palaeontological mitigation measures should be incorporated into the Environmental Management Plan.

Scope and Limitations of the Phase 1 Investigation

The scope of a phase 1 Investigation includes:

- an analysis of the area's stratigraphy, age and depositional setting of fossil-bearing units;
- a review of all relevant palaeontological and geological literature, including geological maps, and previous palaeontological impact reports;
- data on the proposed development provided by the developer (e.g. location of footprint, depth and volume of bedrock excavation envisaged) and
- where feasible, location and examination of any fossil collections from the study area (e.g. museums).
- an on-site investigation to assess the identified palaeontological sensitive areas within the development footprint/study area rather than formal palaeontological collection. The investigation focused on the bedrock exposure where excavations would most probably require palaeontological monitoring.

The results of the field investigation are used to predict the potential of buried fossil heritage within the development footprint. In some investigations, this involves the examination of similar accessible bedrock exposures, such as road cuttings and quarries, along roads that run parallel to or across the development footprint.

Locality and Proposed Development

The study area is located to the east of Ladysmith and is an extension of the present land area of the Sumitomo Rubber Factory at Ladysmith (Figure 1).

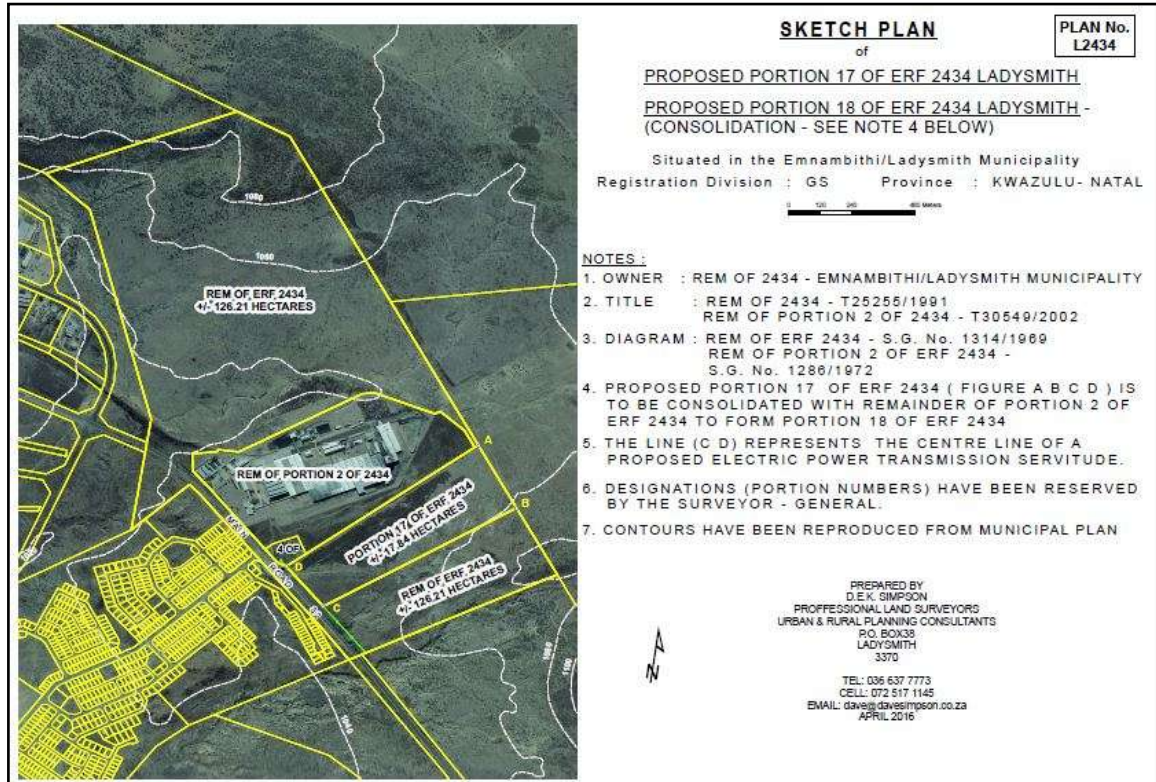


Figure 1 Locality of study area as shown by letters ABCD

The proposal for development includes the extension of the present activities of the Sumitomo Rubber Factory at Ladysmith.

GEOLOGY

The study area is underlain predominantly by Permian aged rocks of the Volksrust Formation, Ecca Group of the Karoo Supergroup and Permian aged Dolerite (Figure 2).



Figure 2 Geology of the study area

Ecca Group

Volksrust Formation (Pvo)

The Permian aged Volksrust Formation is an assemblage of fine-grained sediments, consisting mainly of dark grey mudstone and shale. The deposits represent Permian aged marine deposits that were deposited in offshore shelf, but possibly also nearshore / lacustrine / lagoonal environments in this part of Gondwanaland. The upper part of the formation becomes more sandstone rich and is indicative of a westward migration of a deltaic system into the predominantly marine environments that existed during the Permian in this part of the Karoo Basin (Johnson et al, 2009).

Dolerite

Jurassic aged dolerite dykes and sills represent a volcanic episode that occurred during the breakup of Gondwanaland.

PALAEONTOLOGY

Ecca Group

Volksrust Formation (Pvo)

Trace fossils as well as well-defined plant fossils have been described from the upper layers of the Formation (Johnson et al. 2009; Groenewald, 2016).

The bivalve *Megadesmus* is described from the Late Permian Volksrust Shale Formation in the north-eastern Karoo Basin, South Africa; this is the first reported discovery of this genus in Africa. The fossil is large, 9 cm dorsally and 8.4 cm laterally, and both valves are articulated indicating minimum transport after death. The bivalve was encased in interbedded siltstone-shale that constitutes the distal sediments of a prograding delta at the Beaufort –Ecca Group boundary. *Megadesmus* is known from other continents (Australia, India, Siberia, South America and Tasmania) where its presence indicates exclusively marine conditions. The implication for the northeastern Karoo Basin during the Late Permian is that a marine enclave still existed in this geographic area and that terrestrial conditions did not yet prevail as in the southern basin region (Cairncross et al, 2005).

Dolerite

Due to its igneous character dolerite will not contain fossils.

PRELIMINARY ASSESSMENT RESULTS

The palaeontological sensitivity was predicted after identifying potentially fossiliferous rock units; ascertaining the fossil heritage from the literature and evaluating the nature and scale of the development itself. The palaeontological sensitivity was predicted as highly significant, due to the potential abundance of Permian aged fossils, including trace and plant fossils, in the Volksrust Formation.

FIELD INVESTIGATION

Dr Gideon Groenewald, experienced fieldworker, visited the site of the proposed extension of the Sumitomo Rubber Factory, Emnambithi Local Municipality, and Uthukela District Municipality, KwaZulu-Natal Province on Wednesday 20th April 2016. The topography of the area is mostly gentle undulating in the river valleys, and rolling hills of bushveld thornfeld away from the deeper valleys. The site of the proposed development is on the footslope of a hill and partly or completely altered by human development, including the creation of a dumpsite for building rubble and other waste materials as well as the excavation of a quarry into the dolerite on site. The soil cover vary from

shallow to very shallow vertic Arcadia soils on the footslope to deep clay-rich, most probably Rensburg soils on the gentle slopes underlain by either dolerite or mudstone stone as well as exposed siltstone creating a wetland on site.




Excavations for the new development will expose mostly siltstone and shale of the upper part of the Volksrust Formation.





Observations were recorded at different GPS stations (Figure 4 and Table 2).











Figure 3 Observations for Palaeontological heritage



Table 2 Record of Photographic Observations

Photo	(GPS station) Coordinates	Comments	Photographic Record
1	(271101) -28° 33' 18.0" 29° 50' 14.4"	Excavation onto upper part of Volksrust Formation at quarry.	
2	(271101) -28° 33' 18.0" 29° 50' 14.4"	Unidentified trace fossils in sandy siltstone in upper part of Volksrust Formation that will most probably be exposed during excavation for development	
3	(272101) -28° 33' 10.2" 29° 50' 06.2"	Shallow black vertic soils on Volksrust Formation. Small outcrops of silty shale with plant fragments. Fossils too dispersed to collect and were recorded as observations	

4	(273101) -28° 33' 03.4" 29° 50' 01.8"	Small-scale burrow casts of unidentified trace fossils in shale. Recording of these fossils will contribute significantly to our understanding of the palaeo-environments of the region	
5	(273101) -28° 33' 03.4" 29° 50' 01.8"	Shallow soils with dumping site in background. Fossils will only be exposed during excavation for development	
6	(274101) -28° 33' 00.4" 29° 50' 06.6"	Unidentified trace fossils in fine-grained sandstone in upper part of Volksrust Formation	
7	(275101) -28° 32' 58.0" 29° 50' 10.5"	Rock samples out of situ with trace fossils indicating potential fossils in sandstone on site of development	

8	(276101) -28° 32' 48.9" 29° 50' 19.9"	Sandstone outcrops on northern border of development site indicating high sensitivity for palaeontology in this region. Trace fossils need recording, but no specific collection recommended. Plant fossils highly fragmentary and not worth collecting	
9	(276101) -28° 32' 48.9" 29° 50' 19.9"	Unidentified trace fossils recorded. Fossils are fragmentary but well-defined fossils might be exposed during excavation of sandy siltstone. Recording of the fossils is recommended	
10	(277101) -28° 32' 55.3" 29° 50' 17.0"	Shallow soils on Volksrust shale. Fossils might be exposed during excavation	
11	(278101) -28° 33' 04.1" 29° 50' 06.8"	Dumping of rock filling on site. Exposure of potential fossils expected during removal and excavation for development	

12	(279101) -28° 33' 00.3" 29° 49' 57.9"	Exposure of Volksrust Formation shales in deep excavation on site. Small concretions possibly representing coprolites are present in the shale outcrop	
13	(279101) -28° 33' 00.3" 29° 49' 57.9"	Small concretions, possibly representing the remains of coprolites of fish and other aquatic creatures in the shale of the Volksrust Formation	
14	(280101) -28° 33' 09.6" 29° 50' 08.9"	Concretions with chert and possibly calcified but highly weathered remains of fish or other bony material in the upper part of the Volksrust Formation. Material too broken to collect	
15	(280101) -28° 33' 09.6" 29° 50' 08.9"	Concretions with chert and possibly calcified but highly weathered remains of fish or other bony material in the upper part of the Volksrust Formation. Material too broken to collect	

16	(281101) -28° 33' 09.8" 29° 50' 09.9"	Sandstone with well-defined plant remains. Rock not in situ, but most probably from the quarry on site. When similar plant remains are exposed during excavation for development, the fossils plant material, most probably representing species of the Glossopteris Assemblage, must be collected for further identification and study	
17	(281101) -28° 33' 09.8" 29° 50' 09.9"	Fine-grained sandstone with siliceous concretions. Exposure of this sandstone is expected during excavation for development and the rock will be highly sensitive for palaeontological heritage	

PALAEONTOLOGICAL IMPACT AND MITIGATION

The predicted palaeontological impact of the development is based on the during the field investigation. The field investigation confirms that the study area



Figure 4 Palaeontological Sensitivity of the study area, including the area further to the east that was later excluded from the proposal. The original KMZ file was used to prevent confusion. For colour coding see Table 1

is underlain by fine-grained sandstone and khaki-coloured to dark grey shale beds of the Volksrust Formation of the Ecca Group and Dolerite of the Karoo Supergroup, weathering into a dark vertic soil.

The excavations for the construction of the infrastructure for this development will expose some sediments of the Volksrust Formation. Due to weathering, no well-preserved fossils were observed during the field investigation. Exposure of bedrock during excavation might however result in the exposure of significant plant, trace and possibly vertebrate fossils and the high palaeontological sensitivity of the site is restricted to areas underlain by Volksrust shale and fine-grained sandstone or siltstone (Figure 4). Areas underlain by dolerite have no significant impact on palaeontological heritage.

CONCLUSION

The development site for the proposed extension of the Sumitomo Rubber Factory, Emnambithi Local Municipality, and Uthukela District Municipality, KwaZulu-Natal Province is underlain by Permian aged sedimentary rocks of the Volksrust Formation, Ecca Group and Dolerite of the Karoo Supergroup as well as a minor section on the very north western corner underlain by Masotcheni Formation clays.

Several poorly defined fossils were observed during the field investigation. The potential for finding significant fossils in any excavation into sediments of the Volksrust Formation is high. No fossils will be associated with areas underlain by dolerite.

It is recommended that:

- The EAP and ECO must be informed of the fact that a High Palaeontological Sensitivity was allocated to the western part of the development and although highly weathered, fossils were recorded during the Phase 1 field investigation.

- A suitably qualified palaeontologist must be appointed to inspect all areas where excavation of deeper than 1,5m is made into sediments of the Volksrust Formation. A protocol for the chance find of fossils must be developed and discussed with the contractor on site.
- These recommendations must be included in the EMPr of this project.

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QUALIFICATIONS AND EXPERIENCE OF THE AUTHOR

Dr Gideon Groenewald has a PhD in Geology from the University of Port Elizabeth (Nelson Mandela Metropolitan University) (1996) and the National Diploma in Nature Conservation from Technicon RSA (the University of South Africa) (1989). He specialises in research on South African Permian and Triassic sedimentology and macrofossils with an interest in biostratigraphy, and palaeo-ecological aspects. He has extensive experience in the locating of fossil material in the Karoo Supergroup and has more than 20 years of experience in locating, collecting and curating fossils, including exploration field trips in search of new localities in the southern, western, eastern and north-eastern parts of the country. His publication record includes multiple articles in internationally recognized journals. Dr Groenewald is accredited by the Palaeontological Society of Southern Africa (society member for 25 years).

DECLARATION OF INDEPENDENCE

I, Gideon Groenewald, 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 palaeontological heritage assessment services. There are no circumstances that compromise the objectivity of my performing such work.



Dr Gideon Groenewald
Geologist

APPENDIX B
LOCATION OF FEATURES

Age	name	latitude	longitude	description
Late Iron Age	823a	-28.555279000	29.814691000	Walling
	827	-28.556304000	29.815357000	Walling
	830	-28.555132000	29.806733000	Walling
	831	-28.554716000	29.805445000	Walling
	832	-28.554635000	29.805195000	Walling
	833	-28.554568000	29.805087000	End
	834	-28.554716000	29.804851000	Kraal
	835	-28.554777000	29.804787000	Walling
	836	-28.554857000	29.804860000	Walling
	837	-28.554839000	29.804744000	Grave
	838	-28.554908000	29.804704000	Grave
	839	-28.554985000	29.804878000	Floor
	840	-28.555009000	29.805226000	Walling
	841	-28.555059000	29.805347000	Walling
	842	-28.555184000	29.805653000	Walling
	842a	-28.555277778	29.805833333	Grave
	843	-28.556113000	29.805875000	Walling
	843a	-28.556027778	29.806222222	Walling
	844	-28.556242000	29.805275000	Walls everywhere
	844a	-28.556722222	29.805111111	Walling
	844b	-28.556694444	29.805416667	Walling
	845	-28.555847000	29.804504000	Walling
	845a	-28.555972222	29.804527778	Walling
	846	-28.555710000	29.804546000	Grave
	847	-28.555556000	29.804422000	Floor
	854	-28.552827000	29.810797000	Walling
	855	-28.552771000	29.810743000	Walling
	856	-28.552687000	29.810822000	Walling
	857	-28.553058000	29.811420000	Grave 3
	857a	-28.553194444	29.811333333	Walling
	858	-28.553345000	29.811361000	Walling
	859	-28.553421000	29.811395000	Walling
	859a	-28.553500000	29.811500000	Walling
	860	-28.553324000	29.811698000	Walling
	860a	-28.553194444	29.811638889	Walling
	860b	-28.553138889	29.811833333	Walling
	860c	-28.553166667	29.811972222	Grave
	860f	-28.553277778	29.812194444	Walling
	860d	-28.553216201	29.812035568	Walling
	860e	-28.553444444	29.812166667	Walling
	861	-28.553679000	29.812128000	Walling
861a	-28.552694444	29.811777778	Walling	
861b	-28.552416667	29.811611111	Grave	
862	-28.550362000	29.810916000	Walling	
863	-28.549952723	29.811934157	Walling	
863	-28.549231000	29.812041000	Walling	
864	-28.549295000	29.812179000	Grave	

	865	-28.549349000	29.812198000	Grave
	865a	-28.549472222	29.812166667	Walling
	866	-28.549330000	29.811817000	Grave
	866a	-28.549333333	29.811805556	Grave
	866b	-28.549416667	29.811527778	Walling
	867	-28.549133000	29.809784000	Grave
	868	-28.547044000	29.807677000	Walling
	869	-28.547183000	29.807969000	Walling
	870	-28.547152000	29.808453000	Grave
	871	-28.547749000	29.808532000	Grave
	872	-28.547533000	29.808156000	Grave
	873	-28.547346000	29.807835000	Grave
	874	-28.547329000	29.807777000	Grave
	875	-28.547191000	29.807688000	Walling
	876	-28.547181000	29.806805000	Walling
2 nd Anglo-Boer War	853a	-28.557305556	29.806222222	Walling
	CH01f	-28.555583333	29.803083333	Walling
	CH01e	-28.555194444	29.801583333	Walling
	CH01d	-28.555138889	29.801527778	Walling
	CH01c	-28.554474096	29.802497410	Walling
	CH01b	-28.555055400	29.802500523	Walling
	CH01a	-28.555094028	29.802429651	Walling
	851	-28.556232000	29.803249000	Walling
	850	-28.555970000	29.803059000	Walling
	848	-28.555461000	29.802319000	Walling
	849	-28.555661000	29.802867000	long wall
	852	-28.556987000	29.805483000	Walling
	828	-28.558463000	29.808661000	Walling
	853	-28.557764909	29.806343856	Pit
	829	-28.557486000	29.808361000	Walling
long perimeter wall 1	-28.555374972	29.801871130	Walling	
long perimeter wall 2	-28.558494345	29.805991732	Walling	
20 th century	L&B	-28.546777778	29.811972222	Brick
	871a	-28.547444444	29.808361111	cartridge
	cartridge	-28.556111111	29.812500000	Cartridge
	825	-28.556339000	29.814725000	Walling
	824	-28.556414000	29.814566000	Walling
	826	-28.556579000	29.814749000	Walling
	817	-28.556516000	29.813368000	Cairn
	818	-28.556503000	29.813391000	Cairn
	819	-28.556461000	29.813464000	Cairn
	822	-28.556332000	29.813487000	Cairn
	820	-28.556395000	29.813497000	Cairn
	821	-28.556363000	29.813438000	Cairn
	Shembe Shrine	-28.556979814	29.813776715	Shrine
823	-28.556217000	29.814003000	Cairns	