

**CULTURAL HERITAGE IMPACT ASSESSMENT OF
THE PROPOSED AMASWAZI LODGE AND
CONFERENCE CENTRE NEAR ESTCOURT,
KWAZULU-NATAL.**



ACTIVE HERITAGE CC.

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LIST OF ABBREVIATIONS AND ACRONYMS

EIA	Early Iron Age
ESA	Early Stone Age
HISTORIC PERIOD	Since the arrival of the white settlers - c. AD 1836 in this part of the country
IRON AGE	Early Iron Age AD 200 - AD 1000 Late Iron Age AD 1000 - AD 1830
LIA	Late Iron Age
LSA	Late Stone Age
MSA	Middle Stone Age
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998 and associated regulations (2006).
NHRA	National Heritage Resources Act, 1999 (Act No. 25 of 1999) and associated regulations (2000)
SAHRA	South African Heritage Resources Agency
STONE AGE	Early Stone Age 2 000 000 - 250 000 BP Middle Stone Age 250 000 - 25 000 BP Late Stone Age 30 000 - until c. AD 200

EXECUTIVE SUMMARY

A first phase heritage survey of the proposed Amaswazi Lodge and Conference Centre near Estcourt, KwaZulu-Natal identified no heritage sites on the footprint. The area is also not part of any known cultural landscape. There is no archaeological reason why the proposed development may not proceed as planned. However, attention is drawn to the South African National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA) and the KwaZulu-Natal Heritage Act (Act No. 4 of 2008) which requires that operations that expose archaeological or historical remains should cease immediately, pending evaluation by the provincial heritage agency.

1 BACKGROUND INFORMATION ON THE PROJECT

The consultant was approached by Mondli Consultants to conduct a heritage impact assessment (HIA) of the proposed construction of a tourism and hospitality facility in the form of Amaswazi Lodge and Conference Centre to sleep 25 people, comprising of a wedding facility, chapel and other related buildings. The development is planned on Portion 16 (of 4) of the Farm Klipplaat Drift No. 1009 within Umtshezi Local Municipality and uThukela District Municipality, Estcourt, KwaZulu – Natal and covers an area of approximately 4 hectares (Figs 1 & 2).

According to the National Heritage Resources Act, 1999 (NHRA) (Act No. 25 of 1999), the heritage resources of South Africa include:

- a. places, buildings, structures and equipment of cultural significance;
- b. places to which oral traditions are attached or which are associated with living heritage;
- c. historical settlements and townscapes;
- d. landscapes and natural features of cultural significance;
- e. geological sites of scientific or cultural importance;
- f. archaeological and palaeontological sites;
- g. graves and burial grounds, including-
 - i. ancestral graves;
 - ii. royal graves and graves of traditional leaders;
 - iii. graves of victims of conflict;
 - iv. graves of individuals designated by the Minister by notice in the Gazette;
 - v. historical graves and cemeteries; and

- vi. other human remains which are not covered in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983);
- h. sites of significance relating to the history of slavery in South Africa;
- i. movable objects, including-
 - i. objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens;
 - ii. objects to which oral traditions are attached or which are associated with living heritage;
 - iii. ethnographic art and objects;
 - iv. military objects;
 - v. objects of decorative or fine art;
 - vi. objects of scientific or technological interest; and
 - vii. books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1(xiv) of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996).

The newly promulgated KwaZulu-Natal Heritage Act (Act No. 4 of 2008) also makes specific mention to rock art and archaeological sites.

It is furthermore stated that:

—(1) 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 KwaZulu-Natal Heritage Council.

(2) 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.

(3) 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.

(4) 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.

(5) 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.

(6) (a) 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.

(b) The Council may establish and maintain a provincial repository or repositories for the safekeeping or display of—

(i)

archaeological objects;

(ii)

palaeontological material;

(iii)

ecofacts;

(iv)

objects related to battlefield sites;

(v)

material cultural artefacts; or

(vi)

meteorites.

(7) The Council may, subject to such conditions as the Council may determine, loan any object or material referred to in subsection (6) to a national or provincial museum or institution.

(8) No person may, without the prior written approval of the Council having been obtained on written application to the Council, trade in, export or attempt to export from the Province—

(a)

any category of archaeological object;

(b)

any palaeontological material;

(c)

any ecofact;

(d)

any object which may reasonably be regarded as having been recovered from a battlefield site;

(e)

any material cultural artefact; or

(f)

any meteorite.

(9) (a) A person or institution in possession of an object or material referred to in paragraphs (a) – (f) of subsection (8), must submit full particulars of such object or material, including such information as may be prescribed, to the Council.

(b) An object or material referred to in paragraph (a) must, subject to paragraph (c) and the directives of the Council, remain under the control of the person or institution submitting the particulars thereof.

(c) The ownership of any object or material referred to in paragraph (a) vest in the Provincial Government and the Council is regarded as the custodian on behalf of the Provincial Government.

This study aims to identify and assess the significance of any heritage and archaeological resources occurring on the site. Based on the significance, the impact of the development on the heritage resources would be determined. Then appropriate actions to reduce the impact on the heritage resources would be put forward. In terms of the NHRA, a place or object is to be considered part of the national estate if it has cultural significance or other special value because of:

- a. its importance in the community, or pattern of South Africa's history;
- b. its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
- c. its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
- d. its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;

- e. its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
- f. its importance in demonstrating a high degree of creative or technical achievement at a particular period;
- g. its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
- h. its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa; and
- i. sites of significance relating to the history of slavery in South Africa.

Table 1. Background information

Consultants:	Frans Prins (Active Heritage cc) for Mondli Consultants
Type of development:	Proposed construction of tourism and hospitality facility in the form of Amaswazi Lodge and Conference Centre to sleep 25 people, comprising of a wedding facility, chapel and other related buildings, on Portion 16 (of 4) of the Farm Klipplaat Drift No. 1009 within Umtshezi Local Municipality and uThukela District Municipality, Estcourt, KwaZulu - Natal.
Rezoning or subdivision:	rezoning
Terms of reference	To carry out a Heritage Impact Assessment
Legislative requirements:	The Heritage Impact Assessment was carried out in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) and following the requirements of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA) and the KwaZulu Natal Heritage Act (Act No. 4 of 2008)

1.1. Details of the area surveyed:

The project is falling within the jurisdiction of Uthukela District and Umtshezi Local Municipalities, in KwaZulu-Natal. The proposed development is situated almost 8 kilometres from the town of Estcourt. The site is located on Portion 16 (of 4) of the Farm Klipplaat Drift No. 1009 along P 171, within ward 3 of Umtshezi Local Municipality. The land is owned by the developer under the auspices of Amaswazi Trust with its own title deed.

The site can be accessed from N3 off ramping at Estcourt / Wembezi / Giant's Castle turning left onto R 103 travelling a short distance of 600 metres, turning left onto a gravel road (P 171) for a distance of about 900 metres to the gate of Klipplaat Farm on the left hand side. The property is neighbouring Blue Haze Country Lodge which is well signposted from R103 (Figs 1 & 2).

The GPS co-ordinates taken almost at the centre of the site are as follows: S 29° 02. 099'; E 29° 49. 548'.

2 BACKGROUND TO ARCHAEOLOGICAL HISTORY OF AREA

The Central Drakensberg area, including the foothills in the environs of Estcourt, is well endowed with cultural heritage, including various wilderness areas within and outside the formal protected area network. Although most literature refers to this heritage mainly in terms of San rock art, the region also contains other categories of cultural heritage features representative of various cultures and time-periods. The cultural heritage of the Drakensberg is diverse and highly fragile. Cultural heritage, unlike natural heritage, is non-renewable and irreplaceable. Once damaged, it is gone forever. San rock paintings and associated Later Stone Age sites, as well as the palaeontology of the area, are unique and have global significance. The remaining categories, however, certainly have national, provincial, and regional significance. The area has had several different cultural groups associated with it, from the San to the southern Sotho, the Zulu-speaking and Xhosa-speaking groups, and, more recently, the Griqua and Anglo-Boer descendants. The area around Estcourt is specifically associated with the history of the amaHlubi. Each of these groups has its own unique cultural expressions and has related in various ways to the others. These differences are found in the building styles of homes, their way of life as they interact with their environment, traditional dress, and so on. In addition, there are a number of living heritage values associated with all of these groups, many of which are unknown or poorly recorded. The following section is a more detailed description of the various cultural heritage features.

2.1.1 The Early Stone Age

The occurrence of Early Stone Age tools such as hand axes in areas below the 1 800 m contour suggests that the first inhabitants of the area predated modern humans by at least 800 000 years. Sites belonging to this period in the Drakensberg are mostly characterised

by a few surface scatters and individual stone tools – usually in the close vicinity of water. They were most probably manufactured by *Homo erectus*, a predecessor of modern humans.

2.1.2 The Middle Stone Age

Anatomically modern people (*Homo sapiens sapiens*) with a very different economic strategy and more sophisticated stone tool kits moved into the area about 200 000 years ago. Archaeological assemblages left behind by these people have been termed Middle Stone Age. Not only were these societies more effective hunters than their predecessors but Middle Stone Age sites elsewhere in southern Africa also provide convincing evidence for some of the earliest symbolic behaviour in the world. It was Middle Stone Age people from southern and eastern Africa who left the continent roughly between 80 000 – 60 000 years ago to populate the rest of the world. Middle Stone Age sites in the Drakensberg region occur in both Lesotho and South Africa. Sites occur as surface scatters as well as deep cave deposits. Prime archaeological deposits, however, occur in the Eastern Cape and Free State sections of the region. Archaeological excavations at Strathalan Cave in the Eastern Cape Province indicate that the Middle Stone Age persisted in the Eastern Cape Drakensberg until around 22 000 years ago (Mitchell 2002).

2.1.3. The Later Stone Age

The stone tool assemblages belonging to the immediate ancestors of the San or Bushmen have been termed Later Stone Age. Later Stone Age tools are generally much smaller but also more diversified than the earlier tool kits. It was during this period that the bow and arrow was used extensively, and societies exploited their environments distinctly more intensively and effectively. Literally hundreds of Later Stone Age sites prevail in the Drakensberg region. In addition, most of the rock art in the region was created by the San. The earliest evidence for Later Stone Age occupation of the Maloti Drakensberg comes from Sehonghong Cave in south eastern Lesotho and from Strathalan Cave in the Eastern Cape section of the region. Here a specific Later Stone Age period called the Robberg Industry has been dated to approximately 20 000 years ago. In contrast, evidence from Good Hope shelter 1 near the bottom of Sani Pass suggests that the earliest archaeological evidence for San people in the KwaZulu-Natal portion of the Drakensberg dates back to approximately 8 000 years ago. Whereas most parts of the Maloti Drakensberg were only seasonally occupied by San hunter gatherers for the larger part of

the last 20 000 years, the situation started to change during the later part of the Holocene around 5 000 years ago. This was compounded by the arrival of immigrant black farmers in the region soon after 1600 AD and European colonialism around 1834 AD (Wright & Mazel 2007). During the historical period, the Maloti Drakensberg and adjacent mountainous areas became the last stronghold for various southern San groups such as the Baroa, //Xegwi, !Ga!ne, //Kx'au, and //Ku//ke. Their Later Stone Age way of life finally came to an end during the late 19th century. The //Xegwi left the greater Estcourt area in 1879 and finally settled in the Lake Chrissie region of Mapumalanga. San descendants still live in the foothills of the Drakensberg, including the greater Estcourt area, but for all practical purposes have assimilated with their more powerful neighbours. Many place names within the region still retained their original San pronunciations such as the Inxu, Sehonghong, Qomoqomong and Qhoasing rivers, and the Qeme, Qhuqhu, Qhalasi, and Qholaqhoe mountains. Approximately 1 300 Later Stone Age sites are known within the South African side of the Drakensberg.

2.1.4. Rock Paintings

The Maloti Drakensberg region is particularly well known for the occurrence of some of the finest and most complex prehistoric rock paintings in the world. The most researched rock art shelter in South Africa, namely Main Caves at Giants Castle Nature Reserve, is situated approximately 30km to the west of the footprint. Depictions of humans dominate, although finely executed animals such as eland and rhebuck are common. Some of the art is executed in various colours and in detailed precision that almost renders it a three dimensional aspect. Most researchers support the theory developed by Professor David Lewis-Williams and his colleagues that the figures represent trance induced visions during San religious rites (Lewis-Williams 2003). According to some researchers, the celebrated Rosetta Panel at Game Pass Shelter, situated approximately 30 km from the study area, holds the key to our understanding of all San rock art in the sub-Saharan region of Africa. However, this interpretation is not supported by all rock art researchers. Notable deviations from this approach have been developed by Anne Solomon, and more recently by Thomas Dowson. The Maloti Drakensberg is also one of the areas with the highest density of prehistoric rock art in the world and certainly contains the highest concentration of prehistoric art south of the Sahara in Africa. Although the scientific dating of these paintings is still under researched, recent research suggests that the oldest paintings may date to approximately 4000 years ago (Wright & Mazel 2007). This is much older than previously thought. The chronological uniqueness of the art, however, is not so much in

its antiquity as in the fact that the Maloti Drakensberg was the last area in Africa south of the Zambezi River where the San rock art tradition was still actively practised. Paintings at two sites in the southern portion of the region were created as recently as 1920 (Prins 2009).

2.1.5. Iron Age Sites

Around 2 000 years ago the southern African demographic landscape was transformed with the arrival of the first Bantu-speaking agriculturists in the sub-region. These subsistence farmers lived for the most part in the lower altitude, wooded areas of the eastern seaboard. Around 1250 AD certain agriculturists started occupying the higher altitude, grassland areas. Sites belonging to this period in KwaZulu-Natal are referred to as Moor Park settlements. These abound in the greater Estcourt area and typically occupy hill tops with a low stone walling effect. Although none occur within the designated Maloti-Drakensberg project area, they can be found at the fringes, at an altitude of approximately 1 200-1 400 m. By 1600 AD, groups such as the amaZizi reached the foothills of the northern Drakensberg near Winterton (Wright and Mazel 2007). Various splinter groups of the amaZizi left KwaZulu Natal and also settled in parts of Lesotho where, over time, they adopted a Sotho identity. The baPhuti of south eastern Lesotho are perhaps the best known of these early immigrants. By the early 1700s various other Sotho and Nguni-speaking groups moved into the area and established chieftaincies in those areas below the 1 800 m contour. Impressive Iron Age sites belonging to this period and built in typical Sotho-style occur near Harrismith and Phuthaditjhaba in the Eastern Free State. Nguni-style sites of this period have also been found in KwaZulu-Natal and the Eastern Cape parts of the Drakensberg. The expansion of the Zulu kingdom around 1818 had a major impact on Iron Age settlement in the region. Various chieftaincies were attacked, and their routed remnants typically traversed the Maloti Drakensberg region in search of better settlement elsewhere. Bandits often hid out in the mountains, and a number allegedly practised cannibalism. Perhaps the most significant development during this period was the founding of the Southern Sotho nation under King Moshoeshe I. Various sites in Lesotho belong to this period – some of them, like Thaba Bosiu, are typically mountain strongholds. Almost 2 000 Iron-Age sites have been identified in the Maloti Drakensberg region, and most occur in altitudes lower than 1 800 m contour. Some sites belonging to the ancestors of the amaZizi and amaBhele, have been recorded in near Escourt (Maggs 1987). However, most of these groups left the area during the expansion of the Zulu state formation under King Shaka in the 1820's (Huffman 2007).

2.1.6. The Historical period

The historical period spans the era of colonialism that started around 1830 AD when the first missionaries and Dutch immigrants arrived from the Cape Colony in the Maloti Drakensberg region. Sites associated with Voortrekker settlement of the area occur in the eastern Free State, the northern portion of KwaZulu-Natal near Winterton and Bergville as well as the greater Estcourt near the study area. For the most part, these were the places where laagers were formed (with very low archaeological visibility) and old farmsteads with associated grave yards. Saailaer, was situated approximately 2km from the footprint. A particular site worth mentioning is Kerkenberg near Oliviershoek Pass, where Debora Retief painted the initials of her father on a rock before the trekkers descended into KwaZulu Natal. In Lesotho, the rebellion by Chief Moorosi and the resultant action by the Cape Colony government at the southern tip of the country left footprints of forts and associated graves at Moyeni Camp, Fort Hartley, Cutting Camp, and Mount Moorosi. The most important structure relating to the history of Bushman raids is most probably Forth Nottingham, in KwaZulu-Natal, which was built around 1852. The more impressive Fort Durnford is situated approximately 3km to the east of the study area. Various historical mission stations founded in the mid to late 1800s such as those at Morija and St James in Lesotho and Emmaus, Reichenau, and Mariazell in South Africa, are still in active use. The Ongeluksnek Pass in the Eastern Cape is intimately associated with the epic trek of the Griqua people in 1861, led by Adam Kok. The area associated with the first native uprising against the British colonial government, by the celebrated Hlubi chief Langalibalele in 1873, is at Giants Castle Nature Reserve to the immediate west of the study area. Various battle sites associated with the Basotho Wars between the Boer Republic of the Orange Free State and the Sotho Kingdom of Moshoeshoe I are to be found in the eastern Free State and adjacent parts of Lesotho. Sites belonging to the period of the Anglo-Boer War (1898-1901) abound in the eastern Free State portion of the project area. The skirmish site of Willow Grange is situated approximately 8km to the south west of the study area. These are typically areas where skirmishes took place or where ammunition was destroyed. A few rock engravings belonging to the Anglo-Boer War period have been documented from the Golden Gate Highland Park. However, thorough research is still required to ascertain the meaning and value of these engravings. Many historical sites can be categorised as belonging to the “built environment” as defined in

heritage legislation. These are the physical remnants and traces of historical settlements that underpin the cultural value and meaning of the surrounding communities.

2.1.7. Graves

There are various grave sites belonging to different periods and cultural associations in the Drakensberg region. Perhaps the most famous sites are those belonging to the southern Sotho royalty at Botha Bothe in Lesotho; the grave of Nkosi Langalibalele at Giants Castle; KwaZulu Natal graves associated with the royalty of the amaZizi and amaNgwane near Bergville, KwaZulu-Natal; the grave of Adam Kok at Matatiele, Eastern Cape; and various graves in the Free State belonging to the Voortrekker and Anglo-Boer War periods. Interestingly, graves belonging to the prehistoric San inhabitants of the area are markedly absent or, as yet, have not been identified by researchers. Early Voortrekker settlement took place along the Bushmans River in the near vicinity of the project area and graves of this period has been recorded.

2.1.8. The Living Heritage

The living heritage of the Drakensberg area is varied and as yet little understood. Yet preliminary investigations by the Maloti Drakensberg Project (Anderson 2007) indicate that certain areas, including sites in communal areas close to the study area are still frequented by local communities who afford them ritual or sacred significance. Such locales may include archaeological sites with a living heritage component or natural features such as mountains, forests, boulders, caves, pools, or waterfalls with cultural significance. Living heritage is not only site-specific but also relates to oral history, indigenous knowledge systems, and indigenous languages, practices, and beliefs. Oral history specifically is a rich resource that has been passed down the generations and provides diverse narratives and interpretations concerning places of historical significance. It also provides a window on community perspectives regarding heritage resources, including indigenous names for sites and plant and animal species – all of which are imbued with cultural meaning.

Indigenous Knowledge Systems (IKS) constitute an integral component of local knowledge, at grass roots level, often associated with traditional methods of land management and use. In this regard, IKS can enhance conservation and sustainable management of cultural heritage to which communities may relate. Conservation should provide an enabling environment for communities to continue with the tradition of

transmitting knowledge and skills and of safeguarding their cultural heritage. Traditional ceremonies still performed in the larger Drakensberg region include the *Bale* initiation schools among certain southern Sotho groups, the *amemulo* (coming of age) ceremonies among the amaNngwane, in the near vicinity of the study area, the *Nkubelwana* (planting of the first seed) among Zulu-speakers, rainmaking, and various ceremonies associated with the veneration of the ancestors. Six indigenous languages are still spoken in the area, including siBhaca, which was believed to be almost extinct.

Two broad categories of site-specific living heritage sites have been identified:

- Sites of national significance of which nine have been identified in the SA portion of the MDTFCA. These include rock art sites, sandstone shelters without any archaeological remains but used extensively as pilgrimage sites, two sacred forests, and three sacred mountains. All of these sites are frequented by indigenous groups as part of an annual pilgrimage.
- Sites of local significance include various pools, waterfalls, hot springs, kaolin and red ochre deposits, and boulders afforded special significance by traditional healers and sectarian Christian groupings. Seventeen such sites have been identified in the larger Drakensberg area.

Living Heritage – Wilderness

Areas least influenced by human activities are often said to be representative of a “pristine” landscape. Such areas are recognised by the IUCN. In the context of the Drakensberg, only the Ukhahlamba Drakensberg World Heritage Site has any proclaimed wilderness areas, making up about 48% of the Park. In this regard, a specific wilderness management plan has been produced for the World Heritage site, with the express aim of retaining the integrity of these wilderness areas. In terms of the South African National Environmental Management: Protected Areas Act (no 57 of 2003), a wilderness area is defined as “*an area designatedfor the purpose of retaining an intrinsically wild appearance and character, or capable of being restored to such and which is undeveloped and roadless, without permanent improvements or human habitation*”.

In addition, wilderness can be considered as a value of a given area and in this regard can be defined as a “*...largely undeveloped and intrinsically wild character of the area in vast wilderness areas that provide outstanding opportunities to experience solitude and for spiritual renewal*” (EKZNW 2006). There are a number of stakeholders promoting the concept of wilderness, including the Wilderness Action Group and the Wilderness

Foundation. From a cultural heritage perspective, the concept is more akin to a western inspired ideal than an academic reality. In this sense the concept of wilderness, as an area where visitors may experience and enjoy pristine nature removed from anthropogenic influence and pollution, is therefore a western expression of living heritage. The wilderness notion, however, finds expression also in the indigenous concepts of cultural landscapes which are usually natural areas with profound cultural significance.

2.1.9. Palaeontology

Given its nature, palaeontology should be a component of geology and biodiversity. Nevertheless, the present heritage legislation in South Africa also covers palaeontology. In fact, the heritage management procedures relating to palaeontology are almost identical to those of archaeology. The palaeontological history of the Maloti Drakensberg area is fascinating as it tells the story of the super southern continent called Gondwanaland and its associated fauna and flora preserved today as fossils (McCarthy & Rubidge 2005). Fossils and footprints belonging to various periods from around 270 million years ago to around 180 million years ago have been recorded and collected in the geological layers beneath the basalts. These layers, amongst other interesting facts, provide evidence of the greatest mass extinction of species in the world around 251 million years ago towards the end of the Permian period. Some species survived this extinction as attested by abundant fossils of certain species such as *Lystrosaurus* found deep in the Triassic period layers. Many of these occurrences can be found within a 10km radius from the study area. Whereas the majority of fossilized remains in the area are *therapsids* (mammal-like reptiles, ancestors of most mammal species today), the Maloti Drakensberg also harbours evidence of some of the earliest dinosaurs in the world. Footprints belonging to these early dinosaurs appear in various localities in the Molteno formations of both Lesotho and South Africa.

The most celebrated palaeontological site occurs in the Golden Gate Highlands National Park. Here the earliest known dinosaur eggs in the world and a near intact embryo of an average sized dinosaur, i.e. *Massospondylus*, were located by scientists some thirty years ago. These early eggs, dated to almost 200 million years ago, are almost 100 million years older than other known dinosaur nest egg sites in the world. In adjacent Lesotho the Qomoqomong Dinosaur footprint and museum site has been developed for tourism purposes. The endemic turkey size dinosaur *Lesothosaurus* is known from various localities within Lesotho.

Summary

The cultural heritage of the greater Drakensberg region (including the project area) is rich, diverse, and fragile. The area contains a high density of prehistoric rock art that parallels the well known Upper-Palaeolithic rock art of Western Europe in artistic execution and symbolism. In addition, it harbours a rich and diverse record of palaeontological fossils that, for the most part, pre-date the Jurassic period of popular imagination. The mountains are also the heartland of the *Difaqane* – a period of tribal turmoil that developed as a direct response to the expansion of the Zulu state of Shaka in the 1820s. Many Iron Age sites in the area belong to this period, including significant sites associated with the founding of the Basotho Kingdom under King Moshoeshoe I. It was also the area traversed by some of the most dramatic diasporas documented in southern African history, including the Great Trek of the Voortrekkers, The Griqua trek via Ongeluksnek, the wanderings of the amaHlubi, amaNgwane, amaZizi, and amaBhaca tribal entities, and the lesser-known but equally dramatic trek of the //Xegwi San in 1879 – the last rock artists of the region. Sites related to these historical events abound in the Drakensberg and are windows into a significant period of the history and culture of southern Africa. That some of these cultural expressions are still alive is witnessed by the occurrence of significant living heritage sites in the region. Most of these are used as sites of pilgrimage by visitors from South Africa, Lesotho, and even further abroad.

3 BACKGROUND INFORMATION OF THE SURVEY

3.1 Methodology

A desktop study was conducted of the SAHRA inventory of heritage sites. Unfortunately this database is incomplete and of only limited use. In addition, the archaeological database of the KwaZulu-Natal Museum was consulted. This data base indicated more than 300 heritage sites in the Central Drakensberg in the close vicinity of the study area. The far majority of these are rock art sites situated within the adjacent World Heritage Site to the west of the project area and some are also shelters with Later Stone Age deposits.

The Driel Shelter that was excavated by archaeologists from the then Natal Museum in the 1980's is situated approximately 20km from the study area (Wright & Mazel 2007). The well known Mgoduyanuka Iron Age settlement that was also excavated in the early 1980's (Huffman 2007) is located approximately 30 km from the study area. Various Moor Park type settlements occur in the greater Estcourt area. Most of these have recently been investigated by Gavin Whitelaw although the original Moor Park site, that is located approximately 3km from the study area, has been excavated by the late Oliver Davies in the 1970's (Huffman 2007). A study of aerial photographs of the area shows numerous Later Iron Age stone walled features in the greater Estcourt area. However, none of these known heritage sites occur in the immediate vicinity of the footprint nor will they be impacted-upon by the proposed development. Various historical sites are situated in the immediate environs of Estcourt. These include cemeteries and places of worship. The old farm of Gerrit Maritz, a prominent Voortrekker leader, is situated approximately 2km to the north of the footprint (Fig 1). None of these sites are threatened by the proposed development.

A separate paleontological impact assessment was conducted by Dr Gideon Groenewald. The methodology and results of this study is reported in Appendix 1.

3.2 Restrictions encountered during the survey

3.2.1 Visibility

Visibility during the site visit was good.

3.2.2 Disturbance.

There is no evidence for the disturbance heritage sites in the area.

3.3 Details of equipment used in the survey

GPS: Garmin Etrek

Digital cameras: Canon Powershot A460

All readings were taken using the GPS. Accuracy was to a level of 5 m.

4 DESCRIPTION OF SITES AND MATERIAL OBSERVED

4.1 Locational data

Province: KwaZulu-Natal

Municipality: uThukela District Municipality

Town: Estcourt

4.2 Description of the general area surveyed

Although important archaeological and sites occur in the adjacent Maloti Drakensberg Park World Heritage Site, including the adjacent buffer zone, none were recorded in the actual footprint. Old residential and various out-buildings are located on the footprint (Figs 3-5). However, none of these are older than 60 years and they do not have any heritage value. There are no heritage sites or artefacts on the footprint. The area is also not part of any known cultural landscape (Table 2).

However, the footprint is extremely sensitive from a paleontological perspective. The palaeontologist reports that a Phase Two Paleontological Impact Assessment is imperative. A palaeontologist should be on site when new foundations are dug for the proposed development as these may yield fossil material (Appendix 1).

4.3 Dating the findings

Not applicable.

4.4 Description and distribution of heritage material found

Not applicable as no heritage sites, excluding potential paleontological sites, occur on the footprint (Table 3).

5 STATEMENT OF SIGNIFICANCE (HERITAGE VALUE)

5.1 Field Rating

The SAHRA system of field rating (Table 2) does not apply to this study as there are no heritage sites (excluding palaeontology) on the footprint.

Table 2. Field rating and recommended grading of sites (SAHRA 2005)

Level	Details	Action
National (Grade I)	The site is considered to be of National Significance	Nominated to be declared by SAHRA
Provincial (Grade II)	This site is considered to be of Provincial significance	Nominated to be declared by Provincial Heritage Authority
Local Grade IIIA	This site is considered to be of HIGH significance locally	The site should be retained as a heritage site
Local Grade IIIB	This site is considered to be of HIGH significance locally	The site should be mitigated, and part retained as a heritage site
Generally Protected A	High to medium significance	Mitigation necessary before destruction
Generally Protected B	Medium significance	The site needs to be recorded before destruction
Generally Protected C	Low significance	No further recording is required before destruction

Table 3. Evaluation and statement of significance (excluding palaeontology).

Significance criteria in terms of Section 3(3) of the NHRA		
	Significance	Rating
1.	Historic and political significance - The importance of the cultural heritage in the community or pattern of South Africa's history.	None.

2.	Scientific significance – Possession of uncommon, rare or endangered aspects of South Africa’s cultural heritage.	None.
3.	Research/scientific significance – Potential to yield information that will contribute to an understanding of South Africa’s natural or cultural heritage.	None.
4.	Scientific significance – Importance in demonstrating the principal characteristics of a particular class of South Africa’s cultural places/objects.	None.
5.	Aesthetic significance – Importance in exhibiting particular aesthetic characteristics valued by a community or cultural group.	None.
6.	Scientific significance – Importance in demonstrating a high degree of creative or technical achievement at a particular period.	None.
7.	Social significance – Strong or special association with a particular community or cultural group for social, cultural or spiritual reasons.	None.
8.	Historic significance – Strong or special association with the life and work of a person, group or organization of importance in the history of South Africa.	None.
9.	The significance of the site relating to the history of slavery in South Africa.	None.

6 RECOMMENDATIONS

The proposed development will not have any impact on heritage sites in the area as no sites (excluding potential paleontological sites) occur on the footprint. There is no

archaeological reason why the proposed development may not proceed as planned. The area is also not part of any known cultural landscape.

However, the palaeontologist reports that a Phase Two Paleontological Assessment must be conducted on the footprint as sensitive fossil material may be threatened during the construction phase. A suitably qualified Palaeontologist must be appointed to inspect all excavations deeper than 1.5m during the initial phases of construction and, in collaboration with the ECO and Contractor produce a "Protocol for Chance find of fossils" and arrange for the necessary permits from AMAFA to collect and record all fossils discovered on site (Appendix 1).

It should be pointed out that the KwaZulu-Natal Heritage Act requires that operations exposing archaeological, historical and paleontological material should cease immediately pending an evaluation by the heritage authorities.

7 MAPS AND PHOTOGRAPS

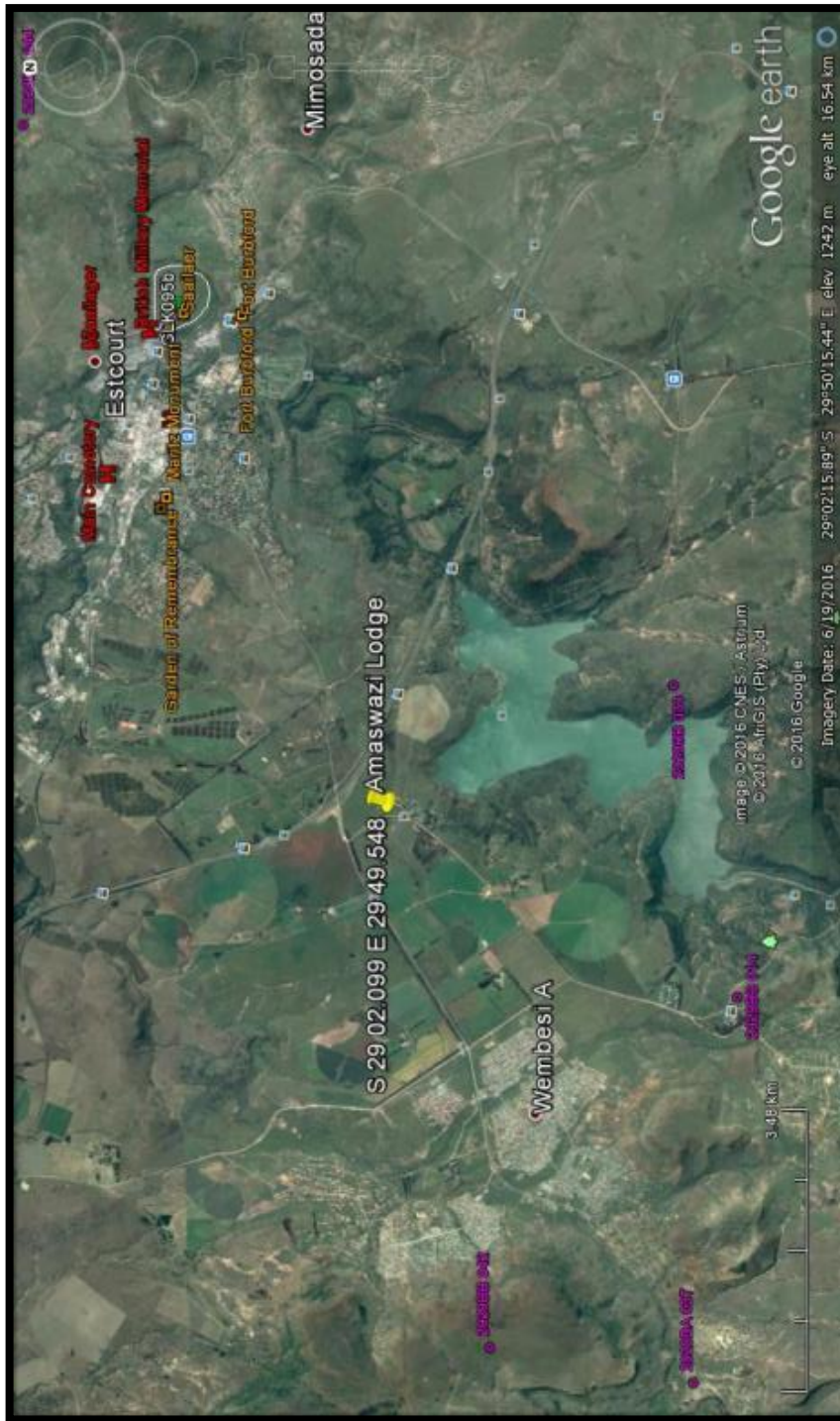


Figure 1. Google aerial photograph showing the locality of the proposed Amaswazi Lodge near Escourt. The location of known heritage sites in the near vicinity of the project area is also indicated.



Figure 2. Google aerial photograph showing the locality of the proposed Amaswazi Lodge near Estcourt.



Figure 3. The existing buildings on the footprint have no heritage value.



Figure 4. Buildings close to the entrance gate of the proposed Amaswazi Lodge. None of these buildings are older than 60 years old.



Figure 5. View towards Wagendrif Dam to the south of the study area: No archaeological sites or features occur on the footprint.

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APPENDIX 1

**DESKTOP PALAEOLOGICAL
ASSESSMENT FOR THE PROPOSED
AMASWAZI LODGE AND CONFERENCE
CENTRE DEVELOPMENT, PORTION 16 (OF
4) OF THE FARM KLIPPLAAT DRIFT NO.
1009 WITHIN UMTSHEZI LOCAL
MUNICIPALITY AND UTHUKELA
DISTRICT MUNICIPALITY, ESTCOURT,
KWAZULU - NATAL.**

**FOR
HIA CONSULTANTS
Active Heritage CC**

DATE: 25 July 2016

By

**Gideon Groenewald
Cell: 078 713 6377**

1. EXECUTIVE SUMMARY

Gideon Groenewald was appointed to undertake a desktop survey, assessing the potential Palaeontological Impact of the proposed Amaswazi Lodge and Conference Centre development, Portion 16 (Of 4) of the farm Klipplaat Drift No. 1009 within Umtshezi Local Municipality and Uthukela District Municipality, Estcourt, Kwazulu-Natal Province.

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.

The study area of the proposed Amaswazi Lodge and Conference Centre development, Portion 16 (Of 4) of the farm Klipplaat Drift No. 1009 within Umtshezi Local Municipality and Uthukela District Municipality, Estcourt, Kwazulu – Natal is underlain by sedimentary rocks of the Permian to Triassic aged Normandien Formation, Adelaide Subgroup of the Beaufort Group, Karoo Supergroup with Very High Palaeontological sensitivity. Excavations of 1.5m and more will most probably expose sensitive plant and vertebrate remains and these fossils need to be collected as part of a Phase 1 PIA. From the Google imagery and photographic evidence the area is overlain by varying depths of soil and no historic springs or highly sensitive linear aquifers were recorded during this desktop survey.

Recommendations:

2. The EAP and ECO of the project must be made aware of the fact that the entire study area is underlain by rocks that are allocated a Very High sensitivity for Palaeontological Heritage.
3. A suitably qualified Palaeontologist must be appointed to inspect all excavations deeper than 1.5m during the initial phases of construction and, in collaboration with the ECO and Contractor produce a “Protocol for Chance find of fossils” and arrange for the necessary permits from AMAFA to collect and record all fossils discovered on site.
4. No obvious Groundwater Resources will be affected by this development.
5. These recommendations must form part of the EMP of the project.

6. TABLE OF CONTENT

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7. INTRODUCTION

Gideon Groenewald was appointed to undertake a desktop survey, assessing the potential Palaeontological Impact of the proposed Amaswazi Lodge and Conference Centre development, Portion 16 (Of 4) of the farm Klipplaar Drift No. 1009 within Umtshezi Local Municipality and Uthukela District Municipality, Estcourt, Kwazulu-Natal Province (figure 1).



Figure 1 Locality of the Amaswazi Lodge Study Area

8. SOUTH AFRICAN NATIONAL HERITAGE RESOURCE ACT NO 25/1999 AND KWAZULU-NATAL HERITAGE ACT NO 4/2008

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;
- objects with the potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage.

9. METHODOLOGY

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 identify exposed and subsurface rock formations that are considered to be palaeontologically significant;
- to assess 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.

The intrinsic National Heritage Resource value of Groundwater Resources and Natural Springs forms part of the Palaeontological landscape of an area and an assessment of existing as well as potential groundwater resources is addressed as part of this Palaeontological Impact Assessment.

In preparing a palaeontological desktop study the potential fossiliferous rock units (groups, formations etc) represented within the study area are determined from geological maps and Google Earth imagery. The known fossil heritage within each rock unit is inventoried from the published scientific literature, previous palaeontological impact studies in the same region and the author's field experience.

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 2 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	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.
BLUE	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.
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 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>

When rock units of moderate to high palaeontological sensitivity are present within the development footprint, a field-based assessment by a professional palaeontologist is usually warranted.

The key assumption for this desktop study is that the existing geological maps and datasets used to assess site sensitivity are correct and reliable. However, the geological maps used were not intended for fine scale planning work and are largely based on aerial photographs alone, without ground-truthing.

These factors may have a major influence on the assessment of the fossil heritage significance of a given development and, without supporting field assessments, may lead to either:

- an underestimation of the palaeontological significance of a given study area due to ignorance of significant recorded or unrecorded fossils preserved there, or
- an overestimation of the palaeontological sensitivity of a study area, for example when originally rich fossil assemblages inferred from geological maps have in fact been destroyed by weathering, or are buried beneath a thick mantle of unfossiliferous “drift” (soil, alluvium etc).

10. GEOLOGY

The study area is underlain by Permian to Triassic aged mudstone and sandstone of the Normandien Formation of the Karoo Supergroup (Figure 2).

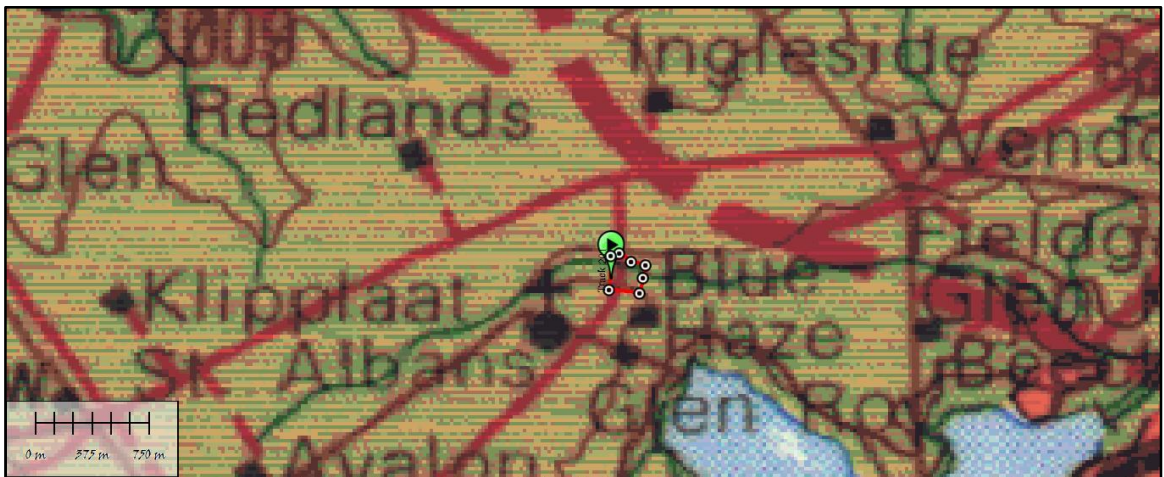


Figure 2 Geology of the study area of the Amaswazi Lodge. The area is underlain by mudstone and sandstone of the Normandien Formation

11.

12. Beaufort Group

13. Normandien Formation

The site is underlain by relatively deeply weathered mudstone and sandstone which are typical sedimentary rocks of the Permian to Triassic aged upper Normandien Formation of the Beaufort Group, Karoo Supergroup. The Formation characteristically consists of dark grey-green to dark grey shale and red coloured mudstone in the upper part thereof, assigned to the Palingkloof Member in the southern part of the Karoo Basin (Groenewald, 1996).

14. PALAEOLOGY

15. Beaufort Group

16. Adelaide Subgroup (Pa) ; Normandien Formation(Pne)

The Adelaide Subgroup overlies the Volksrust Formation of the Ecca Group and the transition from deep water deposits of the Volksrust Formation to pro-deltaic and deltaic deposits of the Beaufort Group present fieldworkers with problems in mapping these units (Groenewald, 1984; Muntingh, 1989; Johnson and Verster, 1994; Johnson et al, 2009; Groenewald, 2016). The Adelaide Subgroup and Normandien Formation comprise the *Cistecephalus* Assemblage Zone, *Daptocephalus* Assemblage Zone (Van der Walt et al., 2010; Viglietti et al, 2015) as well as the overlying *Lystrosaurus* Assemblage Zone of the Karoo Supergroup. It also contains abundant plant fossils of the *Glossopteris* Assemblage whilst trace fossils, including casts of vertebrate burrows are very common in these units.

17. HISTORIC AND POTENTIAL GROUNDWATER RESOURCES

No historic spring site is known from the study area and the area is underlain by mudstone and sandstone of the Normandien Formation (Vegter, 2001) with no obvious linear structures, ie fault zones or dolerite dykes mapped out on the site. No natural springs are indicated on the geological map and pollution of groundwater will be dependent on the secure design of all water pipes and sewerage systems. If French drain systems are planned the developer and the EAP must take note of the fact that the Normandien Mudstones are recorded to have a low permeability (Vegter, 2001; Jonck and Meyer, undated) and might lead to insufficient seepage of sewerage waste water into the rock profile, leading to seepages of sewerage waste water towards the southeast of the study area.

18. DISCUSSION

The predicted palaeontological impact of the development is based on the initial mapping assessment and literature reviews. The Normandien Formation is well-known for a wealth of fossil remains ranging from trace fossils (including casts of vertebrate burrows) to plant and vertebrate fossils of both the *Daptocephalus* and *Lystrosaurus* Assemblage Zones. The study area falls in a very sensitive outcrop area for this Formation and it is expected that exposure of rock to a depth of 1.5m will have a very important impact on the Palaeontological Heritage of KwaZulu-Natal Province.

The Normandien Formation comprises all the sediments of the Adelaide Subgroup and includes the Estcourt Formation (Johnson and Verster, 1989). The Karoo Basin in South Africa is well known for the fact that it represents the most complete sequence of sedimentary history in Gondwana and contains the remains of most of the therapsids (ancient ancestors of mammals) that roamed the Earth during the Permian Period (Rubidge, 1995; MacRae, 1999; McCarthy and Rubidge, 2005). The most significant geological event recorded in this sequence is the end-Permian mass extinction event (EPME) that occurred 252.4 million years ago when much of all life on Earth was terminated. This event is probably associated with the Schoondraai Member of the Normandien Formation.

19. MANAGEMENT PLAN

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 unweathered bedrock excavation envisaged. The different sensitivity classes used are explained in Table 1.

Figure 3 Relatively shallow soils on Normandien Mudstone with very few outcrops. View towards the southeast.



The palaeontological sensitivity of the development is related to the specific geology that underlies the development footprints. The development site is allocated a Very High Palaeontological Sensitivity.

From Google images and photographic evidence (Figure 3) the area is overlain by varying depth of soils on deeply weathered mudstone and the fossils will only be exposed during the initial excavations for foundations and infrastructure development.

It is therefore recommended that a suitably qualified palaeontologist be appointed during the first phase of excavations to do a Phase 1 PIA study and report. The palaeontological sensitivity of the Amaswazi study area is shown in Figure 4.



Figure 4 Palaeosensitivity of the proposed Amaswazi Lodge development site. For colour coding see Table 1

20. CONCLUSION AND RECOMMENDATIONS

The study area of the proposed Amaswazi Lodge and Conference Centre development, Portion 16 (Of 4) of the farm Klipplaat Drift No. 1009 within Umtshezi Local Municipality and Uthukela District Municipality, Estcourt, Kwazulu – Natal is underlain by sedimentary rocks of the Permian to Triassic aged Normandien Formation, Adelaide Subgroup of the Beaufort Group, Karoo Supergroup with Very High Palaeontological sensitivity. Excavations of 1.5m and more will most probably expose sensitive plant and vertebrate remains and these fossils need to be collected as part of a Phase 1 PIA. From the Google imagery and photographic evidence the area is overlain by varying depths of soil and no historic springs or highly sensitive linear aquifers were recorded during this desktop survey.

Recommendations:

1. The EAP and ECO of the project must be made aware of the fact that the entire study area is underlain by rocks that are allocated a Very High sensitivity for Palaeontological Heritage.
2. A suitably qualified Palaeontologist must be appointed to inspect all excavations deeper than 1.5m during the initial phases of construction and, in collaboration with the ECO and Contractor produce a “Protocol for Chance find of fossils” and arrange for the necessary permits from AMAFA to collect and record all fossils discovered on site.
3. No obvious Groundwater Resources will be affected by this development.
4. These recommendations must form part of the EMP of the project.

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22. 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 35 years). Dr Groenewald has 35 years of experience as a hydrogeologist and is an accredited member of the Borehole Water Association of South Africa.

23. 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 and groundwater assessment services. There are no circumstances that compromise the objectivity of my performing such work.



Dr Gideon Groenewald
Geologist