AN ARCHAEOLOGICAL DESKTOP STUDY FOR THE PROPOSED ESTABLISHMENT OF THE SPITSKOP WIND ENERGY FACILITY AND ASSOCIATED INFRASTRUCTURE ON A SITE NORTH-WEST OF RIEBEEK EAST, CACADU DISTRICT MUNICIPALITY, EASTERN CAPE PROVINCE.

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SUMMARY

The area for the proposed Spitskop Wind Energy Facility occurs approximately 75km from the coast within the Cape Midlands running east to west across the Riebeek East, Kommadagga and Bracefield areas. The 247km^2 area is situated mainly to the north of the regional R400 road overlapping to the south of the road at times between the hamlet of Riebeek East to about 20km west of the N10 national road. The proposed area occurs within the most eastern echelons of the Cape Folded Belt mountain range with the Great Fish River occurring approximately 30km to the north-east of Riebeek East.

Little is known about the archaeology of the immediate area, mainly because no systematic research has been conducted within the area proposed for development. The Albany Museum site records show that one site north of Riebeek East occurs within the proposed area for development, a few sites also occur outside the demarcated development area, and a significant amount within the valley south of the proposed development area.

It is therefore recommended that:

1. A full phase 1 archaeological impact assessment be conducted to establish the range and importance of the exposed and *in situ* archaeological heritage materials and features, the potential impact of the development and to make recommendations to minimize possible damage to these sites.

EXPERTISE TO UNDERTAKE STUDY

Dr Johan Binneman has attained his PhD in Archaeology from the University of the Witwatersrand in 1996 and has been employed at the Albany Museum conducting Eastern Cape archaeological research for the past 30 years. Dr Binneman has in the past conducted various phase 1 archaeological impact assessments in and around the area proposed for development.

Ms Celeste Booth has attained a BSc Honours in Archaeology from the University of Cape Town in 2007, she is currently busy completing her Mphil in Archaeology and has been employed at the Albany Museum for the past two and a half years. Ms Booth is conducting her rock art research interest to the west of the proposed area for development along the

Koonap River and surrounding areas and is quite familiar with the possible archaeological occurrences within the proposed area for development.

Ms Natasha Higgitt joined the Albany Museum in April 2010 on an internship programme arranged by the Department of Sport, Recreation, Arts and Culture, Eastern Cape Province. She has attained her Honours degree in Archaeology from the University of Pretoria in 2009. Ms Higgitt will assist in conducting the phase 1 archaeological impact assessment as part of her internship training and experience.

DECLARATION OF INDEPENDENCE

This section serves to confirm a declaration of independence, that Dr Johan Binneman and Ms Celeste Booth with the assistance of Ms Natasha Higgitt (currently on an internship), employees of the Albany Museum, Grahamstown, have no financial or any other personal interests in the project for the construction of the proposed establishment of the Spitskop Wind Energy Facility and associated infrastructure on a site north-west of Riebeek East, Cacadu District Municipality, Eastern Cape Province. Dr Johan Binneman and Ms Celeste Booth (with the assistance of Ms Natasha Higgitt on an internship) were appointed on a strictly professional basis to conduct a archaeological desktop study and phase 1 archaeological impact assessment in line with the South African national heritage legislation, the National Heritage Resources Act (Act 25 of 1999), and in response to the regulations guiding the Environmental Impact Assessment processes.

INTRODUCTION AND BRIEF

Renewable Energy Systems Southern Africa ('RES Southern Africa') is proposing to establish a wind energy facility and associated infrastructure within an area of approximately 247km^2. The wind energy facility is proposed on the following farm portions: Farm Steenkampsberg 590; the remainder of Farm Buffels Drift 61; Farm 597; Portion 1 of Farm 61 Junction Drift; Portion 2, 3, the remainder of Portion 1 and the remaining extent of Farm 60; Portion 2 and 3 of Farm Groot Fontein 138; Portion 1 and the remaining extent of Farm Bosch Fontein 143; Portion 2, 3 and the remainder of Portion 1 Farm Groot Fontein 140; Portion 2, the remainder of Portion 1 and the remaining extent of Farm Ebenezer 141; Portion 3 and 4 and the remaining extent of Farm 144; Portion 3 of Farm Modderfontein 302; Portion 1 and the remaining extent of Farm Bothas Hoop 358; the remaining extent of Farm Draai Van Klein Visch Rivier 254; Portion 1 and the remaining extent of the Farm Gras Fonteyn 258; Farm Springbok Vlakte 434; Portion 3 and the remaining extent of Farm Driefontein 259; Portion 11, the remaining extent of portion 1, and the remaining extent of portion 6 of Farm Witte Poort 262; Portion 1 and Portion 2 of Farm Varkens Kuil 269; the remaining extent of Farm Brand Rug 268; Portion 1 of Farm Commadagga 264; Farm 369; Portion 2 and the remainder of Portion 1 of Farm Brakfontein 261; Portion 1 and Portion 3 of Farm Commadagga 263; Portion 2, Portion 6, Portion 7, Portion 8, the remainder of Portion 3, the

remainder of Portion 4 and the remaining extent of Farm Commadagga 266, Farm Driefontein 436; the remaining extent of Farm 267; Portion 1, Portion 2 and the remaining extent of Farm 145, ,the remaining extent of Farm 66 and the remaining extent of Portion 1 of Farm 139.

The proposed wind energy facility would include up to 200 wind turbines (between 80m-120m hub height) with foundations as support and an estimated total installed capacity of up to 420MW, underground cabling between the turbines where possible, internal access roads to each turbine, a workshop area for control, maintenance and storage, on-site substation/s to facilitate the connection between the wind energy facility and the grid. The new overhead power line/s are likely to be connected to Eskom's existing Poseidon Substation situated near Cookhouse.

Savannah Environmental (Pty) Ltd has been contracted to conduct the environmental impact assessment (EIA) by the Renewable Energy Systems Southern Africa ('RES Southern Africa') (the developer). This archaeological desktop study has been prepared as part of the scoping phase for the proposed project in accordance with the National Heritage Resources Act 25 of 1999.

ARCHAEOLOGICAL BACKGROUND AND HERITAGE ("Description of the Affected Environment")

Little is known about the archaeology of the immediate area, mainly because no systematic archaeological research has been conducted within the area proposed for the Spitskop Wind Energy Facility. The pre-colonial archaeological record of the Grahamstown region and its immediate surrounds includes the Early Stone Age (ESA), the Middle Stone Age (MSA), the Later Stone Age (LSA) as well as pastoralism within the last 2000 years, Later Iron Age farming communities and colonial/historical archaeology. Grahamstown and the wider regions are rich in archaeological remains and sites and include many caves, rock shelters and rock paintings.

The Early Stone Age (ESA) and Middle Stone Age (MSA)

The Early Stone Age spans a period of between 1.5 million and 250 000 years ago and refers to the earliest that *Homo sapiens sapiens* predecessors began making stone artefacts. The earliest stone tool industry was referred to as the Olduwan Industry originating from stone artefacts recorded at Olduvai Gorge, Tanzania. The Acheulian Industry which replaced the Olduwan Industry approximately 1.5 million years ago is attested to in diverse environments and over wide geographical areas. The hallmark of the Acheulian Industry is its large cutting tools (LCTs or bifaces), primarily handaxes and cleavers. Bifaces emerged in East Africa more that 1.5 million years ago (mya) but have

been reported from a wide range of areas, from South Africa to northern Europe and from India to the Iberian coast. Yet the end products were astonishingly similar across the geographical and chronological distribution of the Acheulian techno-complex: large flakes that were suitable in size and morphology for the production of handaxes and cleavers perfectly suited to the available raw materials (Sharon 2009). The most well know Early Stone Age site in southern Africa is Amanzi Springs, situated about 10km north-east of Uitenhage, near Port Elizabeth (Deacon 1970). In a series of spring deposits a large number of stone tools were found *in situ* to a depth of 3-4 metres. Wood and seed material preserved remarkably very well within the spring deposits, and possibly date to between 800 000 to 250 000 years old.

The Middle Stone Age spans a period from 250 000-30 000 years ago and focuses on the emergence of modern humans through the change in technology, behaviour, physical appearance, art and symbolism. Various stone artefact industries occur during this time period, although less is known about the time prior to 120 000 years ago, and ample systemic research is being conducted on sites across southern Africa dating within the last 120 000 years (Thompson & Marean 2008). The large handaxes and cleavers were replaced by smaller stone tools called the Middle Stone Age flake and blade industries. Surface scatters of these flake and blade industries occurs widespread across southern Africa although rarely with any associated botanical and fauna remains. It is also common for these stone artefacts to be found between the surface and approximately 50-80cm below ground. Fossil bone may in rare cases be associated with MSA occurrences (Gess 1969). These stone artefacts, like the Earlier Stone Age handaxes are usually observed in secondary context with no other associated archaeological material.

The oldest evidence of the early inhabitants that occurs in surrounding area of the proposed development and wider region are large stone artefacts, called handaxes and cleavers which are from the Earlier Stone Age. According to S.L. Hall (1985), classic Early Stone Age handaxes and cleavers had been found near the Grahamstown golf course probably dating between 1 million and 200 000 years ago. Early Stone Age stone artefacts have also been recorded in the valley south of the proposed area for the wind energy facility.

Evidence of Middle Stone Age sites occur throughout the surrounding and wider region of the proposed development. The site of Howieson's Poort is situated about ten kilometres south-west of Grahamstown and is the archetype site for a distinctive type of Middle Stone Age stone artefact with similar specimens having been documented at the Kasouga River-mouth and at Bell in the Peddie District (Stapleson & Hewitt 1928; Goodwin & Van Riet Lowe 1929; Deacon 1995). Middle Stone Age stone artefacts have also been recorded to occur at the sites in the valley south of proposed wind energy facility.

It is therefore likely that surface scatters of Early Stone Age and Middle Stone Age may be encountered within the area proposed for development. Such occurrences may also be found between the surface and approximately 50-80cm below ground. It is rare that these particular stone artefacts are found in association with other archaeological remains and are usually out of context owing to natural disturbances over time and, more recently, owing to human impact.

The Later Stone Age (LSA) and Pastoralism within the last 2000 years

The Later Stone Age spans a period from 30 000 years ago to the historical period (the last 500 years) until 100 years ago and is associated with the archaeology of San hunter-gatherers. The majority of archaeological sites found in the area would date from the past 10 000 years where San hunter-gatherers inhabited the landscape living in rock shelters and caves as well as on the open landscape. These latter sites are difficult to find because they are in the open veld and often covered by vegetation and sand. Sometimes these sites are only represented by a few stone tools and fragments of bone. The preservation of these sites is poor and it is not always possible to date them (Deacon and Deacon 1999). Caves and rock shelters, however, in most cases, provide a more substantial preservation record of pre-colonial human occupation.

Some 2 000 years ago Khoekhoen pastoralists entered into the region and lived mainly in small settlements. They were the first food producers in South Africa and introduced domesticated animals (sheep, goat and cattle) and ceramic vessels to southern Africa. Often, these archaeological sites are found close to the banks of large streams and rivers. Large piles of freshwater mussel shell (called middens) usually mark these sites. Precolonial groups collected the freshwater mussel from the muddy banks of the rivers as a source of food. Mixed with the shell and other riverine and terrestrial food waste are also cultural materials. Human remains are often found buried in the middens (Deacon and Deacon 1999).

There is little archaeological evidence for human occupation within the Grahamstown region between 75 000 and 15 000 years ago. However, from about 15 000 years ago populations of hunter-gatherers re-established themselves within the region as is evidenced in the preserved Later Stone Age occupational deposits of the few caves and rock shelters that have been excavated, namely Melkhoutboom in the Suurberg (Deacon 1976) approximately 50km to the south-west of the proposed development, Wilton (Deacon 1972), Roodekrans (unpublished, excavated by W. W. Austin, 1921) (Binneman 1993), Spitskop also yielded human remains that have been radiocarbon dated to 4 700 ± 60 BP (Pta 5979) (Albany Museum records) (Hewitt 1922), Rautenbach's Drift (Albany Museum records), Welcome Woods (unpublished, first excavated by Hewitt in 1935/8) all occurring to the south between the proposed area for development and Alicedale, and Edgehill and Welgeluk

located on the Koonap River some 40km to the north of Grahamstown (Hall 1985, 1990). In addition, most of these sites and many more caves and shelters in the surrounding area for development contain rock paintings.

It is likely that Later Stone Age stone artefacts and Khoekhoen pastoral archaeological remains would occur within the area proposed for development as surface scatters around and in the open areas, caves and rock shelters. Previously human inhabited caves and rock shelters containing rock art may also be encountered within the area proposed for development.

Rock Art (Paintings)

Rock art is generally associated with the Later Stone Age period mostly dating from the last 5000 years to the historical period. It is difficult to accurately date the rock art without destructive practices. The southern African landscape is exceptionally rich in the distribution of rock art which is determined between paintings and engravings. Rock paintings occur on the walls of caves and rock shelters across southern Africa.

No systematic research on the occurrence of rock paintings has been conducted within the immediate area proposed for development. However, rock paintings have been recorded at various sites within the Cape Folded Belt Mountains, along the Koonap River and around Grahamstown and it is highly likely that rock art sites may be encountered within the area proposed for development.

Late Iron Age and the Historical Period

The Late Iron Age communities during the second millennium AD moved from settlement in river valleys to the hilltops. Late Iron Age settlements have been formally recorded by the Albany Museum and cover a relatively extended area in comparison with the Early Iron Age settlement patterns within river valleys during the first millennium AD. Although local farmers along the Koonap River approximately 50km north-east of the proposed development have mentioned remnants of huts and pottery that may be associated with Late Iron Age settlement, the Albany Museum holds no records of such investigation within the immediate area proposed for development, the surrounding and wider region.

Historical archaeology refers to the last 500 years when European settlers and colonialism entered into southern Africa. Grahamstown experienced an influx of English settlers from the 1820's who settled within and surrounding the town. Historical buildings, stonewalling, evidence of historical artefacts such as ceramics and buttons have been recorded within the area to the south of the proposed areas for development and Grahamstown. It is likely that a variety of historical features and artefacts will be encountered within the area for

development, owing to early farming activities, the region's historical settlements, movements and migrations through the area.

References

Binneman, J & Hall, S. 1993. The context of four painted stones from the South-Eastern and Eastern Cape. *Southern African Field Archaeology*, 2: 89-95.

Deacon, H.J. 1976. *Where Hunters Gathered: A Study of Holocene Stone Age people in the Eastern Cape*. Claremont: South African Archaeological Society Monograph Series, No. 1.

Deacon, J. 1972. Wilton: an assessment after 50 years. South African Archaeological Bulletin 29:3-18.

Deacon, J. 1995. An unsolved mystery at the Howieson's Poort name site. *South African Archaeological Bulletin* 50:110-120.

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

Goodwin, A.J.H. and van Riet Lowe 1929. The Stone Age Cultures of South Africa. Annals of the South African Museum 27:1-289.

Goodwin, A.J.H. 1946. Earlier, Middle and Later. *South African Archaeological Bulletin*, Vol. 3 (1): 74-76.

Hall, S.L. 1990. Hunter-gatherer-fishers of the Fish River Basin: a contribution to the Holocene prehistory of the Eastern Cape. Unpublished thesis: University of Stellenbosch.

Hall, S.L. 1985. The Prehistory of Grahamstown and its Environs. In Daniel, J.B. Mcl.; Holleman, W.; Jacot Guillardmod, A. Grahamstown and its Environs. Grahamstown: Albany Museum.

Hewitt, J. 1922. On several implements and ornaments from Strandloper sites in the Eastern Province. *South African Journal of Science* 18:454-467.

Leslie Brooker, M. 1987. An Archaeological Study of the Uniondale Rockshelter, Albany District, Eastern Cape. Unpublished M.A. thesis: University of Stellenbosh

Sharon, G. 2009. Acheulian Giant-Core Technology. *Current Anthropology*, Vol. 50 (3): 335-367.

Stapleson, P. and Hewitt, J. 1928. Stone implements from a rock shelter at Howieson's Poort, near Grahamstown.

CONCLUSIONS AND RECOMMENDATIONS

The area proposed for the Spitskop Wind Energy Facility has in the past not been systematically researched archaeologically; however, there is enough recorded information available within the surrounding area and wider region to determine the probable archaeological artefacts and remains that may be encountered during the practical investigation of the area.

It has been established that there is a variety of archaeology within the proposed area that may be encountered, ranging from the Early Stone Age, Middle Stone Age, Later Stone Age and pastoralism within the last 2000 years, including burials and rock art. Historical artefacts and features may also be rife within the proposed area owing to the settlement and migrations of early travelers and settlers.

It is therefore recommended that:

1. A full phase 1 archaeological impact assessment be conducted to establish the range and importance of the exposed and *in situ* archaeological heritage materials and features, the potential impact of the development and to make recommendations to minimize possible damage to these sites.

ASSESSMENT OF THE IMPACTS

A full phase 1 archaeological impact assessment be conducted to establish the range and importance of the exposed and *in situ* archaeological heritage materials and features, the potential impact of the development and to make recommendations to minimize possible damage to these sites.

Impact Assessment

It is not possible to measure the impact of the wind energy facility on the archaeological heritage because we do not know what sites/remains and where these sites/remains are. Only once the Phase 1 Archaeological Impact Assessment (AIA) has been completed, we would be able to measure the impacts, if any.

Potential impacts on the heritage

Once the Phase 1 AIA has been conducted, potential impacts can be assessed, the impact will in all cases be negative.

Nature of the impacts on the heritage

The nature of the impact will be the destruction of archaeological heritage resources, and the affect will be negative.

The extent of the impact (local, regional, national or international)

Once the Phase 1 AIA has been conducted the extent of the impact on probable sites within the immediate area or site of development can be assessed and the significance of the archaeological sites can be determined local, regional, national or international.

METHODOLOGY: 1st Phase survey (brief summary)

1. If the precise footprints of the turbine bases, roads, power line connections, offices and construction sites and other infrastructures are known, then these areas will be surveyed and recorded in detail following the methods discussed below.

2. If 1 is not available:

Due to the large area, the survey will be conducted from a vehicle and on foot following the access roads with as many spot checks as possible. Recommendations from this will be that once the above is available an archaeologist visits these areas for a walk through.

Therefore: It will make sense that the Phase 1 AIA be conducted when the complete footprint is available to avoid unnecessary expenses for the developer.

All sites, features and material will be recorded by GPS coordinates and plotted on maps/air photographs.

Site, features, material and general environment will be digitally recorded.

All sites will be evaluated in terms of:

* Type of site - e.g. shell midden, shell scatter, stone feature etc.
* Location and environmental surrounds - e.g. dune, grassland, etc.
* Site category - e.g. Later Stone Age, Middle Stone Age etc.
* Context and condition - e.g. disturbed, primary or secondary, etc.
* Estimated size and depth of deposits
* Cultural affinities - e.g. hunter-gatherer, pastoralist, etc.
* Record site content - e.g. food waste, cultural material, etc.
* Record basic information of finds -e.g. types of bone, shellfish species, raw material used for stone tools, type of stone tools, ceramics, describe stone features etc.
* Estimate relative age of sites from cultural material and other information.
* Record and describe any graves or burial sites.
* Make statement on the importance/significance of site, feature etc.
* Rate sites - e.g. national, provincial, local etc.

Compile a report and recommendations which include an assessment of the potential impact of development on the sites and proposals for mitigation and/or protection - towards a Phase 2 and possible Phase 3 investigation.

APPENDIX A: IDENTIFICATION OF ARCHAEOLOGICAL FEATURES AND MATERIAL FROM INLAND AREAS: guidelines and procedures for developers

1. Human Skeletal material

Human remains, whether the complete remains of an individual buried during the past, or scattered human remains resulting from disturbance of the grave, should be reported. In general the remains are buried in a flexed position on their sides, but are also found buried in a sitting position with a flat stone capping and developers are requested to be on the alert for this.

2. Freshwater mussel middens

Freshwater mussels are found in the muddy banks of rivers and streams and were collected by people in the past as a food resource. Freshwater mussel shell middens are accumulations of mussel shell and are usually found close to rivers and streams. These shell middens frequently contain stone tools, pottery, bone, and occasionally human remains. Shell middens may be of various sizes and depths, but an accumulation which exceeds 1 m^2 in extent, should be reported to an archaeologist.

3. Stone artefacts

These are difficult for the layman to identify. However, large accumulations of flaked stones which do not appear to have been distributed naturally should be reported. If the stone tools are associated with bone remains, development should be halted immediately and archaeologists notified

4. Fossil bone

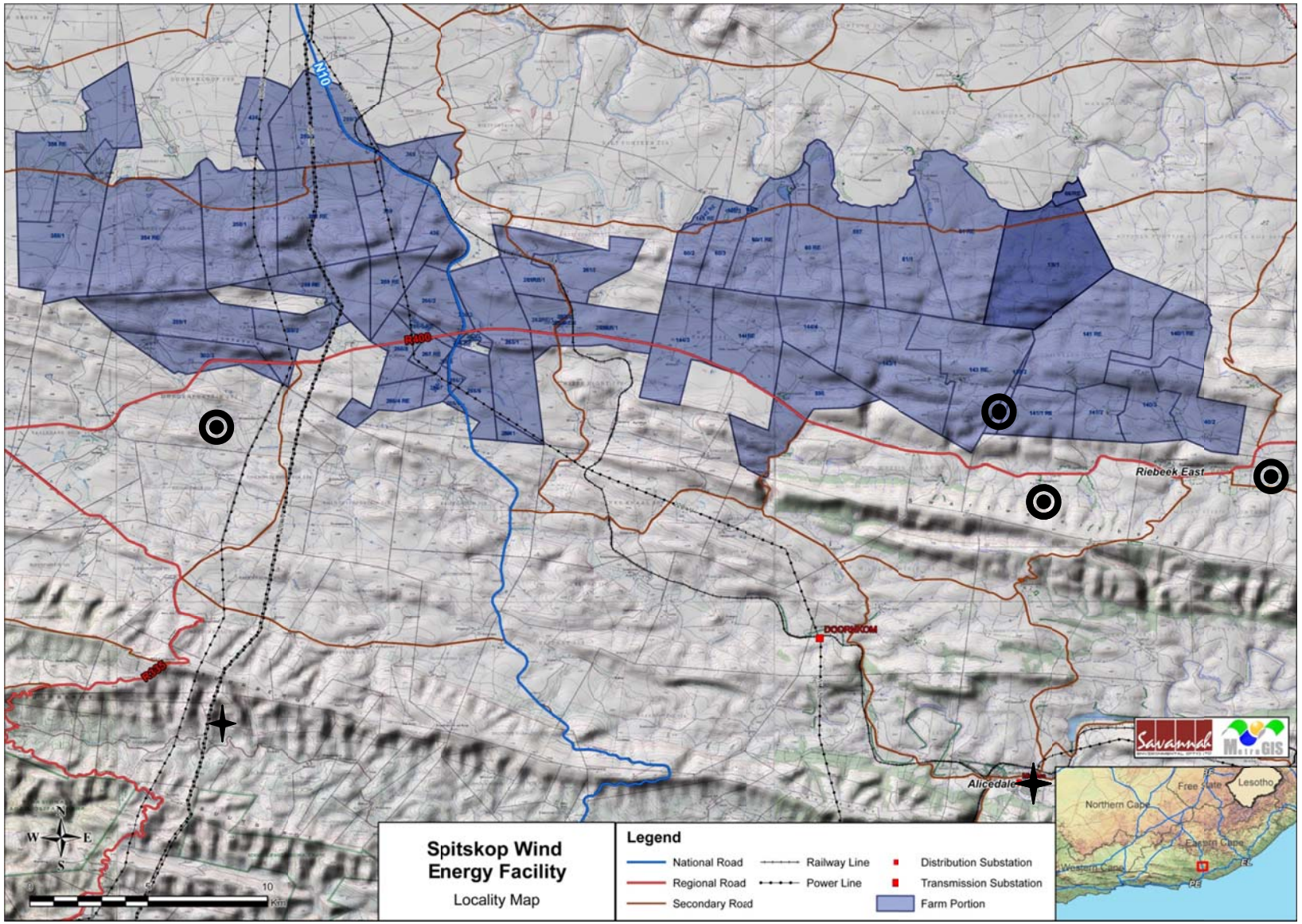
Fossil bones may be found embedded in geological deposits. Any concentrations of bones, whether fossilized or not, should be reported.

5. Large stone features

They come in different forms and sizes, but are easy to identify. The most common are roughly circular stone walls (mostly collapsed) and may represent stock enclosures, remains of wind breaks or cooking shelters. Others consist of large piles of stones of different sizes and heights and are known as *isisivane.* They are usually near river and mountain crossings. Their purpose and meaning is not fully understood, however, some are thought to represent burial cairns while others may have symbolic value.

6. Historical artefacts or features

These are easy to identified and include foundations of buildings or other construction features and items from domestic and military activities.



Map 3. Area proposed for the Spitskop Wind Energy Facility with nearby archaeological sites plotted (circles: nearby sites; stars: extent of sites that occur within the area mapped (map courtesy of Savannah Environmental).