A PHASE 1 ARCHAEOLOGICAL IMPACT ASSESSMENT FOR THE PROPOSED 132KV POWER LINE LINKING THE TSITSIKAMMA COMMUNITY WIND ENERGY FACILITY TO THE PROPOSED EXTENSION OF THE DIEPRIVIER SUBSTATION, KOUGA LOCAL MUNICIPALITY, HUMANSDORP DISTRICT, EASTERN CAPE PROVINCE

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CONTENTS

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EXECUTIVE SUMMARY

Eastern Cape Heritage Consultants cc was appointed by Savannah Environmental (Pty) Ltd on behalf of the proponent Cennergi (Pty) Ltd to conduct a Phase 1 Archaeological Impact Assessment (AIA) for the proposed 132kV power line linking the Tsitsikamma Community Wind Energy Facility and associated infrastructure at Wittekleibosch near Humansdorp to the proposed extension of the Dieprivier Substation. The power line runs from the proposed Tsitsikamma Community Wind Energy Facility site, which is situated approximately 30 km west of Humansdorp in the Wittekleibosch area, to the proposed extension of the Dieprivier substation some 8 km north-east of the wind farm. It runs over a number of farms used mainly for grazing and general farming activities and is approximately 11 km in length.

A comprehensive desktop study, a Phase 1 Archaeological Impact Assessment (AIA) and an archaeological walk through survey of the final turbine footprint have been conducted previously for the proposed Tsitsikamma Community Wind Energy Facility and associated infrastructure.

The survey was conducted to establish the range and importance of possible exposed and *in situ* archaeological heritage remains and features, the potential impact of the development and, to make recommendations to minimize possible damage to these sites. This report discusses the results from the 132kV power line route survey from the wind facility to the substation.

Most of the power line route runs over land which has been ploughed extensively in the past and now covered by dense grass used for grazing. It crosses the Krom River and several smaller drainage lines which are either covered by patches of fynbos or alien vegetation. These circumstances impeded the archaeological visibility and made it difficult to locate sites/materials. Only a few Earlier Stone Age stone tools were observed where the sub-surface ferricretes were exposed in tracks. It is unlikely that any significant archeological material will be exposed during the development. However, if any concentrations of archaeological material are uncovered during development, work must immediately cease and be reported to the nearest archaeologist and/or the South African Heritage Resources Agency.

In general the proposed power line route is of low archaeological significance and the construction activities will have little impact on possible archaeological sites/material. However, there are already other power lines in the area and the proposed power line will add a slight negative cumulative visual impact to the cultural landscape.

Consultation with the Gamtkwa KhoiSan Council was conducted as required by the National Heritage Resources Act No. 25 of 1999, Section 38(3e). They will communicate their recommendations to Savannah Environmental (Pty) Ltd if required.

PROJECT INFORMATION

The type of development

Cennergi (Pty) Ltd proposed the construction of a 132kV power line to link the proposed Tsitsikamma Community Wind Energy Facility at Wittekleibosch near Humansdorp to the proposed extension of the Dieprivier Substation. This report is part of a Basic Environmental Impact Assessment for that project.

The Developer

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Purpose of the study

The original proposal was to conduct a Phase 1 Archaeological Impact Assessment (AIA) for the proposed 132kV power line linking the proposed Tsitsikamma Community Wind Energy Facility at Wittekleibosch near Humansdorp, Kouga Local Municipality, Eastern Cape Province, to the proposed extension of the Dieprivier Substation next to the R62 to Kareedouw. The survey was conducted to establish;

- the range and importance of possible exposed and *in situ* archaeological sites, features and materials,
- the potential impact of the development on these resources and,
- to make recommendations to minimize possible damage to these resources.

Site and Location

The development is located within the 1:50 000 topographic reference maps 3424AB Clarkson and 3424BA Kruisfontein (Map 1). The power line runs from the proposed Tsitsikamma Community Wind Energy Facility site, which is situated approximately 30 km west of Humansdorp, south of the N2 National Road in the Wittekleibosch area, Kouga Local Municipality, Humansdorp District, Eastern Cape Province, to the proposed extension of the Dieprivier substation approximately 8 km north-east of the wind farm as the crow flies (Maps 1-2). The substation is situated a hundred and fifty metres north-east of the R62 main road from the N2 to the small town of Kareedouw. The power line is approximately 11 km in length and runs over a number of farms used mainly for grazing and general farming activities and includes the following properties;

675 portion 3, 5 and remainder of (Vergaaderings)
Farm 818, Farm 358 portion 1, 4 and 14 (Diep Rivier's Mond)
Farm 361 portion 1 and 5 (Kromme Rivier's Poort)
Farm 891
Farm 360 (Rheboksfontein).

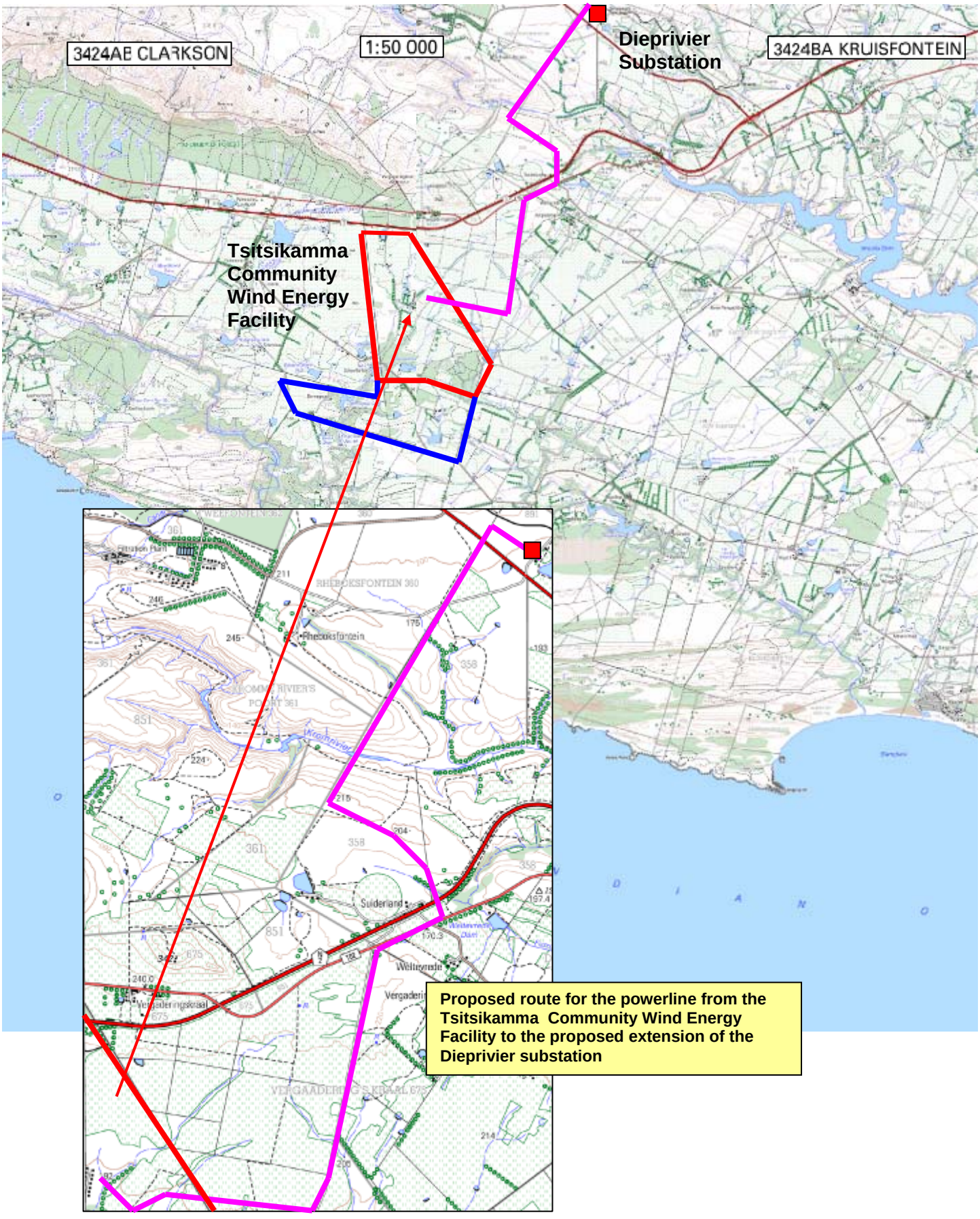
The general landscape to the south of the study area (proposed Tsitsikamma Community Wind Energy Facility site) is relatively flat, high lying agricultural land and currently being used mainly for grazing. The northern part comprises a gentle undulating hill landscape deeply incised by the Krom and Diep Rivers (Maps 2). The area is currently being used for general farming activities such as grazing and cultivation and has therefore been ploughed extensively. General small scale farming activities such as the construction of fences, dams, kraals, farm roads, power lines and soil erosion has disturbed the study area in the past. The entire route for the proposed power line is covered by dense grass, fynbos and patches of alien trees. The steep slopes of the Krom River and other drainage lines are covered by near-pristine fynbos vegetation, and the river valleys are covered by dense alien trees. The dense ground cover made it difficult to locate archaeological sites/materials.

ARCHAEOLOGICAL BACKGROUND

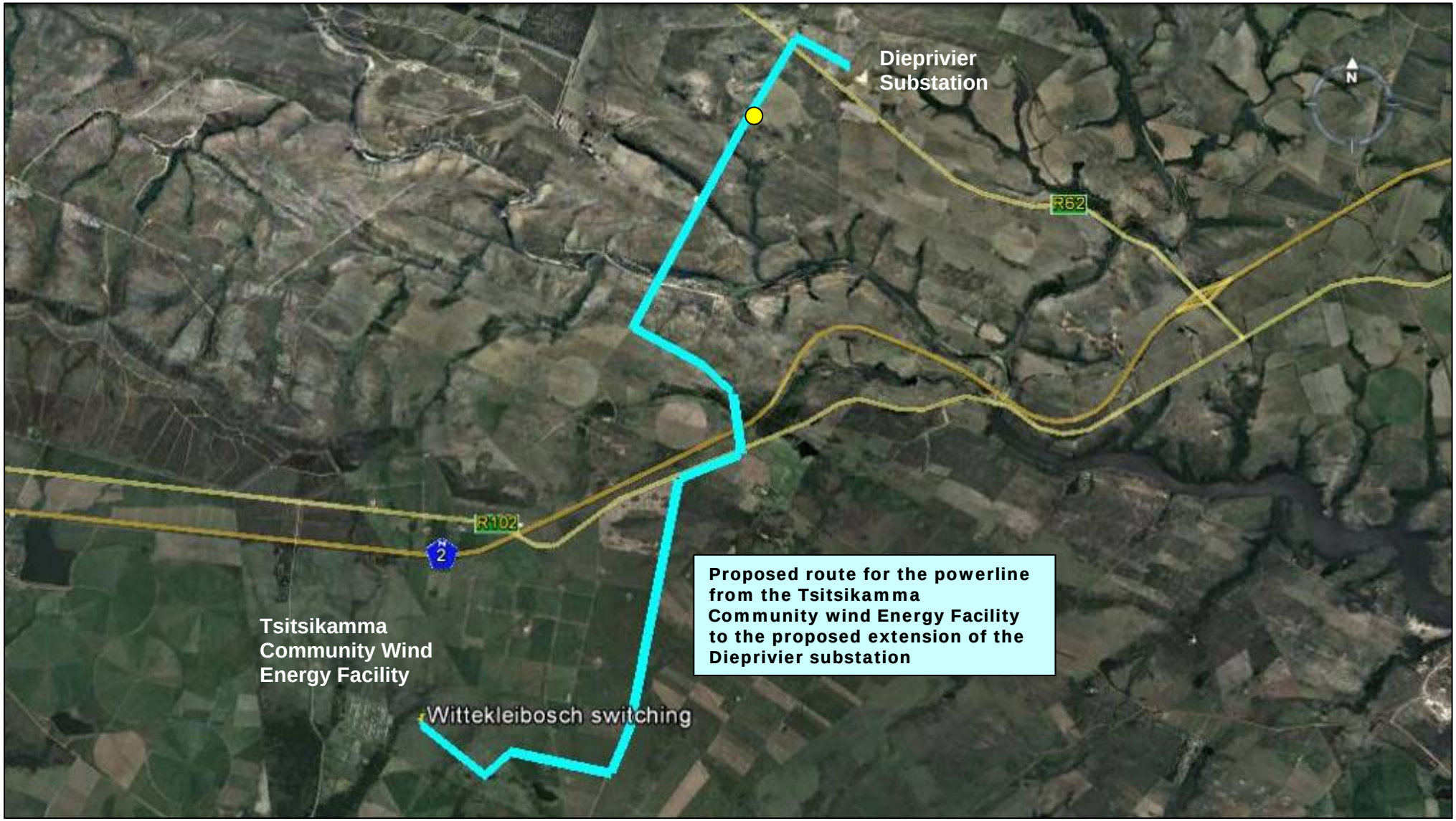
Literature review

The oldest evidence of the early inhabitants in the region are large stone tools, called hand axes and cleavers which can be found in the gravels which cap the hill slopes in the region, and on the calcrete floors exposed in the dune systems along the coast towards Cape St Francis (Laidler 1947; Deacon & Geleijnse 1988; Binneman 2001, 2005). The time period is known as the Earlier Stone Age (ESA) and the stone tools belong to the Acheulian Industry, dating between approximately 1,5 million and 250 000 years old.

The Acheulian hand axes and cleavers were replaced by a totally different looking stone tool industry, the so-called flake and blade industries of the Middle Stone Age (MSA). The time period, between 120 000 - 30 000 years ago, also witness the emergence of the first modern humans (*Homo sapiens sapiens*). The oldest remains of anatomically modern humans in the world (some 110 000 years old) comes from the



Map 1. 1:50 000 Maps indicating the location of the proposed powerline from the Tsitsikamma Community Wind Energy Facility to the proposed extension of the Dieprivier substation (pink line).



Map 2. Aerial view of the location of the proposed powerline from the Tsitsikamma Community Wind Energy Facility to the proposed extension of the Dieprivier substation. The yellow dot marks the Earlier Stone Age stone tool site (map courtesy Savannah Environmental (Pty) Ltd).

Klasies River complex of caves some seven kilometres west of the proposed development (Singer & Wymer 1982; Rightmire & Deacon 1991; Deacon 1992, 1993, 2001; Deacon, H. J & Shuurman, R. 1992). The archaeological deposits at the Klasies River Caves (1-5) date to 120 000 years old. Although humans were already anatomically modern by 110 000 years ago, they were not yet fully exhibiting 'modern behaviour' and only developed into culturally modern behaving humans between 80 000 and 70 000 years ago. This occurred during cultural phases known as the Still Bay and Howieson's Poort time periods/stone tool traditions. The Howison's Poort is well represented at Klasies River Cave 2 (Deacon & Wurz 1996; Wurz 1999).

From about 30 000 years ago, several 'new' technological innovations were introduced to the region. During this period, known as the Later Stone Age (LSA), rock art, burials associated with grave goods, painted stones, new microlitic stone tool types, bows and arrows, decorative items and many more became common (Deacon & Deacon 1999).

The period between 20 000 and 14 000 years ago experienced extremely cold climatic conditions which influenced the environment, people and animals. During the Last Glacial Maximum vast areas were exposed along the coast which created favourable conditions for grassland and grazing animals (also inland). The remains from archaeological sites indicated that there were several large grazing animal species which are now extinct, for example the giant buffalo, the giant hartebeest and the Cape horse. After 14 000 years ago the climate started to warm up again and the sea level rose rapidly. By 12 000 years ago the sea was close to modern conditions and the previously exposed grassland also disappeared due to the rising sea level, causing the extinction of many grassland species including the giant buffalo, hartebeest and the Cape horse (Deacon & Deacon 1999).

Between 10 000 and 8 000 years ago the environment became bushier and gave rise to territorial smaller type browsing animals that lived in small groups or pairs. Most of the large Last Glacial grazing animals disappeared from the archaeological deposits during this time period from sites in the region. A characteristic of the past 8 000 years, also known as the Wilton time period, was the large number of small (microlithic) stone tools in the shelters and open-air middens of the region. The first real change in the socio-economic landscape came some 2 000 years ago when Khoi pastoralists settled in the region. They were the first food producers and introduced domesticated animals (sheep, goats and cattle) and ceramic vessels to the region (Binneman, 2001, 2005).

References

Binneman, J.N.F. 2001. An introduction to a Later Stone Age coastal research project along the south-eastern Cape coast. Southern African Field Archaeology 10:75-87.

Binneman, J.N.F. 2005. Archaeological research along the south-eastern Cape coast part1: open-air shell middens Southern African Field Archaeology 13 & 14:49-77.

Deacon, H.J. 1992. Southern Africa and modern human origins. Philosophical Transactions of the Royal Society, London 337: 177–83.

Deacon, H.J. 1993. Southern Africa and modern human origins. In: Aitken, M. J., Stringer, C. B. & Mellars, P. A., eds, The origin of modern humans and impact of chronometric dating. Princeton: Princeton University Press, pp. 104–17.

Deacon, H.J. 2001. Modern human emergence: an African archaeological perspective. In: Tobias, P. V., Raath, M. A., Moggi-Cecchi, J. & Doyle, G. A., eds, Humanity from African Renaissance to coming Millennia. Johannesburg: University of the Witwatersrand Press, pp. 213–22.

Deacon, H.J. & Geleijnse, V. 1988. The stratigraphy and sedementtology of the Main Site sequence at Klasies River, South Africa. South African Archaeological Bulletin 43:5-14.

Deacon, H. J & Shuurman,R. 1992. The origins of modern people: the evidence from Klasies River. *In*:Bräuer, G. & Smith, F. H., eds, *Continuity or replacement: controversies in Homo sapiensevolution*. Rotterdam: Balkema, pp. 121–9.

Deacon, H. J. & Wurz, S. 1996. Klasies River Main Site, Cave 2: a Howiesons Poort occurrence. In: Pwiti, G. & Soper, R., eds, Aspects of African Archaeology. Harare: University of Zimbabwe Publications, pp. 213–8.

Deacon, H.J. & Deacon, J. 1999.Human beginings in South Africa: uncovering the secrets of the Stone Age. Cape Town: David Phillips Publishers.

Laidler, P.W. 1947. The evolution of Middle Palaeolithic technique at Geelhoutboom, near Kareedouw, in the southern Cape. Transactions of the Royal Society of South Africa 31:283-313.

Rightmire, G.P. & Deacon, H.J. 1991. Comparative studies of Late Pleistocene human remains from Klasies River Mouth, South Africa. Journal of Human Evolution 20:131-156.

Singer, R. & Wymer, J. 1982. The Middle Stone Age at Klasies River Mouth in South Africa. Chicago: University of Chicago Press.

Wurz, S. 1999. The Howiesons Poort backed artefacts from Klasies River: an argument for symbolic behaviour. South African Archaeological Bulletin 54: 38–50.

Relevant impact assessments close to the study area

Binneman, J. 2012. An archaeological walk through survey of the final turbine footprint for the proposed Tsitsikamma Community Wind Energy Facility, Kouga Local Municipality, Humansdorp District, Eastern Cape Province: an amendment to the Phase 1 Archaeological Impact Assessment conducted during august 2011. Prepared for Savannah Environmental (Pty) Ltd, Sunninghill.

Binneman, J. 2011. A phase 1 archaeological impact assessment for the proposed Tsitsikamma Community Wind Energy Facility, Kouga Local Municipality, Humansdorp District, Eastern Cape Province. Prepared for Savannah Environmental (Pty) Ltd, Sunninghill. Prepared for Savannah Environmental (Pty) Ltd, Sunninghill.

Binneman, J. 2010. A phase 1 archaeological heritage impact assessment for the proposed Deep River Wind Energy Project, Kouga Municipality, District Of Humansdorp, Eastern Cape Province. Prepared for Savannah Environmental (Pty) Ltd, Sunninghill.

ARCHAEOLOGICAL INVESTIGATION

Methodology

The proposed 132kV power line route from the proposed Tsitsikamma Community Wind Energy Facility to the proposed extension of the Dieprivier Substation was investigated by two people on foot and from a vehicle. Due to the relatively gentle undulating and open nature of the terrain the entire route of the propose power line could be reached via the

many access tracks. From the access points the proposed route was investigated on foot in the different directions. All the landowners were contacted prior to the survey to inform them about the visit and to gain access to their land. GPS readings were taken with a Garmin and all important features were digitally recorded. Consultation was conducted with the local Gamtkwa KhoiSan community regarding the archaeological heritage of the area.

Limitations and assumptions

During the investigation special attention was given to the areas near the current tower positions. The reason is that no information was available for the new tower positions and because the new route follows the old route for almost half of the distance, it was assumed that the new tower positions will be placed at similar distances near the current positions. Little attention was, however, given to the steep slopes of the Krom River valley because the lines (like the current ones) will most probably be anchored on the opposite embankments. However, the smaller drainage lines and slopes were investigated because those are the obvious areas where sites/materials may be located.

The dense vegetation cover and the disturbed nature of the proposed route made it difficult to locate archaeological sites/materials. During the investigation attention was given to areas where the underlying sub surfaces were exposed by erosion and/or by human activities. Furthermore, the experience and knowledge gained from research and investigations of the surrounding areas provided the information base to make predictions on the pre-colonial archaeology of the region.

Results

The proposed 132kV power line route commences at the Wittebosch Substation just east of the settlement in the proposed Tsitsikamma Community Wind Energy Facility site. From here the route runs in an easterly direction where it meets up with a gravel farm road (Maps 1-2). The immediate landscape comprises a gently undulating plain used mainly for agricultural activities. Virtually the entire area has been transformed in the past by bush clearing, ploughing and planting of grass for grazing, construction of dams, general farming activities and more recently by the establishment of small informal settlements. The dense vegetation cover and waterlogged fields made it impossible to locate archaeological sites/materials (Fig 1).

The route follows the gravel road in a northerly direction to the R102 (old national road between Humansdorp and Eersterivier) where it runs adjacent to the R102 in a north-easterly direction for a few hundred metres where after it turns to a northerly direction and crosses the N2 national Road (Maps 1-2). This part of the route also comprises of ploughed fields, drainage lines/wetlands, disturbed landscapes and dense alien and fynbos vegetation (Figs 2-3). No archaeological remains were observed for this part of the route.

North of the N2 the route passes through a patch of alien trees and then turns in a north-westerly direction and follows the existing power line along the side of the hill (Fig. 4).

Approximately 1.2 km further the route makes a 90 degree turn towards the north-east and follows the existing power line in a straight line towards the Dieprivier Substation (Maps 1-2). En route towards the substation the power line runs through almost pristine fynbos vegetation, dense grass and old ploughed fields and crosses the deep Krom River valley and another two drainage lines (Figs 5-7). Again no archaeological remains were observed.

The final part of the proposed power line route continues in a straight line, crosses the R62 and then turns sharply in an easterly direction towards the substation (Figs 8-9). About a kilometre from the Dieprivier Substation the existing power line diverts in an easterly direction and continues in a straight line towards the substation. Earlier Stone Age hand axes, cleavers, flakes and cores (dating between 1,5 million – 30 000 years old) were located at the area where the lines split (Fig 8). The stone tools were observed in the vehicle tracks where the underlying ferricrete was exposed (GPS reading: 34.04.612S; 24.31.697E). These stone tools were in secondary context and not associated with any other archaeological material and are therefore of low cultural significance. Earlier Stone Age stone tools are commonly found throughout the region and there is a large site on the hill slopes close to the confluence of the Krom and Diep Rivers some 2.5 km east of the study area.

There are no historical features or graves older than 60 years near the proposed power line route.

ASSESSMENT OF THE IMPACTS

Judging from the existing power line, the construction of the proposed 132kV power lines will consist of overhead cables suspended from wooden poles placed a few hundred metres apart. These poles must be firmly positioned several metres deep in the ground. Although the placing of the poles will only affect a few square metres, it will be the additional activities such as the service roads for the construction vehicles and clearing of vegetation along the servitude which will disturb the land surface on a large scale.

These activities may have a negative effect on the above and below ground archaeological remains. The disturbances to the landscape may be rehabilitated over time, but the power lines, however, will have a long term visually impact on the general countryside.

Pre-colonial archaeology

From the investigation, it would appear that the proposed 132kV power line route from the proposed Tsitsikamma Community Wind Energy Facility site to the proposed extension of the Dieprivier Substation is of low archaeological sensitivity. Apart from a few exposed Earlier Stone Age stone tools near the Dieprivier Substation no other sites/remains of significance were observed, but material may be covered by soil and vegetation. These stone tools were in secondary context and not associated with any other archaeological material and therefore of low cultural importance.

Nature of the impacts

The main impact on archaeological sites/remains (if any) will be the physical disturbance of the material and its context. The construction of the foundations or positions for the power line and service roads may expose, disturb and displace archaeological sites/material.

Extent of the impacts

Construction of the power line foundations and service roads may impact on remains which are buried, but these impacts will be limited and restricted to the local area. Given the fact that almost the entire line will be constructed on ploughed fields, disturbed land and close to an existing power line, the chances are very small that any *in situ* archaeological sites/remains will be exposed, disturbed or displaced. The construction of the power line foundations will also only disturb small areas and the negative impact on possible archaeological sites/materials may be relatively small. Other projects such as the construction of service roads will disturb larger areas and may expose sites/materials on a larger scale. In both cases further disturbances of sites/materials can be limited by mitigation.

Table 1. Impacts on the pre-colonial archaeology.

Nature: The potential impact of the construction of the power line foundations and service roads on above and below ground archaeological sites/materials		
	Without Mitigation	**With Mitigation**
Extent	Local (1)	Local (1)
Duration	Permanent (5)	Permanent (5)
Magnitude	Minor (1)	Minor (1)
Probability	Unlikely (2)	Unlikely (2)
Significance	Low (14)	Low (14)
Status (positive or negative)	Negative	Neutral
Reversibility	No	No
Irreplaceable loss of resources?	No, but in some cases, yes	No
Can impacts be mitigated?	Yes	
Mitigation No mitigation is proposed before construction starts because the archaeological remains (if any) are of low significance (excluding human remains). However, if concentrations of archaeological materials are exposed then all work must stop for an archaeologist to investigate (see below). If any human remains (or any other concentrations of archaeological heritage material) are exposed during construction, all work must cease and it must be reported immediately to the nearest museum/archaeologist or to the South African Heritage Resources Agency, so that a systematic and professional investigation can be undertaken. Sufficient time should be allowed to investigate and to remove/collect such material. Recommendations will follow from the investigation.		
Cumulative impacts: The number of the power line foundations will determine the impact on the buried materials (if any) and if these increase so will the possible impact.		
Residual impacts: Permanent		

The cultural landscape

There is an existing power line in the area and the proposed 132kV power line route from the Tsitsikamma Community Wind Energy Facility site to the proposed extension of the

Dieprivier Substation follows a similar route from the N2 to the existing substation (about halfway). It runs through a primarily open farming area of which large parts have been transformed by farming activities and used mainly for grazing. There are only a few modern farm houses in the wider region at fair distances from the power line route. The nearest historical buildings older than 60 years is on the farm Rheboksfontein, more than a kilometre from the route and there are no known graves older than 60 years close to the power line route.

Nature of the impact

The proposed power line will be a 'new feature' on the landscape and therefore will have a visual effect on the general landscape and sense of place, especially on the open, flat landscape in the southern part of the study area (Tsitsikamma Community Wind Energy Facility site), and where it crosses the N2. Where the proposed power line joins the existing power line it will not have the same visual effect because it will become part of the existing visual disturbance which has been there for many years. It will, however, slightly increase the visibility of the feature on high ground or where it crosses main roads.

Extent of impact

The existing power line has relatively low visibility form a distance and 'blends' well with the surrounding landscape in the low lying areas. It is assumed that the proposed power line will be of similar size, and therefore be of a similar visual effect, providing it stays within the current servitude and not creating another/new visual intrusion. Nevertheless, as an addition to an existing power line it will add a cumulative impact to the landscape, especially on the high lying areas. However, mitigation, if needed, falls in the domain of the visual impact assessment.

Table 1. Impacts on the cultural landscape.

Nature: The potential impact of the construction of the power line on the pre-colonial cultural landscape in terms of visual impacts and changes to 'sense of place'.		
	Without Mitigation	**With Mitigation**
Extent	Local (3)	Local (2)
Duration	Long term (4)	Long term (4)
Magnitude	Low (4)	Low (4)
Probability	Probable (3)	Probable (3)
Significance	Medium (33)	Medium (30)
Status (positive or negative)	Negative	Negative
Reversibility	Reversible	Reversible
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	yes	
Mitigation The proposed power line should where possible follow the existing corridor.		
Cumulative impacts: The construction of another power line will slightly increases the visibility of the feature on high ground or where it crosses main roads.		
Residual impacts: Disturbances to the landscape by the construction of service roads will be long term.		

DISCUSSION AND MITIGATION

Almost the entire proposed 132kV power line route from the Tsitsikamma Community Wind Energy Facility site to the proposed extension of the Dieprivier Substation runs over land which has been ploughed extensively in the past and now covered by dense grass used for grazing. These activities most probably disturbed/destroyed any *in situ* archaeological sites/materials which may have been present. Nevertheless, apart from a few Earlier Stone Age stone tools, no other archaeological sites/materials were observed. No further action is required regarding the few Earlier Stone Age stone tools. Previous surveys in the wider area identified Earlier and Middle Stone Age stone tools in the exposed river gravels and surrounding hill tops throughout the region, but these were in secondary context and not associated with any other archaeological materials.

The impact of the development on archaeological sites/materials will be limited. However, there are already other power lines in the area and the proposed power line will add a slight negative cumulative visual impact to the cultural landscape. Although it is unlikely that any sensitive archaeological remains will be exposed during the development, there is always a possibility that human remains and/or other archaeological and historical material may be uncovered during the development. Should such material be exposed then it must be reported to the nearest museum, archaeologist or to the South African Heritage Resources Agency (see general remarks and conditions below). The development may proceed, but it is recommended that;

1. The proposed 132kV power line should where possible follow the existing corridor.

2. If any concentrations of material are uncovered during development, it should be reported to the Albany Museum and/or the South African Heritage Resources Agency immediately so that systematic and professional investigation/excavations can be undertaken. Sufficient time should be allowed to remove/collect such material (See appendix B for a list of possible archaeological sites that maybe found in the area).

3. Construction managers/foremen should be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites. It is suggested that a person be trained to be on site to report to the site manager if sites are found.

GENERAL REMARKS AND CONDITIONS

Note: This report is for a Phase 1 archaeological heritage impact assessment only and do not include or exempt other required heritage impact assessments (see below).

The National Heritage Resources Act (Act No. 25 of 1999, section 35)(see Appendix A)requires a full Heritage Impact Assessment (HIA) in order that all heritage resources, that is, all places or objects of aesthetics, architectural, historic, scientific, social, spiritual linguistic or technological value or significance are protected. Thus any assessment should make provision for the protection of all these heritage components, including archaeology, shipwrecks, battlefields, graves, and structures older than 60 years, living heritage, historical settlements, landscapes, geological sites, palaeontological sites and objects

It must be emphasised that the conclusions and recommendations expressed in this archaeological heritage sensitivity investigation are based on the visibility of archaeological sites/material and may not therefore, reflect the true state of affairs. Many sites may be covered by soil and vegetation and will only be located once this has been removed. In the event of such finds being uncovered, (during any phase of construction work), archaeologists must be informed immediately so that they can investigate the importance of the sites and excavate or collect material before it is destroyed. The onus is on the developer to ensure that this agreement is honoured in accordance with the National Heritage Resources Act No. 25 of 1999 (NHRA).

It must also be clear that Phase1 Specialist Reports (AIAs) will be assessed by the relevant heritage resources authority. The final decision rests with the heritage resources authority, which should give a permit or a formal letter of permission for the destruction of any cultural sites.

APPENDIX A: brief legislative requirements

Parts of sections 35(4), 36(3) and 38(1) (8) of the National Heritage Resources Act 25 of 1999 apply:

Archaeology, palaeontology and meteorites

35 (4) No person may, without a permit issued by the responsible heritage resources authority—

(a) destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;
(b) destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;
(d) bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assist in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites.

Burial grounds and graves

36. (3) (a) No person may, without a permit issued by SAHRA or a provincial heritage resources authority—

(a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;
(b) destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or
(c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation equipment, or any equipment which assists in the detection or recovery of metals.

Heritage resources management

38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorized as –

(a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
(b) the construction of a bridge or similar structure exceeding 50m in length;
(c) any development or other activity which will change the character of the site –
(i) exceeding 5000m^2 in extent, or
(ii) involving three or more erven or subdivisions thereof; or
(iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or

(iv) the costs of which will exceed a sum set in terms of regulations by SAHRA, or a provincial resources authority;

(d) the re-zoning of a site exceeding 10 000m^2 in extent; or

(e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must as the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

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

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.

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

Fossil bone

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

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.

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.

APPENDIX C: General digital landscape images of the proposed 132kV power line route from the Tsitsikamma Community Wind Energy Facility site to the proposed extension of the Dieprivier Substation

Fig. 1. General views of the proposed power line route from the proposed Tsitsikamma Community Wind Energy site eastwards towards the gravel farm road (Fig. 2).

Fig. 2. General views of the proposed power line route northwards along the farm gravel road. Note the wetlands and dense grass cover.

Fig. 3. General views of where the proposed power line route crosses the R102 and N2 and where it joins the exiting power line to the Dieprivier Substation.

Fig. 4. General views of the proposed power line route northwards along the side of the hill before it crosses the Krom River.

Fig. 5. General views towards the north-east (Fig. 6) where the proposed power line route crosses the Krom River. Note the low, dense fynbos vegetation.

Fig. 6. General view towards the south-west (Fig 5) of the proposed power line where it crosses the Krom River (main image) and north-east towards the Dieprivier Substation (insert).

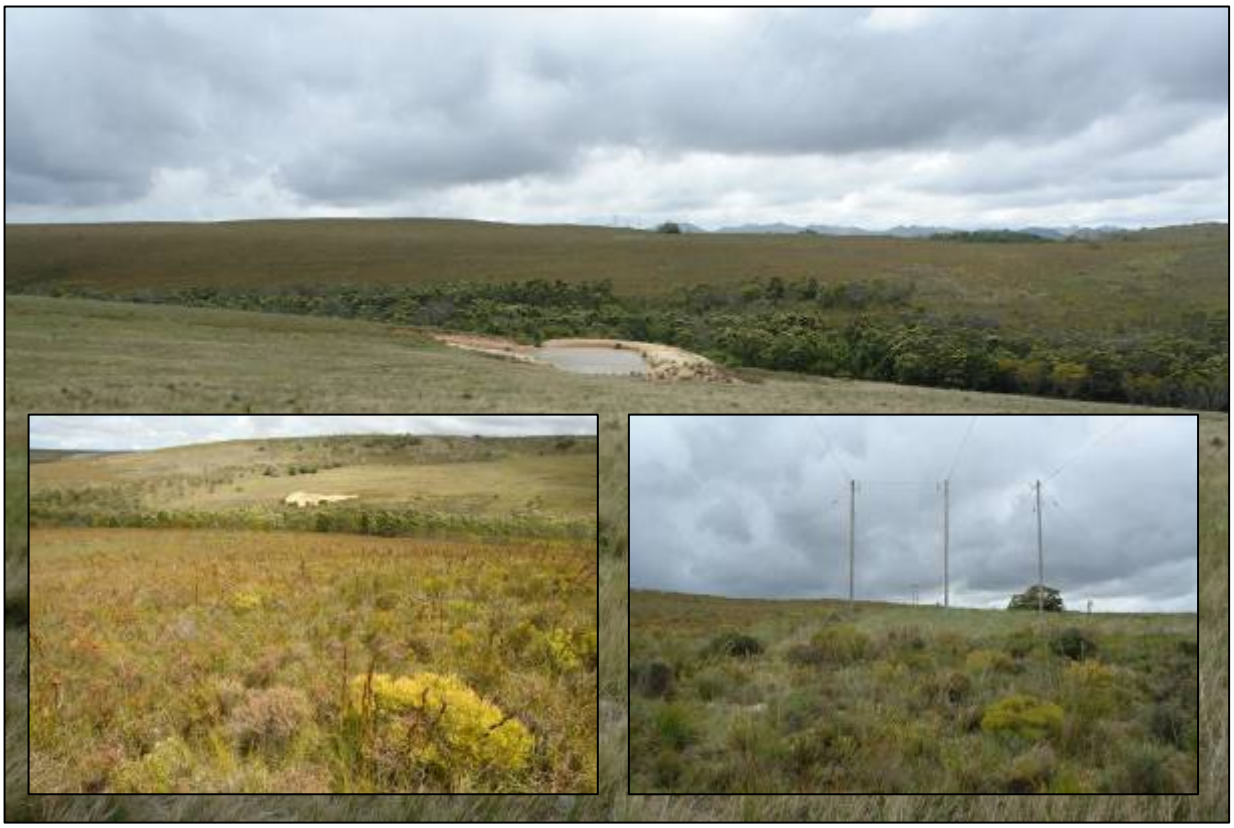


Fig. 7. General views of the proposed power line route where it crosses a drainage line en route to the Dieprivier Substation.

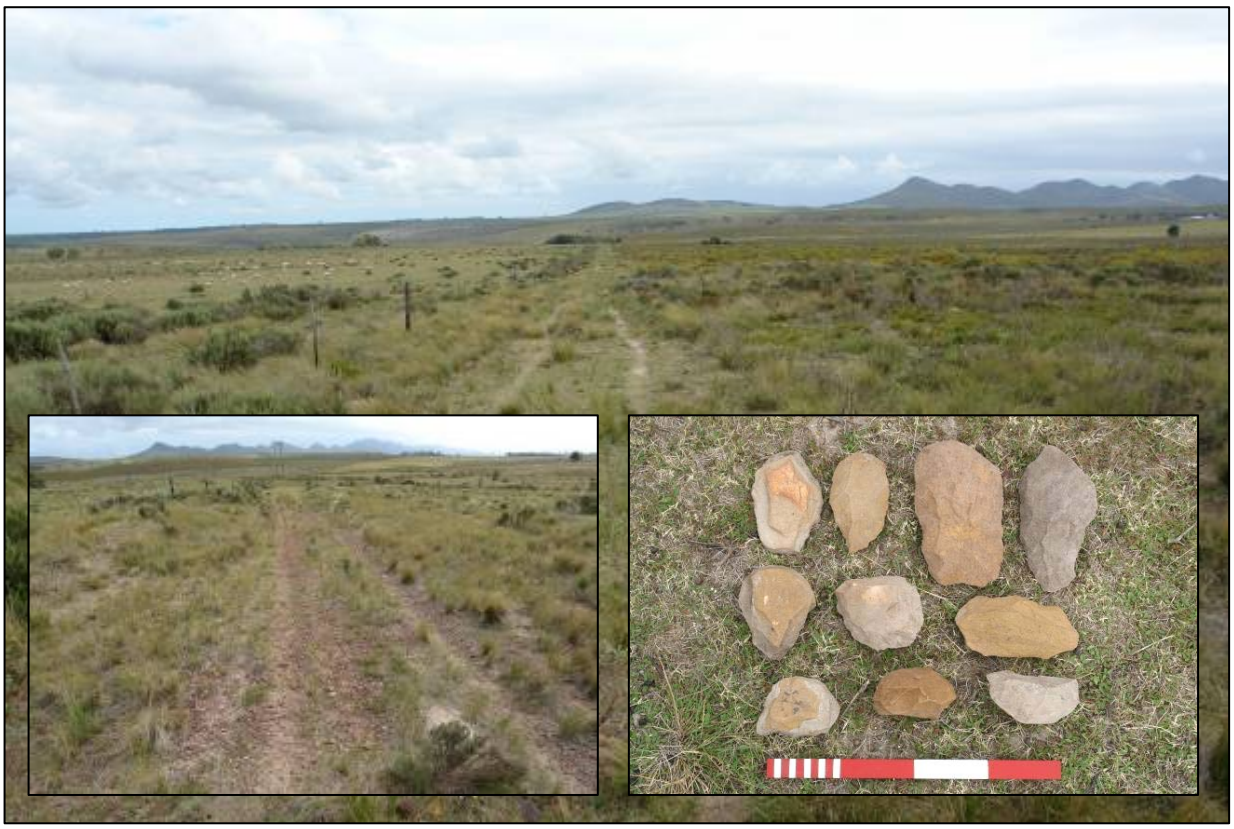


Fig. 8. General views towards the south-west of the proposed power line route and the Earlier Stone Age stone tools observed in the vehicle track.

Fig. 9. General views of the existing Dieprivier Substation and the surrounding landscape.

ORIGINAL STUDY: A PHASE 1 ARCHAEOLOGICAL IMPACT ASSESSMENT FOR THE PROPOSED 132KV POWERLINE LINKING THE TSITSIKAMMA COMMUNITY WIND ENERGY FACILITY TO THE PROPOSED EXTENSION OF THE DIEPRIVIER SUBSTATION, KOUGA LOCAL MUNICIPALITY, HUMANSDORP DISTRICT, EASTERN CAPE PROVINCE

AMENDED STUDY: A PHASE 1 ARCHAEOLOGICAL IMPACT ASSESSMENT FOR THE REVISED 132KV POWERLINE LINKING THE TSITSIKAMMA COMMUNITY WIND ENERGY FACILITY TO THE PROPOSED EXTENSION OF THE DIEPRIVIER SUBSTATION, KOUGA LOCAL MUNICIPALITY, HUMANSDORP DISTRICT, EASTERN CAPE PROVINCE

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CONTENTS

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SUMMARY

Apart from occasional Earlier and Middle Stone Age stone tools observed in areas adjacent to the proposed revised/alternative powerline route where the sub-surface ferricrete land floors were exposed by erosion or in vehicle tracks, no other significant archaeological or historical sites/materials were located. The revised powerline route is of low archaeological sensitivity and construction may proceed as planned.

BACKGROUND

During October 2012 a complete phase 1 archaeological impact assessment was conducted for the proposed 132kv powerline linking the Tsitsikamma Community Wind Energy Facility (TCWEF) to the proposed extension of the Dieprivier substation. A comprehensive archaeological impact assessment report and recommendations have been compiled for Savannah Environmental (Pty) Ltd and must be consulted for the background information of the project and the study area, because it will not be repeated here in any detail (see Binneman 2012).

The original proposed powerline started at the TCWEF substation from where it ran in an easterly direction before it turned in a north-easterly direction and crossed the Krom River towards the Dieprivier substation (dark blue line, map 1). No significant archaeological or historical heritage sites/materials were observed on the direct powerline route during the investigations (Binneman 2012).

During December 2013 a revised/alternative powerline route was investigated, running from the TCWEF substation in a north, north-westerly direction before it turned in a north-easterly direction towards the Dieprivier substation and joins the original surveyed route west of the Krom River (orange line, map 1). This report discusses the results from this revised 132kV powerline route survey.

PROJECT INFORMATION

Eastern Cape Heritage Consultants cc was appointed by Savannah Environmental (Pty) Ltd on behalf of Eskom Holdings SOC Limited to conduct a Phase 1 Archaeological Impact Assessment (AIA) for the proposed revised/alternative 132kV powerline linking the Tsitsikamma Community Wind Energy Facility and associated infrastructure at Wittekleibosch near Humansdorp to the proposed extension of the Dieprivier substation (orange line, map 1). The powerline runs from the proposed Tsitsikamma Community

Wind Energy Facility substation, which is situated approximately 30 km west of Humansdorp in the Wittekleibosch area, to the proposed extension of the Dieprivier substation some 8 km north-east of the wind farm. The revised powerline is approximately 7 km in length (of which about 4,5 kilometres were investigated) and runs over a number of farms used mainly for grazing and general farming activities and include the following properties (only the ones investigated):

Farm 675/4
Farm 361/5
Farm 358/1

Most of the powerline route runs over land which has been ploughed extensively in the past and now covered by dense grass used for grazing. The survey was conducted to establish the range and importance of possible exposed and *in situ* archaeological heritage remains and features, the potential impact of the development and, to make recommendations to minimize possible damage to these sites.

ARCHAEOLOGICAL INVESTIGATION

Methodology

The proposed revised 132kV powerline route from the proposed Tsitsikamma Community Wind Energy Facility to the proposed extension of the Dieprivier substation was investigated by two people on foot and from a vehicle. Only the route from the N2 National Road to the area where the revised route joins the original surveyed route near the Krom River was investigated. The route over the Tsitsikamma Community Wind Energy Facility site towards the N2 National Road was investigated previously. The entire revised powerline route could be reached via access tracks and was investigated on foot in the different directions. All the landowners were contacted prior to the survey to inform them about the visit and to gain access to their land. GPS readings were taken with a Garmin and all important features were digitally recorded. Consultation with the Gamtkwa KhoiSan Council was conducted as required by the National Heritage Resources Act No. 25 of 1999, Section 38(3e). They will communicate their recommendations to Savannah Environmental (Pty) Ltd and/or Eskom Holdings SOC Limited if required.

Limitations and assumptions

The dense ground vegetation cover and the disturbed nature of the proposed route made it difficult to locate archaeological sites/materials. During the investigation attention was given to areas where the underlying sub surfaces were exposed by erosion and/or by human activities. Furthermore, the experience and knowledge gained from research and investigations of the previous survey and surrounding areas provided the information base to make predictions on the pre-colonial archaeology of the region.

Results

The proposed revised 132kV powerline route starts at the Wittebosch substation just east of the settlement in the Tsitsikamma Community Wind Energy Facility site (Figure 1). From there the route runs in a north, north-westerly direction over Tsitsikamma Community Wind Energy Facility land and crosses the N2 National Road (to Port Elizabeth) towards the R102 main road (to Humansdorp) (Figure 2). It follows the R102 for about 700 metres over disturbed commercial forestry land before it turns north over grazing land and low foreland hills towards the Dieprivier substation (Figure 3). From the high ground the route runs in an almost straight line over agricultural land to the western embankment of the Krom River where it joins the original power line route (Figure 4).

No archaeological or historical sites/materials were observed on the powerline route, but occasional Earlier and Middle Stone Age stone tools were observed in adjacent areas where the sub-surface ferricrete land floors were exposed by erosion or in vehicle tracks (Figure 5). The Earlier Stone Age stone tools date between 1,5 million – 250 000 years

old and the Middle Stone Age stone tools between 250 000 – 30 000 years old. These stone tools are commonly found throughout the region and were in secondary context. The tools were not associated with any other archaeological material and are therefore of low cultural significance. There are no historical features or graves older than 60 years near the proposed powerline route.

In general it would appear that the revised powerline route is of low archaeological sensitivity and the construction activities will have little impact on possible archaeological sites/material. However, there are already other power lines in the area and the proposed powerline will add a slight negative cumulative visual impact to the cultural landscape. It is unlikely that any significant archeological material will be exposed during the development. If any concentrations of archaeological material are uncovered during development, work must immediately cease and be reported to the nearest archaeologist and/or the Eastern Cape Provincial Heritage Resources Authority.

ASSESSMENT OF THE IMPACTS

It is assumed that the construction of the proposed 132kv power lines will consist of overhead cables suspended from wooden/metal structures placed a few hundred metres apart. These structures must be firmly positioned several metres deep in the ground. Although the placing of the structures will only affect a few square metres, it will be the additional activities such as the service roads for the construction vehicles and clearing of vegetation along the servitude which will disturb the land surface on a large scale.

These activities may have a negative effect on the above and below ground archaeological remains. The disturbances to the landscape may be rehabilitated over time, but the power lines however, will have a long term visually impact on the general countryside.

Pre-colonial archaeology

From the investigation, it would appear that the revised 132kV power line route from the Tsitsikamma Community Wind Energy Facility site to the proposed extension of the Dieprivier substation is of low archaeological sensitivity. Apart from occasional Earlier and Middle Stone Age stone tools observed adjacent to the powerline servitude, no other sites/remains of significance were observed. However, material may be covered by soil and vegetation. These stone tools were in secondary context and not associated with any other archaeological material and therefore of low cultural importance.

Nature of the impacts

The main impact on archaeological sites/remains (if any) will be the physical disturbance of the material and its context. The construction of the foundations or positions for the powerline and service roads may expose, disturb and displace archaeological sites/material.

Extent of the impacts

Construction of the powerline foundations and service roads may impact on remains which are buried, but these impacts will be limited and restricted to the local area. Given the fact that almost the entire line will be constructed on ploughed fields and disturbed land the chances are very small that any *in situ* archaeological sites/remains will be exposed, disturbed or displaced. The construction of the powerline foundations will also only disturb small areas and the negative impact on possible archaeological sites/materials may be relatively small. Other projects such as the construction of service roads will disturb larger areas and may expose sites/materials on a larger scale. In both cases further disturbances of sites/materials can be limited by mitigation.

Table 1. Impacts on the pre-colonial archaeology.

Nature: The potential impact of the construction of the power line foundations and service roads on above and below ground archaeological sites/materials		
	Without Mitigation	**With Mitigation**
Extent	Local (1)	Local (1)
Duration	Permanent (5)	Permanent (5)
Magnitude	Minor (1)	Minor (1)
Probability	Unlikely (2)	Unlikely (2)
Significance	Low (14)	Low (14)
Status (positive or negative)	Negative	Neutral
Reversibility	No	No
Irreplaceable loss of resources?	No, but in some cases, yes	No
Can impacts be mitigated?	Yes	
Mitigation: No mitigation is proposed before construction starts because the archaeological remains (if any) are of low significance (excluding human remains). However, if concentrations of archaeological materials are exposed then all work must stop for an archaeologist to investigate (see below). If any human remains (or any other concentrations of archaeological heritage material) are exposed during construction, all work must cease and it must be reported immediately to the archaeologist at the Albany Museum (046 6222312) or to the Eastern Cape Provincial Heritage Resources Authority (043 6422811), so that a systematic and professional investigation can be undertaken. Sufficient time should be allowed to investigate and to remove/collect such material. Recommendations will follow from the investigation.		
Cumulative impacts: The number of the powerline foundations will determine the impact on the buried materials (if any) and if these increase so will the possible impact.		
Residual impacts: Permanent		

The cultural landscape

The revised powerline route runs through a primarily open farming area of which large parts have been transformed by farming activities and used mainly for grazing. There are only a few modern farm houses in the wider region at fair distances from the powerline route. There are no historical buildings or known graves older than 60 years close to the power line route.

Nature of the impact

The revised powerline will be a 'new feature' on the landscape for part of the route and therefore will have a slight negative visual effect on the cultural landscape and sense of place on high ground or where it crosses main roads.

Extent of impact

The existing power lines in the immediate area have relatively low visibility form a distance and 'blends' well with the surrounding landscape. However, the revised power line will be constructed in a wide open landscape close to existing lines and therefore as a new addition to the landscape it will add a cumulative impact to the landscape, especially on the high lying areas. However, mitigation, if needed, falls in the domain of the visual impact assessment.

Table 1. Impacts on the cultural landscape.

Nature: The potential impact of the construction of the power line on the pre-colonial cultural landscape in terms of visual impacts and changes to 'sense of place'.		
	Without Mitigation	**With Mitigation**
Extent	Local (3)	Local (2)
Duration	Long term (4)	Long term (4)
Magnitude	Low (4)	Low (4)
Probability	Probable (3)	Probable (3)

Significance	Medium (33)	Medium (30)
Status (positive or negative)	Negative	Negative
Reversibility	Reversible	Reversible
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	yes	
Mitigation: None		
Cumulative impacts: The construction of another power line will slightly increases the visibility of the feature on high ground or where it crosses main roads.		
Residual impacts: Disturbances to the landscape by the construction of service roads will be long term.		

DISCUSSION AND MITIGATION

The entire revised 132kv powerline route from the Tsitsikamma Community Wind Energy Facility site to the proposed extension of the Dieprivier Substation runs over land which has been ploughed extensively in the past and now covered by dense grass used for grazing. These activities most probably disturbed/destroyed any *in situ* archaeological sites/materials which may have been present. Apart from occasional Earlier and Middle Stone Age stone tools observed outside the powerline route, no other archaeological sites/materials were located. No further action is required regarding the stone tools because these were in secondary context and not associated with any other archaeological materials.

The main impact on archaeological sites/remains will be the physical disturbance of the material and its context. However, from the investigation it would appear that the revised route is of low archaeological sensitivity and that the impact of the development on archaeological sites/materials will be limited, but permanent if impact occurs. As a new feature in the landscape the revised powerline will contribute to a slight negative visual impact of the cultural landscape. Although it is unlikely that any sensitive archaeological remains will be exposed during the development, there is always a possibility that human remains and/or other archaeological and historical material may be uncovered during the development. The development may proceed, but it is recommended that;

1. The proposed 132kV power line should where possible follow the existing corridor.

2. If any concentrations of material are uncovered during development, work must stop immediately and be reported to the archaeologist at the Albany Museum (046 6222312) or to the Eastern Cape Provincial Heritage Resources Authority (043 6422811) so that a systematic and professional investigation/excavations can be undertaken. Sufficient time should be allowed to remove/collect such material (See appendix B for a list of possible archaeological sites that maybe found in the area).

3. Construction managers/foremen should be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites. Alternatively it is suggested that the Environmental Control Officer be trained to be on site to report to the site manager if sites are found.

GENERAL REMARKS AND CONDITIONS

Note: This report is for a Phase 1 archaeological heritage impact assessment only and do not include or exempt other required heritage impact assessments (see below).

The National Heritage Resources Act (Act No. 25 of 1999, section 35)(see Appendix A)requires a full Heritage Impact Assessment (HIA) in order that all heritage resources, that is, all places or objects of aesthetics, architectural, historic, scientific, social, spiritual linguistic or technological value or significance are protected. Thus any assessment should make provision for the protection of all these heritage components, including archaeology, shipwrecks, battlefields, graves, and structures older than 60 years, living heritage, historical settlements, landscapes, geological sites, palaeontological sites and objects

It must be emphasised that the conclusions and recommendations expressed in this archaeological heritage sensitivity investigation are based on the visibility of archaeological sites/material and may not therefore, reflect the true state of affairs. Many sites may be covered by soil and vegetation and will only be located once this has been removed. In the event of such finds being uncovered, (during any phase of construction work), archaeologists must be informed immediately so that they can investigate the importance of the sites and excavate or collect material before it is destroyed. The onus is on the developer to ensure that this agreement is honoured in accordance with the National Heritage Resources Act No. 25 of 1999 (NHRA).

It must also be clear that Phase1 Specialist Reports (AIAs) will be assessed by the relevant heritage resources authority. The final decision rests with the heritage resources authority, which should give a permit or a formal letter of permission for the destruction of any cultural sites.

APPENDIX A: brief legislative requirements

Parts of sections 35(4), 36(3) and 38(1) (8) of the National Heritage Resources Act 25 of 1999 apply:

Archaeology, palaeontology and meteorites

35 (4) No person may, without a permit issued by the responsible heritage resources authority—

(a) destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;
(b) destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;
(d) bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assist in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites.

Burial grounds and graves

36. (3) (a) No person may, without a permit issued by SAHRA or a provincial heritage resources authority—

(a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;
(b) destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or
(c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation equipment, or any equipment which assists in the detection or recovery of metals.

Heritage resources management

38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorized as –

(a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
(b) the construction of a bridge or similar structure exceeding 50m in length;
(c) any development or other activity which will change the character of the site –
(i) exceeding 5000m^2 in extent, or
(ii) involving three or more erven or subdivisions thereof; or
(iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or
(iv) the costs of which will exceed a sum set in terms of regulations by SAHRA, or a provincial resources authority;
(d) the re-zoning of a site exceeding 10 000m^2 in extent; or
(e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must as the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

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

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.

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

Fossil bone

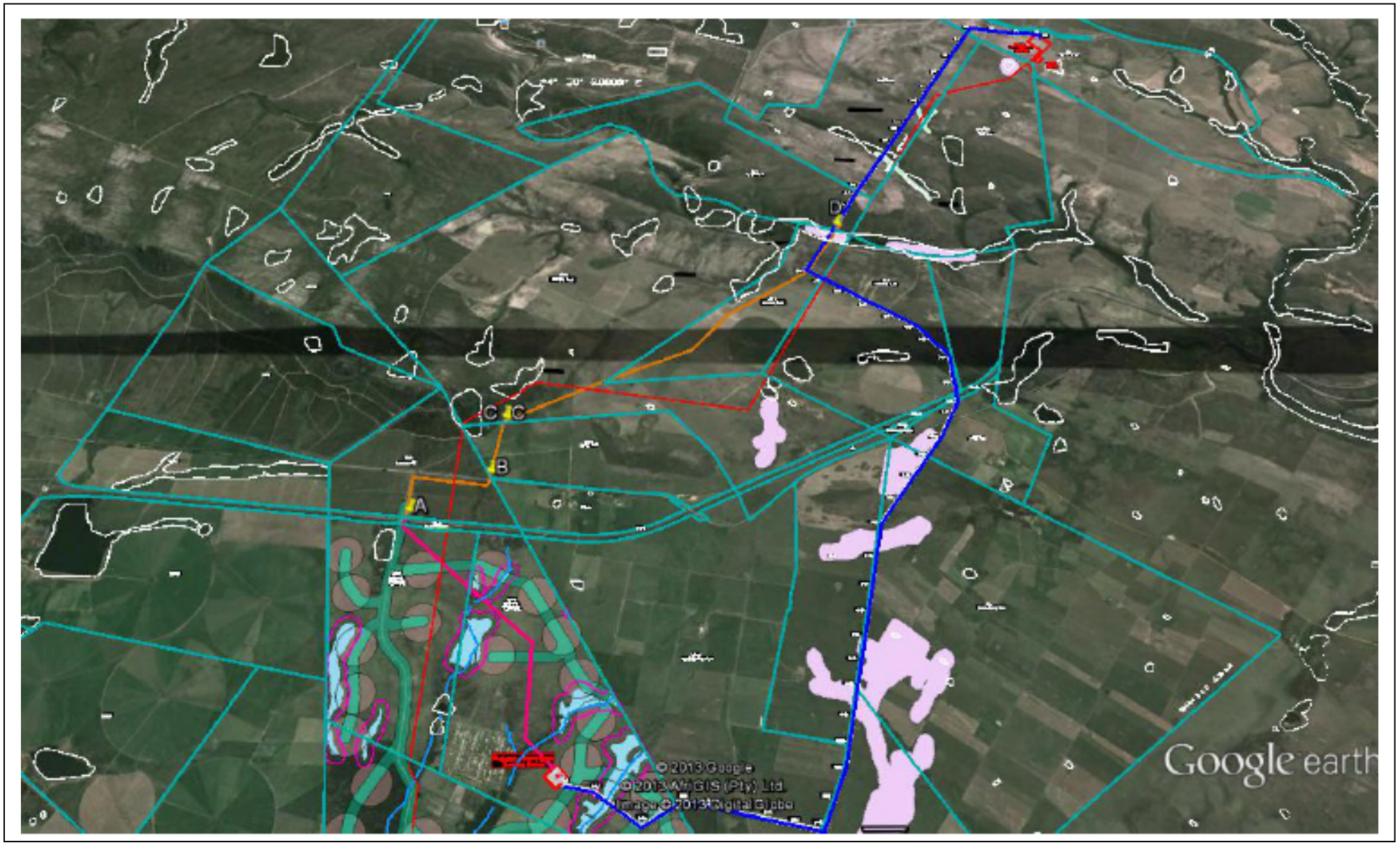
Fossil bones may be found embedded in geological deposits. Any concentrations of bones, whether fossilized or not, should be reported.

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.

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 1. Aerial view of the layout of the original proposed powerline from the TCWEF to the proposed extension of the Dieprivier substation (blue line) and the revised/alternative powerline (pink and orange lines) (map courtesy the developers).

Figure 1. General views of the TCWEF landscape from where the powerline will be constructed (main image and left insert) towards the N2 (left insert) en route to the Dieprivier substation (right insert). The N2 runs at the foot of the hill and the red arrow marks the area where the route passes over the low foreland hills.

Figure 2. Views of the powerline route from the TCWEF substation towards the N2 (main image) and from the N2 towards the R102 and the low foreland hills (inserts). The red arrow marks the area where the route passes over the low foreland hills.

Figure 3. Views of the route along the R102 (main image and left insert) and the area where it crosses the R102 towards the low foreland hills (right insert). The red line marks the approximate line route.

Figure 4. A view of the route over the low hills (main image and left insert) and towards the Krom River and Dieprivier substation. Note the exposed ferricrete land floor in the left bottom corner of the left insert.

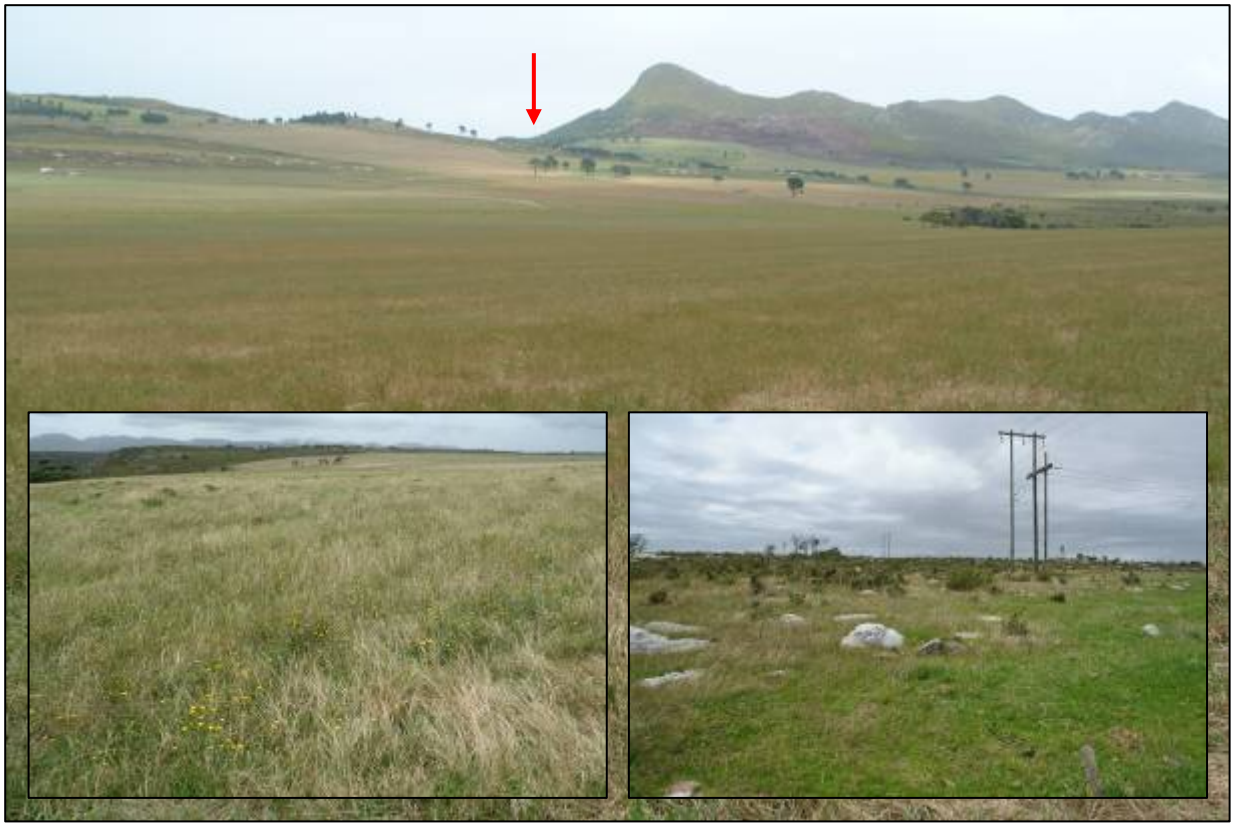


Figure 5. General views of the line route from the hill crossing (red arrow) towards the Krom River (main image and left insert) where it joins the original line route (right insert) towards the Dieprivier substation.

Figure 6. Earlier Stone Age stone tools exposed in a vehicle track adjacent to the line route.