AN ARCHAEOLOGICAL WALKTHROUGH SURVEY OF THE PROPOSED TURBINE FOOTPRINT AND INFASTRUCTURE FOR THE MSENGE EMOYENI WIND ENERGY FACILITY, BEDFORD DISTRICT, BLUE CRANE ROUTE MUNICIPALITY, EASTERN CAPE PROVINCE.

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BRIEF SUMMARY

Background

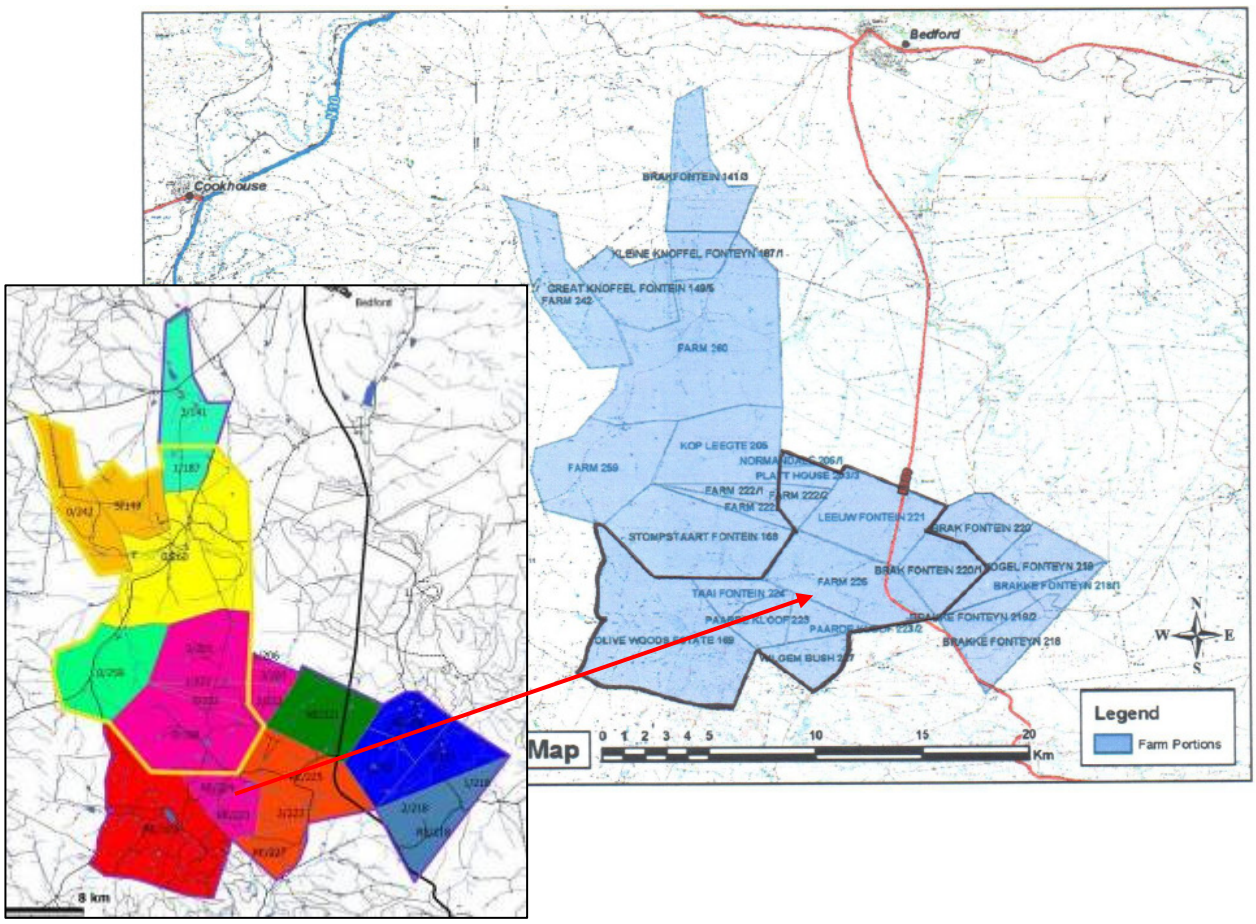
The Msenge Emoyeni Wind Energy Facility (WEF) and associated infrastructure are adjacent and situated to the south and east of the Amakhala Emoyeni RE Phase 1 development and south of Bedford. It falls within the Bedford District of the Blue Crane Route Local Municipality in the Eastern Cape Province. The proposed development will be constructed west and east of the R350 main road between Grahamstown and Bedford (Maps 1 & 2). ACO Associates cc conducted an extensive reconnaissance heritage impact assessment and compiled a comprehensive report during 2010 for the original large Amakhala Emoyeni Wind Energy Facility site (Halkett *et al.* 2010) (Map 3). The author conducted a walkthrough survey during 2012 of the final turbine footprint for the Amakhala Emoyeni RE Phase 1 (Binneman 2012a) and also compiled a walkthrough survey for the Msenge Emoyeni Wind Energy Facility power line route and substation location (Binneman 2014) (Maps 2 & 3). Savannah Environmental (Pty) Ltd (independent environmental consultants) on behalf of Windlab Developments South Africa (Pty) Ltd, appointed Eastern Cape Heritage Consultants to conduct the Msenge Emoyeni (WEF) turbine foot print and associated infrastructure walkthrough survey.

The wind energy facility will comprise of up to 56 wind turbines and associated infrastructure with a proposed total generating capacity of up to 140 MW. An on-site substation as well as a new section of 132kV overhead power line and one new section of 33/132/220/400kV power line feeding into the Poseidon Substation north-west of the study area will be constructed

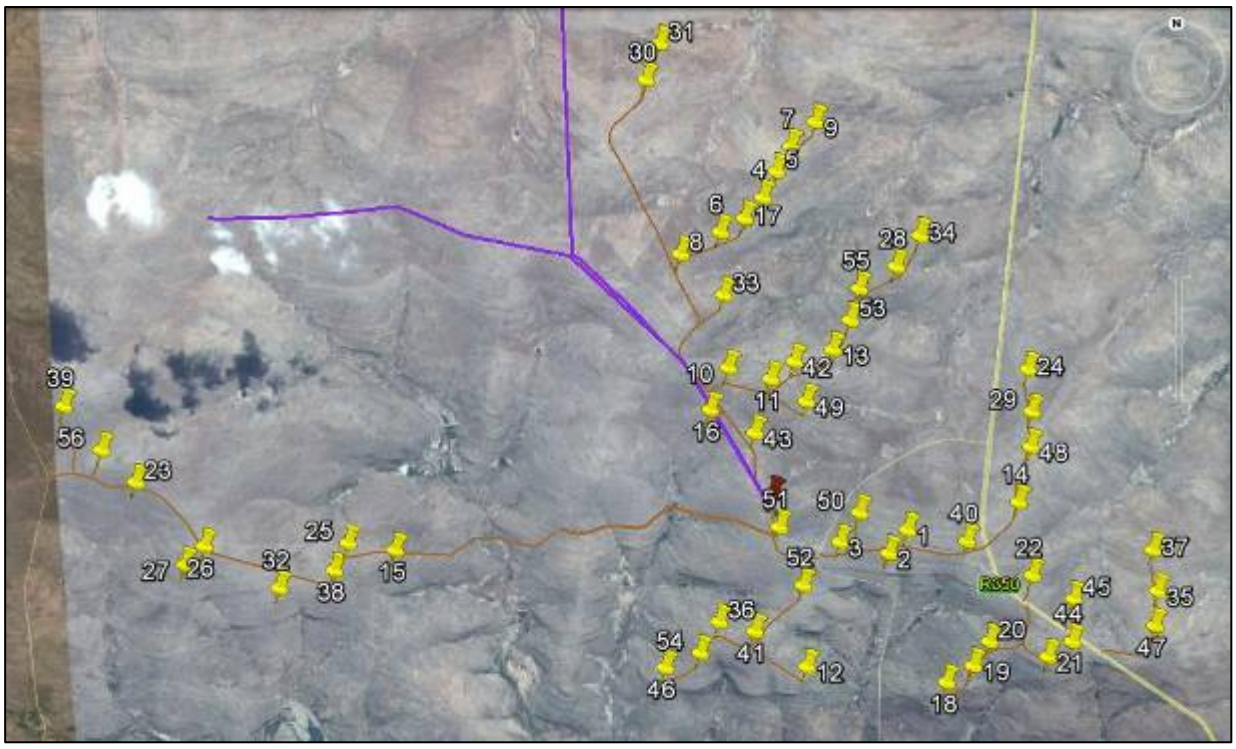
Purpose of the Study

The purpose of the study was to conduct a walkthrough survey of the turbine positions and associated infrastructure to establish;

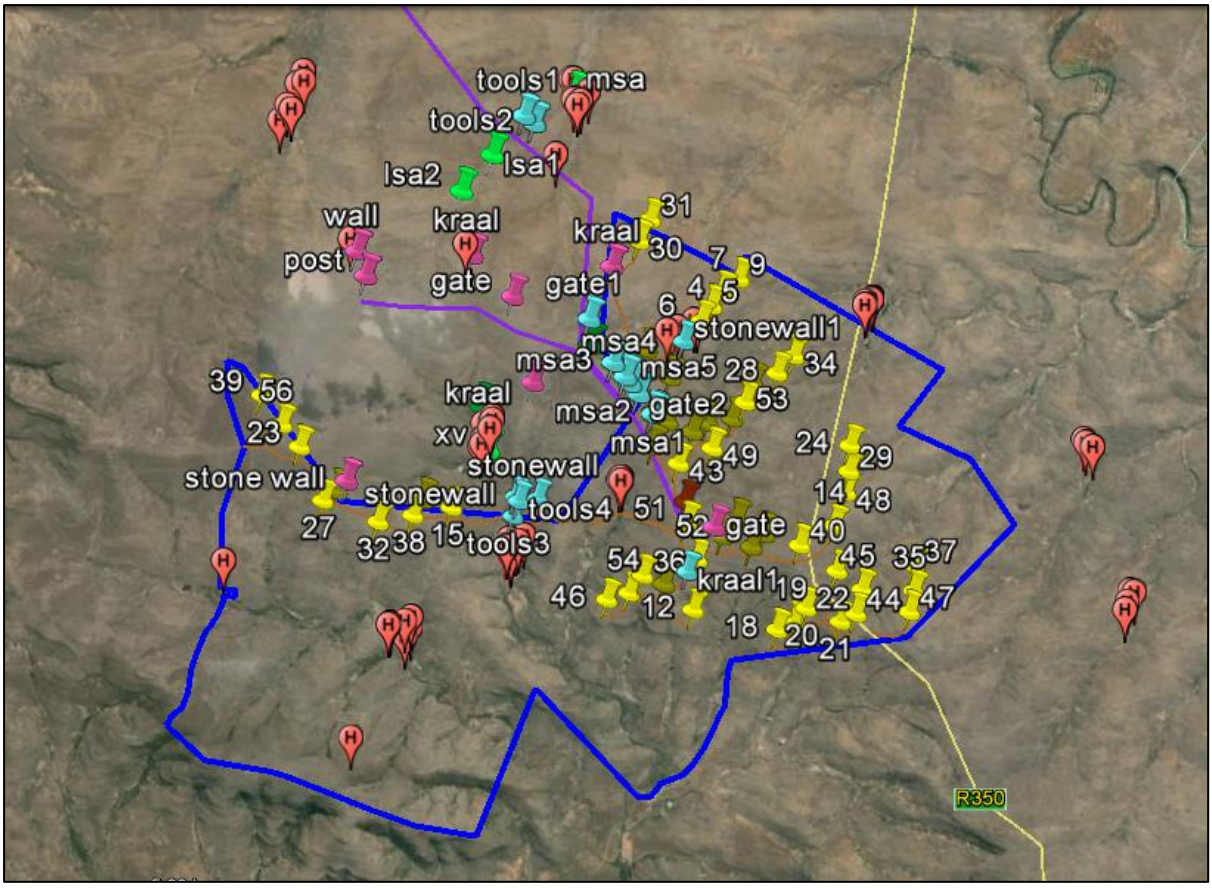
- the range and importance of possible exposed and in situ archaeological sites, features and materials,
- the potential impact of the development on these resources and,
- to make recommendations to minimize possible damage to these resources.



Map 1. Location of the proposed Msenge Emoyeni Wind Energy Facility and layout of the different farm portions (maps courtesy Savannah Environmental Pty Ltd).



Map 2. An aerial view of the layout of the turbine positions (yellow pegs), power line (purple line), substation, maintenance yard and lay down area (red peg) and service roads (brown lines) (maps courtesy Savannah Environmental Pty Ltd).



Map 3. An aerial view of the Msenge Emoyeni WEF with the different heritage sites recorded during a reconnaissance survey by ACO in 2010 (H-bubbles), walkthrough surveys in 2012 (green and pink pegs) and in 2014 (light blue pegs) by the author.

The site and location

The proposed Msenge Emoyeni WEF and associated infrastructure are located within the 1:50 000 topographic reference maps 3225DD Golden Valley and 3226CC Herbert's Hope (Map 1).The developments fall within the Blue Crane Route Local Municipality, Bedford District, Cacadu District Municipality (recently renamed the Sarah Baartman District Municipality, but not inaugurated yet), in the Eastern Cape Province. It is situated approximately 16 kilometres south of Bedford (nearest point) and west of the R350 main road connecting Grahamstown with Bedford. The Poseidon Substation is situated approximately 18 kilometres north-west of the development. The development includes the following properties;

Portion 1 of Farm 206 (Mormandale),
Portion 3 of Farm 203 (Plat House),
Portion 2 of Farm 222,
Remainder of Farm 224 (Taai Fontein),
Remainder of Farm 221 (Leeuw Fontein),
Portion 2 and Remainder of Farm 223 (Paarde Kloof),
Remainder of Farm 227 (Wilgem Bush),
Remainder of Farm 225 (Farm 225),
Portion 1 of Farm 220 (Brak Fontein),
Remainder of Farm 169 (Olive Woods Estate).

The general landscape comprises a gentle undulating hill landscape, lowlands and non-perennial open valley drainage systems/lines (Figure 1). No perennial rivers traverse the study area. The major rivers occurs many kilometres to the north, east (Great Fish River) and west (Sunday's River). The dominant natural vegetation is grassland, small, low shrubs in places and patches of *Acacia karroo* in the drainage valleys. The main activity in the study area is commercial stock farming and the land is used for grazing of livestock. Apart from the usual small scale disturbances due to farming activities such as fences, tracks, dams, soil erosion and power lines which crosses through the area, the hill tops shows little disturbances. Most development and disturbance, such as homesteads, and associated infrastructure occur mainly along and adjacent to the network of gravel roads which traverse the study area, or in valleys areas close to drainage lines.

Type of development

The proposed development entails the construction and operation of a wind energy facility and associated infrastructure. The wind energy facility will comprise of up to 56 wind turbines with a proposed total generating capacity of up to 140 MW. The associated infrastructure required for the facility will include concrete foundations (of up to 20 x 20 x 2 m) to support the turbines. Cabling between the turbines will be lain underground where practical. An on-site substation (of up to 250 x 200 m) to facilitate the connection between the wind energy facility and the Poseidon Substation or Kopleegte will be constructed. One new section of 132kV overhead power line to Kopleegte and one new section of 33/132/220/400kV power line feeding into the Poseidon Substation north-west of the study area will be constructed. Other developments will include internal access roads to each turbine (6-8 m wide during construction), a maintenance yard and a lay down area.

Investigation

The purpose of the study was to do a walkthrough of the turbine locations, underground cable routes and roads, which will be positioned in long lines following the crests of the hills, ridges and high ground. Although the terrain was relatively easy to access, the archaeological visibility in general was moderate to poor due to the dense surface cover of grass and shrubs in places. Apart from a few Middle Stone Age stone tools occurrences in secondary contexts a number of dry packed stone kraals, walls and gates were also observed on the high ground. Numerous other stone features were also observed throughout the study area, such as stone fence posts, erosion prevention walls, furrows and low walls. However, although these features have everyday functional value, they have little heritage significance.

Cultural sensitivity

In general the study area investigated appears to be of low archaeological and historical (sites/materials) sensitivity and the impact of construction will be of low negativity.

However, construction activities and the visual impact of the turbines will have a negative effect on the cultural landscape.

Recommendations

The service road between turbine positions 51-15 (Map 9) must be moved to a distance of 50 metres from the wall at the far western end (Map 9).

The same road also runs through a farm complex with historic buildings and graves, and must be re-routed (Map 9).

Marked buffer zones must be placed around all the stone structures before construction starts to protect them from damage/vandalism.

All construction activities must be monitored by an archaeologist/heritage practitioner or alternatively a person must be specially trained, for example the ECO, to conduct the monitoring. The archaeologist/heritage practitioner should apart from monitoring specific activities at specific times also regularly visit the construction site to inspect the construction routes and activities and to meet with the ECO.

Construction managers/foremen should be informed before construction starts on the possible types of heritage sites and cultural material they may encounter. Alternatively the ECO must be trained as a site monitor to report to the foreman when heritage sites are exposed/found.

Should any concentrations of heritage material be exposed during construction, all work must cease in the immediate area (depending on the type of find) and it must be reported to the archaeologist at the Albany Museum in Grahamstown (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 (See appendix C for a list of possible archaeological sites that maybe found in the area).

It is **suggested** that;

A more detailed archival study is conducted by a historian to establish/confirm the historic ox wagon transport road and how it will be impacted by the development (recommendations to follow).

Archaeological background

The archaeology and history of the area have been address in several reports and will not be repeated here again (see relevant impact assessment reports below).

Relevant impact assessments

Binneman, J. 2012a. An archaeological walkthrough survey of the turbine footprint for the proposed Phase 1 Amakhala Emoyeni Wind Energy Facility, Cookehouse District, Blue Crane Route Municipality, Eastern Cape Province. Prepared for Savannah Environmental Ltd. (Pty). Eastern Cape heritage Consultants. Jeffreys Bay.

Binneman, J. 2012b. Basic archaeological assessments for: 1. the kopleegte substation (250m x 250m), 2. the new 132kv power line from Kopleegte Substation to Poseidon Substation,3. the re-route of the 66kv power line from Poseidon Substation to Zebra Substation, 4. the re-route of the 132kv power line from Klipfontein to Poseidon Substation, Cookhouse District, Blue Crane Route Municipality, Eastern Cape Province. Prepared for Savannah Environmental Ltd. (Pty). Eastern Cape heritage Consultants. Jeffreys Bay.

Binneman, J. 2012c.Basic archaeological assessments for the proposed: 1. Golden Valley-Poseidon 132kv power lines (3 power lines), 2. Golden Valley-Kopleegte power lines (2 power lines) and, 3. the 132kv Golden Valley Substation (250m x 250m) (2 options),Bedford District, Blue Crane Route Local Municipality, Eastern Cape Province. Prepared for Savannah Environmental Ltd. (Pty). Eastern Cape heritage Consultants. Jeffreys Bay.

Binneman, J. 2012d. An archaeological scoping report for the proposed amendments to the Msenge Emoyeni Wind Energy Facility and associated infrastructure, Bedford District, Blue Crane Route Local Municipality, Eastern Cape Province. Prepared for Savannah Environmental Ltd. (Pty). Eastern Cape heritage Consultants. Jeffreys Bay.

Binneman, J. 2014. An archaeological walkthrough survey of the Msenge Emoyeni Wind Energy Facilty power line routes and substation location, Bedford District, Blue Crane Route Municipality, Eastern Cape Province. Prepared for Savannah Environmental Ltd. (Pty). Eastern Cape heritage Consultants. Jeffreys Bay.

Booth, C. 2011. A phase I archaeological impact assessment (AIA) for the proposed Cookhouse II wind energy facility, Blue Crane Route, Local Municipality, Eastern Cape. Prepared for Savannah Environmental Ltd. (Pty). Albany Museum, Grahamstown.

Halket, D. and Webley, L. 2010. Heritage scoping assessment of a proposed Amakhala-Emoyeni wind Energy Facility to be situated on 19 farms in the Cookhouse District, Eastern Cape. Unpublished report prepared for Savannah Environmental Ltd. (Pty). ACO Associates cc.

Hart, T. and Webley, L. 2010. Heritage impact assessment of a proposed Cookhouse Wind Energy Project, Blue Crane Route, Local Municipality. Unpublished report prepared for CES Ltd. (Pty). ACO Associates cc.

Webley, L., Halkett, D. and Hart, T. 2009. Heritage Impact Assessment of a proposed Wind Energy Facility to be situated on portions of farms Arolsen 69, Farm 148, Farm 148/1; Rooidraai 146, Baviaans Krans 151, Baviaans Krantz 151/2, Klip Fonteyn 150/2, Roberts Kraal 281, Zure Kop 74/1, Zure Kop 74/2, Van Wyks Kraal 73, Van Wyks Kraal 73/2 and Van Wyks Kraal 73/3 in the Cookhouse District, Eastern Cape. Unpublished report prepared for Savannah Environmental Ltd. (Pty). ACO Associates cc.

THE WALKTHROUGH INVESTIGATION

Methodology

The purpose of the study was to do a walkthrough of the turbine locations, underground cable routes, roads and other infrastructures. The landowners were contacted prior to the visit to inform them of the walkthrough survey and to obtain permission for access to their properties. They were also consulted on possible locations of historical buildings, structures and features, cemeteries, graves and archaeological sites. The walkthrough for the proposed Msenge Emoyeni WEF and associated infrastructure followed the layout as supplied by the developer which mainly follows the hilltops and high ground.The turbines will be positioned some distances apart in long lines following the crests of the hills, ridges and high ground. An extensive Google aerial image investigation was conducted of the area prior to the investigation. The walkthrough survey was conducted on foot by two people and spots checks and surveys were conducted from a vehicle to investigate as much of the terrain as possible. Farm tracks to the turbine locations were followed by vehicle and investigated further on foot. Transects were conducted on foot to reach the turbine locations where no farm tracks existed. GPS readings were taken and all important features were digitally recorded (for views of the turbine routes and the surrounding landscape and vegetation see Appendix D, Figures 1-9).

A large number of pre-colonial and colonial heritage sites have been recorded for the Msenge Emoyeni WEF section during the previous reconnaissance survey of the entire Amakhala Emoyeni Wind Energy Facility site (Halket *et al.* 2010) (Map 3). The bulk of the sites were historical heritage features of the European colonial settlement in the region and included farm buildings, dry packed stone structures, grave yards, graves and refuse dumps. These were mainly situated and concentrated close to, or near the network of gravel roads throughout the area and in valleys/drainage systems. A number of pre-colonial sites/materials were also observed during the reconnaissance survey and walkthrough survey (Halket *et al.* 2010; Binneman 2012a). The older Earlier/Middle Stone Age material occurred along rocky ridges and the Later Stone Age materials were in general concentrated close to drainage lines and in valleys. Due to the fact that the final layout of the turbine positions and cable routes follows the high ground, little attention was given to open valleys, steep slopes and farm yards. No turbines will be positioned in or near these areas and the colonial landscape has been recorded in detail during the reconnaissance survey (Halket *et al.* 2010).

Limitations and assumptions

Although the terrain was relatively easy to access, the archaeological visibility in general was moderate to poor due to the dense surface cover of grass and shrubs in places. The region experienced exceptional good rainfall the past year which resulted in dense high surface vegetation cover. Due to the dense surface vegetation and little sheet erosion on the high ground it was difficult to locate archaeological sites/materials. However, in areas where the surface soils were exposed by natural erosion, foot paths and vehicle tracks, the archaeological visibility was good and made it fairly easy to locate archaeological materials. Uncomfortable high temperatures, thunderstorms accompanied by heavy

lightning, rain and hailstones delayed the initial walkthrough survey and a second site visit had to be conducted which took place under almost similar conditions.

Regardless of the restrictions imposed by the dense vegetation, the experiences and knowledge gained from several other investigations in the wider surrounding region provided background information to make assumption and predictions on the incidences and the significance of possible pre-colonial archaeological sites/material which may be located in the area, or which may be covered by soil and vegetation.

Results and findings

The results and findings for the section of power line routes, substation and maintenance yard which is also located in the Mesenge Emoyeni WEF study area, have been included in a separate walkthrough survey for those features and will not be repeated in this report (see Binneman 2014).

Pre-colonial archaeology

Although the terrain was relatively easy to access, the archaeological visibility in general was moderate to poor due to the dense surface cover of grass and shrubs in places after good rains during the past two years (for general views of the landscape and vegetation see Figures 1-10).The walkthrough of the study site, given the limitations and impediments, turned out to be an exhausting exercise with little results in terms of heritage sites/materials following the high ground (Appendix A). However, the scenario that the concentrations of archaeological sites/materials will be located along the drainage lines rather than on the high ground, was predicted beforehand from previous experiences. A quick spot investigation along a drainage line near the proposed service road between turbine positions 51-15 (tools3 site) (Map 9) confirmed this prediction. A concentration of Earlier, Middle and Later Stone age stone tools and KhoiSan pottery were observed close to the drainage line exposed by surface erosion. The site will not be impacted by the development. However, two hundred metres north of this site were a few Later Stone Age stone tools exposed on an erosion surface close to the service road between turbine positions 51-15 (tools4 site) (Map 9). The tools were widely dispersed without any archaeological context and need no further mitigation.

Occasional stone tools (Earlier, Middle and Later Stone Age) were observed during the walkthrough, but were isolated occurrences without any archaeological context and therefore of low heritage significance. Only two small stone tool scatters (msa1 and 2) were observed near turbine position 10 (Figure 3) (Map 5). The stone tool scatters comprised a few quartzite, shale and hornfels weathered Middle Stone Age stone tools (dating older than 30 000 years old). They were randomly scattered next to a vehicle track and along small surface erosion areas. Both the observed stone tool occurrences were in secondary context and not associated with any other archaeological remains and are of low heritage significance and therefore need no further mitigation.

Colonial period heritage and the historic ox wagon transport road

A number of dry packed stone walls, gates and a kraal were observed on the high ground. Among these structures were three stone walls of which two were extensive. Stonewall1 is some 1,2 kilometres long and near turbine positions 6 and 17 and the connecting service road (Figure 2) (Map 4). The development is about 50 metres from the wall, but care must be taken that no damage will come to the wall by fencing-off the section closest to the development. The other extensive wall structure (stonewall) is some 200 metres long and north of the service road between turbine positions 51-15 (Figure 7) (Map 9). For the most part the proposed service road is a fair distance from the wall, but at the far western end it is only 30 metres away. It is recommended that the road be constructed at least 50 metres from the wall. Furthermore precautions must be taken that the structure will not be damaged during the construction phase by fencing-off that section. The third stone wall is a short boundary marker towards the western end of the development near turbine position 26 and the service road between turbines 23 and 38 (Figure 8) (Map 10). The structure is 50 metres from the service road, but care should still be taken that the wall will not be damaged.

Two dry packed stone wall gates were also observed, one (gate) at the entrance to Alstonfield (Figure 5) (Map 7) and the other one (gate2) higher up the slope (Figure 3) (Map 5). No mitigation is necessary for both of the structures because they are more than 50 metres from the nearest developments, but precautions must be taken that the structures will not be damaged during the construction phase. Only one dry packed stone kraal (Figure 6) (Map 8) was observed near the service road between turbine positions 52 and 41. No mitigation is necessary for this structure because it is more than 50 metres from the service road, but precaution must also be taken that the structures will not be damaged.

A major problem with the design/layout of the service road between turbine positions 51-15 is that it runs through a farm complex with historical features and graves (Halket *et al.* 2010) (Map 9a). All farm complexes must be no-go areas and it is recommended that the service road be re-routed to avoid damage/destruction of graves, graveyards and historical structures.

The historic ox wagon transport road from Grahamstown to Cradock which possibly crosses through the region has been discussed in a walkthrough survey for the Msenge Emoyeni WEF power lines and substation location and will not be repeated in detail (Binneman 2014). A small section of the road is conserved and marked by the 57 miles stone marker and is located towards the north-west of the study area. The route is visible on aerial images from the 57 miles stone marker northwards towards Cradock. Although possible track lines were detected on aerial images, the exact route southwards towards Grahamstown is for the most part unclear and the walkthrough also observed little evidence on the ground. However, according to one of the landowners, Mr Derek Bowker, the ox wagon transport road was connected by the three large stone wall gates in the area. From the large dry packed stone wall entrance gate to Alstonfield (Figure 5) (Map 7) it ran in a north-westerly direction up the gentle slope to the stone wall gate2 at the top of

the hill (Figure 3) (Map 5) and from there to another gate and further on to the 57 miles stone marker (also see Binneman 2014). Although it would appear from the aerial evidence that the old ox wagon transport road in general follows the route as described by Mr Bowker, this should be confirmed by detailed archival research.

Numerous other stone features were also observed throughout the study area, such as stone fence posts, erosion prevention wall, furrows and low walls (Figure 10). Although these features have everyday functional value, they have little heritage significance.

ASSESSMENT OF THE IMPACTS

Pre-colonial archaeology

Nature of the impacts

Apart from two exposed Middle Stone Age stone tool occurrences and occasional stone tool finds, no other sites/remains of significance were observed. However site/materials may be covered by soil and vegetation. The main impact to archaeological sites/remains (if any) will be the physical disturbance and/or destruction of the material and its context. The construction of the turbine foundations, substation, cabling between the turbines and access roads may expose, disturb, displace and destroy archaeological sites/material. It is assumed that the overhead transmission lines may have less impact on possible buried archaeological material due to their smaller foot print, but that depends on the construction activities.

Extent of the impacts

Construction of the turbine foundations, substation, cabling between the turbines and access roads may impact on remains which are buried, but these impacts will be limited and restricted to the local area. The construction of the turbine bases may disturb small areas and the negative impact on possible archaeological sites/materials may be relatively small. Other projects such as the construction of roads, buildings and underground lines will disturb large 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 turbines, substation, cabling between the turbines, access roads and maintenance yard on above and below ground archaeology.		
	Without Mitigation	**With Mitigation**
Extent	Local (1)	Local (1)
Duration	Permanent (5)	Permanent (5)
Magnitude	Minor (2)	Minor (2)
Probability	Unlikely (2)	Unlikely (2)
Significance	Low (16)	Low (16)
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, all construction activities of the substation site must be monitored by an archaeologist/heritage practitioner or trained ECO. If concentrations of archaeological materials are exposed then all work must stop for an archaeologist to investigate (see Appendix C 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 Eastern Cape Provincial Heritage Resources Authority, 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 concrete bases will determine the impact on the buried materials (if any) and if these increase so will the impact.
Residual impacts: Permanent

Colonial period heritage

Nature of the impacts

The bulk of the historical build environment, graves, graveyards, and other structures and features are concentrated at settlements along the network of gravel roads in the region and in the valleys. No development will take place near settlements or will turbines be placed near these concentrations of historical features. Only a few isolated dry packed stone features such as walls, gates and kraals were observed on the high ground where the development will take place. These structures are large and had great functional value in the past. They are an integral part of the cultural landscape and are sensitive to damage, especially with large scale developments close to them. Historically these structures were function specific/significant and are therefore context sensitive to changes in the surrounding landscape. The increase of a large number of workers into the area may have an impact on the historical buildings due to possible vandalism.

Extent of the impacts

In general the turbine locations and other construction activities will be placed at fair distances from the historical nodes on the landscape and will therefore not directly impact on these features. The stone structures are large and easy to identify and therefore impacts on these features are generally not expected. Nevertheless, to avoid/minimize possible impacts on the stone structures and the cultural context/significance, marked buffer zones around the features must be implemented before development starts. These features are excellent examples of the distinctive architectural characteristic/'style' of the region and are of medium/high heritage significance. They also represent the shared and combined heritage skills of all the people of the region in the past.

Table 2. Impacts on the colonial period heritage.

Nature: The potential impact of the construction of the turbines, substation, cabling between the turbines, access roads and maintenance yard on historical features and material.		
	Without Mitigation	**With Mitigation**
Extent	Local (2)	Local (2)

Duration	Permanent (5)	Permanent (5)
Magnitude	Low (4)	Minor (2)
Probability	Unlikely (2)	Unlikely (2)
Significance	Low (22)	Low (18)
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

It is recommended that the construction of the service road between turbine positions 51-15 be re-routed from the historic farm complex to avoid graves being damaged/destroyed.

Along the same route the road will be approximately 30 metres from a dry packed stone wall and it is recommended that the road be moved to 50 metres from the wall.

If archival research confirms the old ox wagon transport route as preliminary established by oral history and a Google aerial image investigation, then changes to the layout of the proposed should be mitigated.

If any graves or any other concentrations of historical/colonial heritage material are exposed during construction, all work must cease and it must be reported immediately to the nearest museum/archaeologist or to the Eastern Cape Provincial Heritage Resources Authority, 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: Similar to above

Residual impacts: Permanent in the case of graves

Cultural landscape and sense of place

Nature of the impacts

The R350 main road between Grahamstown and Bedford passes through the eastern part of the proposed development and the construction of a large number of turbines will dominate the surrounding landscape and confront the public directly in terms of changes of place. It will have a significant visual effect on the cultural landscape and will also introduce an 'industrial character' to a once rural agricultural environment. The negative visual impact on the historical and natural landscape will be restricted mainly to the immediate region. However, the main impact on the cultural landscape will be the extensive construction of roads and other activities which will leave permanent scars.

Extent of the impacts

The size and large number of turbines will definitely change the character and meaning of 'place'. The extensive construction of roads and other activities will transform the landscape and it will be difficult to fully rehabilitate this scarring of the landscape. It may even caused larger problems such as large scale soil erosion. However, it will also create new identities and activities in the immediate and wider surrounding areas. It is felt that these developments will generate opportunities for tourism in the future, which will create jobs and have positive economic expansion.

Table 3 . Impact on the cultural landscape.

Nature: The potential impact of the construction of the turbines, substation, cabling between the turbines, access roads and maintenance yard on the cultural landscape.		
	Without Mitigation	**With Mitigation**
Extent	Local (4)	Local (4)
Duration	Long term/permanent (5)	Long term/permanent (5)
Magnitude	Moderate(6)	moderate (6)
Probability	Highly probable (4)	Highly probable (4)
Significance	high (60)	High (60)
Status (positive or negative)	Negative	Negative
Reversibility	Reversible	Reversible
Irreplaceable loss of resources?	No	
Can impacts be mitigated?	no	no
Mitigation Given the size of the turbines, no mitigation can reduce the negative visual effect on 'significance of place'.		
Cumulative impacts: The cumulative impacts may be increasing as further wind farms are planned for adjoining areas. The large number of turbines will bring permanent changes to the cultural landscape in terms of visual impacts and changes to 'sense of place'.		
Residual impacts: Disturbances to the landscape by the construction of roads and trenches for the cables will be long term to permanent.		

Table 5. Environmental management programme for heritage resources

Objective: Preserving the pre-colonial archaeological and colonial period heritage sites/remains of the Msenge Emoyeni WEF site.	
Project component/s	Construction of turbines, new roads, power lines, substation, maintenance yard and other associated infrastructure.
Potential impact	The physical disturbance, damage and/or destruction of pre-colonial archaeology and colonial period heritage sites/remains, either by direct impact or secondary impact such as vandalism. The impact on the cultural landscape.
Activity/risk source	Large scale levelling, construction of substation, power lines and access roads for construction vehicles.
Mitigation: Target/Objective	All construction activities on the substation site must be monitored by an archaeologist/heritage practitioner (or alternatively a person specially trained to conduct the monitoring, i.e. the ECO). This must include the clearing of the vegetation (which constrained the visibility of heritage resources during the walkthrough investigation), and the leveling of turbine positions.

Mitigation: Action/control	**Responsibility**	**Timeframe**
Several heritage sites of high significance were observed during the walkthrough survey. No development may occur within 50 metres of the sites and marked buffer zones must be placed around them.	Proponent, consultant, contractor and the heritage practitioner.	Before and during construction starts.
If any human remains (or any other concentrations of heritage material) are exposed during construction, all work must	Proponent, consultant, contractor, heritage	From the start and duration of all phases

cease and it must be reported immediately to the nearest museum/archaeologist or to the Eastern Cape Provincial Heritage Resources Authority 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.	practitioner and heritage authority.	of the construction phases, i.e., during the clearing of the vegetation for the above ground heritage. During the levelling phase for the buried heritage.

Performance indicator	All heritage sites/materials observed during any construction activity must be recorded. The success of the monitoring will be determined by the degree of damage/disturbance that can be avoided to heritage resources.
Monitoring	All construction activities must be monitored by a heritage practitioner or alternatively a person must be specially trained, for example the ECO. The heritage practitioner should apart from monitoring specific activities at specific time also regularly visit the construction site (for example, once a month) to inspect the construction routes and activities (or to meet with the ECO, A report and if required a list of recommendations, should be compiled and submitted to the Eastern Cape Provincial Heritage Resources Authority after the monitoring phase(s) for comment.

DISCUSSION AND MITIGATION

Dense grass cover throughout the study area and little sheet erosion on the high ground made it difficult to locate pre-colonial archaeological sites and materials. However, in areas where the surface soils were exposed by natural erosion, for example in foot paths and in vehicle tracks the archaeological visibility was good and made it fairly easy to locate archaeological materials. Two stone tool occurrences of mainly Middle Stone Age origin were observed, but both were without any archaeological context and therefore of low heritage significance. Although the occasional weathered stone tools were observed along the turbine routes, it would appear unlikely that any significant *in situ* sites/material will be exposed during the development. A reason for the lack of sites/materials on the high ground may be that they are simply not there, because the open, windy environment was too unpleasant for human occupation. From a positive side one may argue that at least from the visual observations it would appear that little heritage sites/materials may be disturbed and/or destroyed during the construction of the wind facility. However, on the other hand there may be sites/materials covered by soil and vegetation. Unlike the steeper valley slopes and bottoms where soil erosion exposed sub surface strata and also archaeological sites/materials, this was not the case along the hill tops and high ground. Due to the gentle undulating nature of the landscape little sheet soil erosion occurred on the high ground. Whatever the reason, the results from the walkthrough survey in general, confirmed the assumptions/predictions of other survey in the region that the more sensitive archaeological sites will be in the valley/drainage areas and the less

sensitive on the high ground (also Halket *et al.* 2010; Binneman 2012).

The two dry stone packed wall gates, three walls, of which two were extensive and one kraal which were observed close to the proposed turbine positions and service roads are typical examples of the architectural 'style' of the region and are of high heritage significance. Of these structures need mitigation. The service road between turbine positions 51-15 (Map 9) is some 30 metres from the wall and must be move to a distance of 50 metres from the wall. Marked buffer zones must be placed around all the stone structures before construction starts to protect them from damage/vandalism. This road also runs through a farm complex with historic buildings and graves, and must be re-routed.

Little evidence of the possible historic ox wagon transport road from Grahamstown to Cradock could be observed on the ground. However, aerial images of the area appear to support oral history that the route followed the dry packed stone wall gates en route to the 57 miles stone marker (Maps 5 & 7). However, should this preliminary assessment be confirmed by detailed archival research, then the turbine positions and service roads should be mitigated to protect as much of the historical context of the ox wagon transport road as possible.

However, although the road has a certain historic context value and significance, one must be realistic to the extent (and what) the route can be conserved, especially if it is largely undetectable on the ground. There will be little (if any) evidence in the way of substantial cultural material remains along the route that will mark it or that will be disturbed by the development. The route has already been impacted by general small scale farming activities such as fencing and farm tracks. On the other hand it is not possible or viable to protect the entire ox wagon road, but there are probably certain sections outside the area earmarked for the proposed development towards the north-west that can be conserved.

Recommendations

In general (apart from above discussed heritage features) it would appear that the layout for the turbines and associated infrastructure which was investigated by a walkthrough is of relatively low cultural significance. Although it would also appear unlikely that any significant *in situ* sites/material will be exposed during these developments, sites/materials may be covered by soil and vegetation. It is **recommended** that;

1. The service road between turbine positions 51-15 (Map 9) must be moved to a distance of 50 metres from the wall at the far western end (Map 9).

2. The same road also runs through a farm complex with historic buildings and graves, and must be re-routed (Map 9).

3. Marked buffer zones must be placed around all the stone structures before construction starts to protect them from damage/vandalism.

4. All construction activities must be monitored by an archaeologist/heritage practitioner or alternatively a person must be specially trained, for example the ECO, to conduct the monitoring. This must include the clearing of the dense grass (which constrained the visibility of heritage resources during the walkthrough), leveling, placing and excavations of the pylon foundations and construction of the access roads.

    - The archaeologist/heritage practitioner should apart from monitoring specific activities at specific times also regularly visit the construction site (for example, once a month) to inspect the construction routes and activities (or to meet with the ECO, see below).

5. 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 the ECO must be trained as a site monitor to report to the foreman when heritage sites are exposed/found. This person must monitor all activities during the construction phase.

6. Although it would seem unlikely that any significant 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 during construction, all work must cease in the immediate area (depending on the type of find) and it must be reported to the archaeologist at the Albany Museum in Grahamstown (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 (See appendix C for a list of possible archaeological sites that maybe found in the area).

It is **suggested** that;

7. A more detailed archival study is conducted by a historian to establish/confirm the historic ox wagon transport road and how it will be impacted by the development (recommendations to follow).

GENERAL REMARKS AND CONDITIONS

Note: This is an Archaeological Impact Assessment (AIA) report compiled for the Eastern Cape Provincial Heritage Resources Authority (ECPHRA) to enable them to make informed decisions regarding the heritage resources assessed in this report and only they have the authority to revise the report. This Report must be reviewed by the ECPHRA where after they will issue their Review Comments to the EAP/developer. The final decision rests with the ECPHRA who must grant permits if there will be any impact on cultural sites/materials as a result of the development

This report is a Phase 1 Archaeological Impact Assessment and does not exempt the developer from any other relevant heritage impact assessments as specified below:

In terms of the National Heritage Resources Act, No. 25 of 1999 (section 38) ECPHRA may require a full Heritage Impact Assessment (HIA) to assess all heritage resources, that includes *inter alia* , all places or objects of aesthetical, architectural, historic, scientific, social, spiritual, linguistic, or technological significance that may be present on a site earmarked for development. A full Heritage Impact Assessment (HIA) should assess all these heritage components, and the assessment may include archaeology, shipwrecks, battlefields, graves, and structures older than 60 years, living heritage, historical settlements, landscapes, geological sites, palaeontological sites and objects.

It must be emphasized that this Phase 1 AIA is based on the visibility of archaeological sites/material and may not therefore reflect the true state of affairs. Sites and material 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 construction activities, ECPHRA or an archaeologist must be informed immediately so that they can investigate the importance of the sites and excavate or collect material before it is destroyed (see attached list of possible archaeological sites and material). The developer must finance the costs should additional studies be required as outlined above. The *onus* is on the developer to ensure that the provisions of the National Heritage Act No. 25 of 1999 and any instructions from ECPHRA are followed. The EAP/developer must forward this report to ECPHRA in order to obtain their Review Comments, unless alternative arrangements have been made with the heritage specialist to submit the report.

APPENDIX A: List of selected observations.

Text description	Text reference	GPS Location	Type of site	Rating	Location/ status
stonewall1	Map 4	32.52.53,18S 26.03.50,78E	Extensive dry packed stone wall - also recorded by ACO	high	Near turbines 6,17 & 4
gate2	Map 6	32.53.29,01S 26.03.19,14E	Dry packed stone wall gate	high	Near road to turbine 33
msa1	Map 5	32.53.40,32S 26.03.31,14E	Middle Stone Age stone tools	low	Near road between turbine 10 and 33
msa2	Map 5	32.53.41,16S 26.03.30,06E	Middle and Later Stone Age stone tools	low	Near road between turbine 10 and 33
(entrance) gate	Map 7	32.54.49,55S 26.04.22,00E	dry packed stone wall	high	Near turbine 3 and road to 51
kraal1	Map 8	32.55.17,04S 26.04.40,08E	dry packed stone kraal	high	Between turbines 52 and 41
stonewall	Map 9	32.54.37,26S 26.02.8,98E 32.54.37,00S 26.01.52,15E	Extensive dry packed stone wall	high	Road between turbines 51 and 15 runs pass it
tools3	Map 9	32.54.49,35S 26.01.51,18E	Earlier, Middle and Later Stone Age stone tools and KhoiSan pottery	Medium -high	Not impacted by the development
Tools4	Map9	32.54.39,77S 26.01.54,53E	Few Later Stone Age stone tools	Low	Near road between turbines 51-15
stone wall	Map 10	32.54.34,66S 25.59.45,37E	dry packed stone boundary wall	high	Near turbine 26and road Between38-23

APPENDIX B: 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 C: IDENTIFICATION OF ARCHAEOLOGICAL FEATURES AND MATERIAL FROM INLAND 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 human remains are buried in a flexed position on their side, but are also found buried in a sitting position with a flat stone capping. Developers are requested to be on alert for the possibility of uncovering such remains.

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.

Large stone cairns

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.

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.

Historical artefacts or features

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

APPENDIX D

DIGITAL IMAGES OF THE LANDSCAPE AND HERITAGE SITES
AND
AERIAL VIEWS OF THE HERITAGE SITES AND TURBINE LOCATIONS

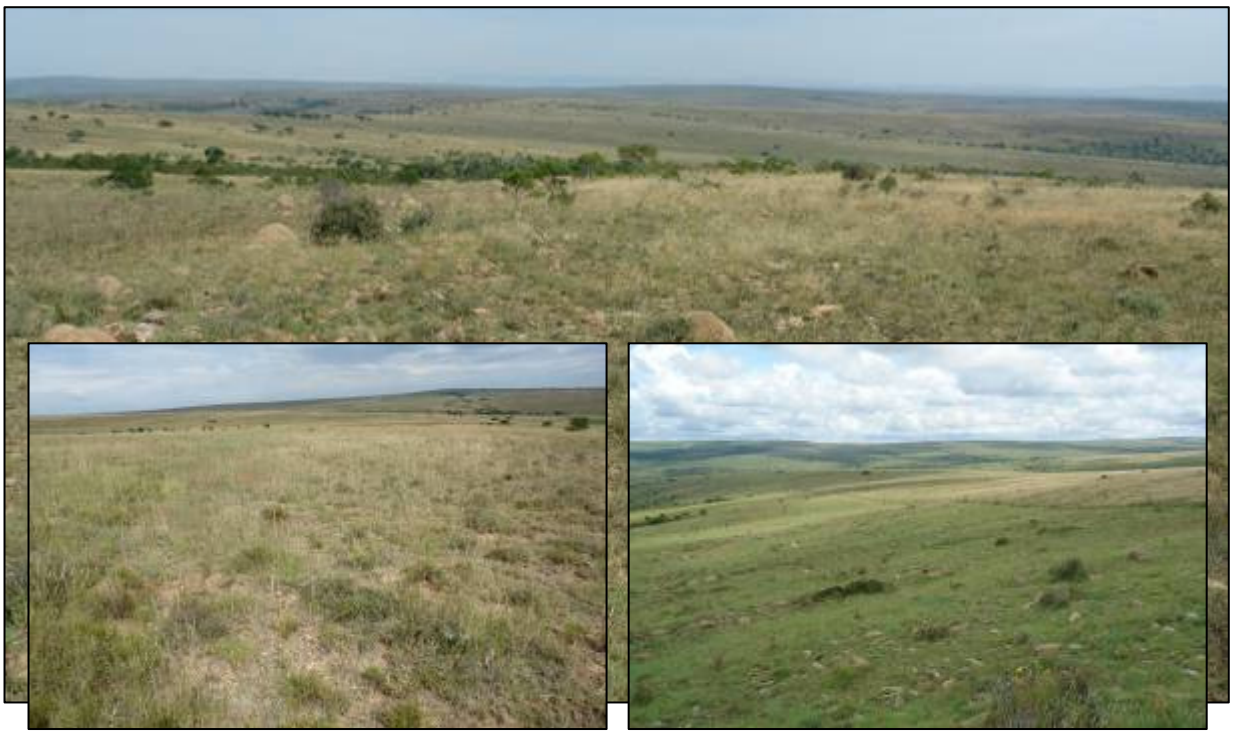
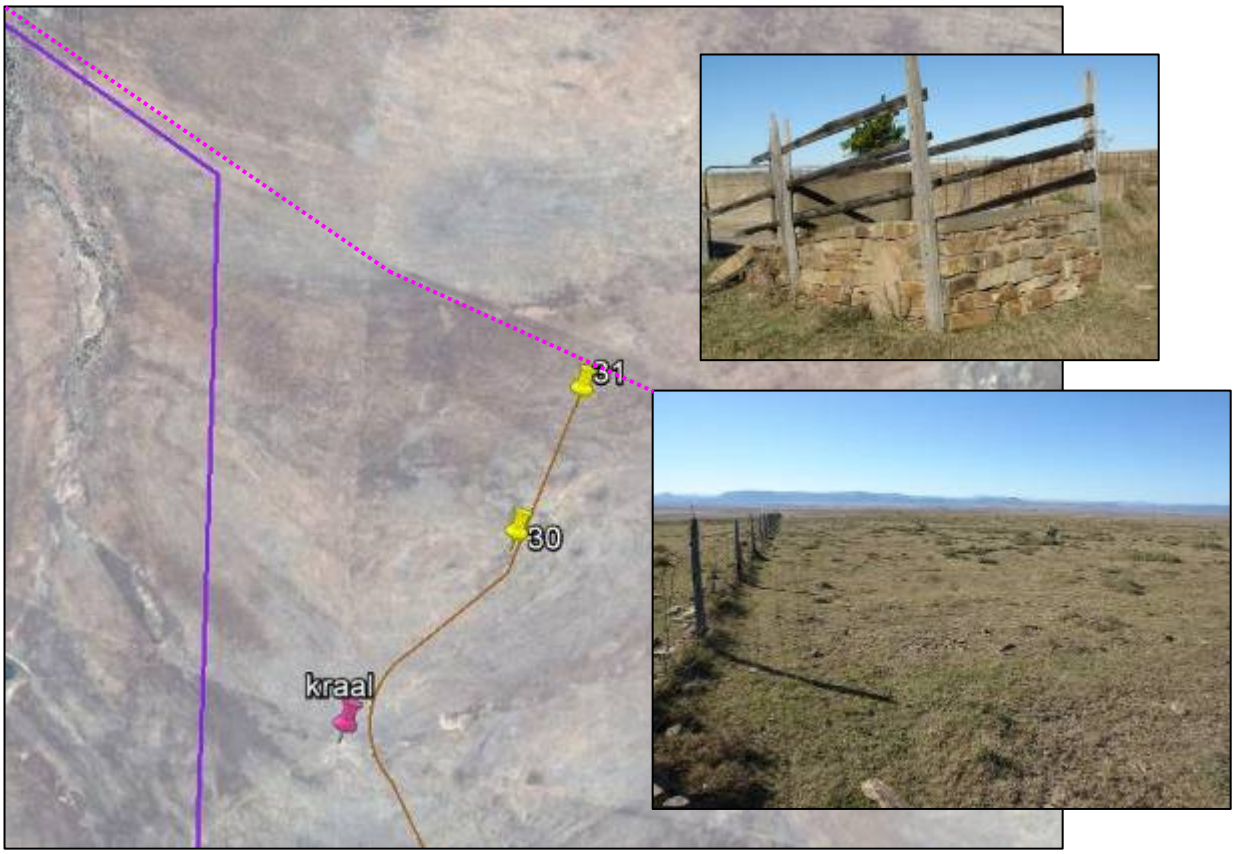
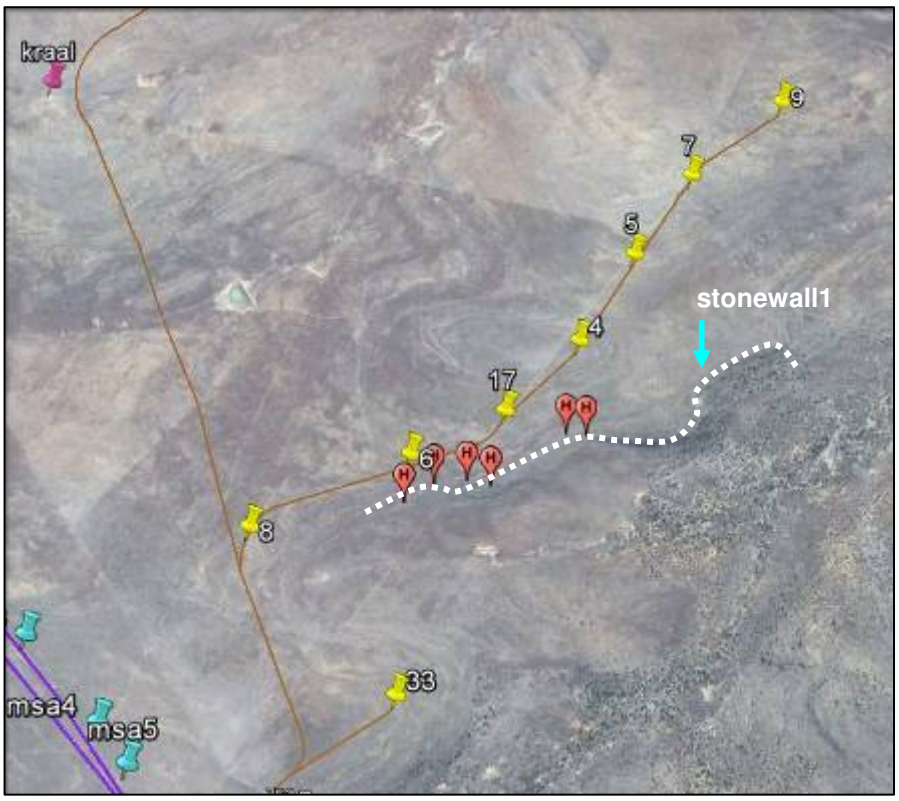


Figure 1. General views of the Msenge Emoyeni Wind Energy Facility site.



Map 3. An aerial image and a view towards the locations of Turbines 30-31 from the kraal (top insert). It is a relatively modern kraal and stone structure without historic dry packed stone walls and has little heritage value. The road/underground cables are well removed from the feature and should not have an impact. The existing power line is marked by the pink dotted line and the proposed new power line by the solid purple line.



Map 4. An aerial image of the turbine positions 8-33 and the extensive dry packed stone wall. The development should not impact on the wall but must be protected against possible damage before construction starts.

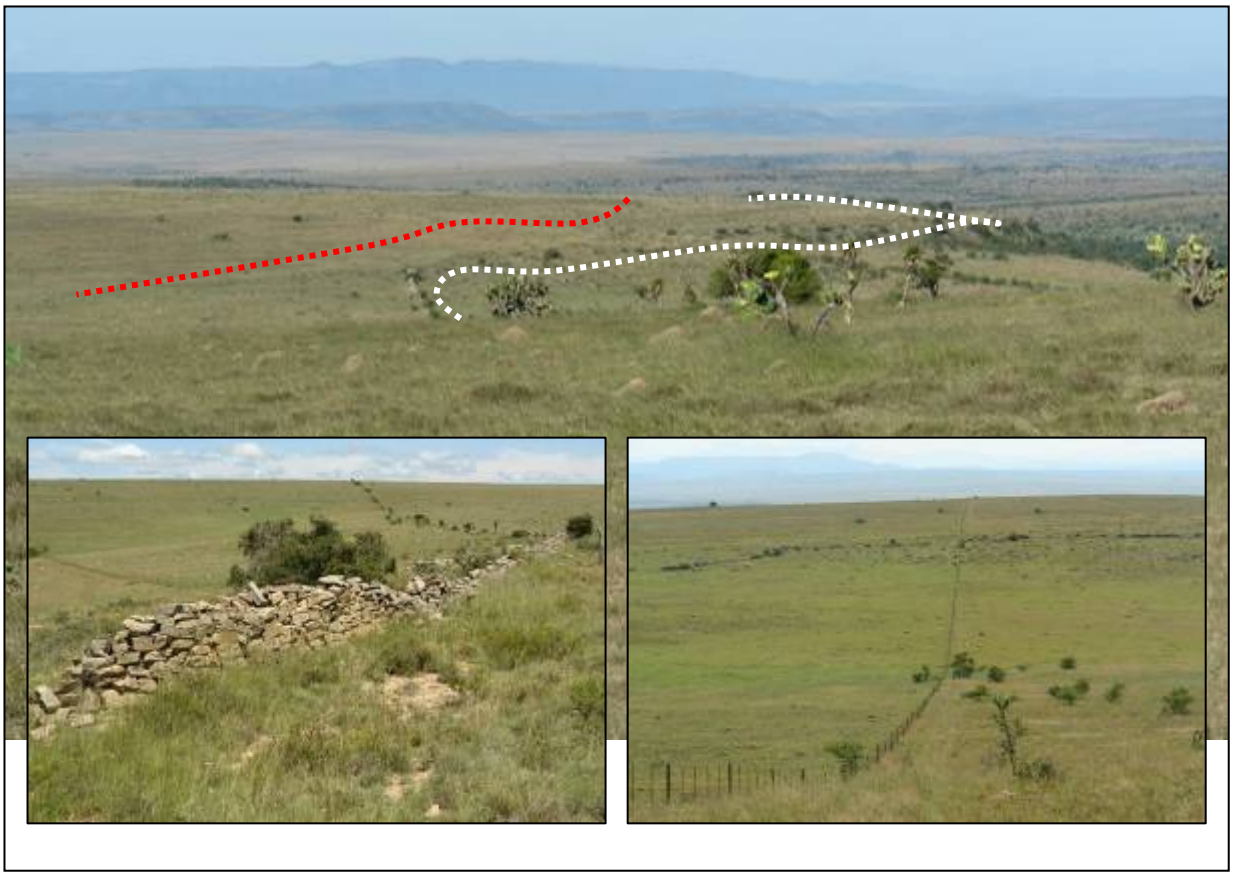
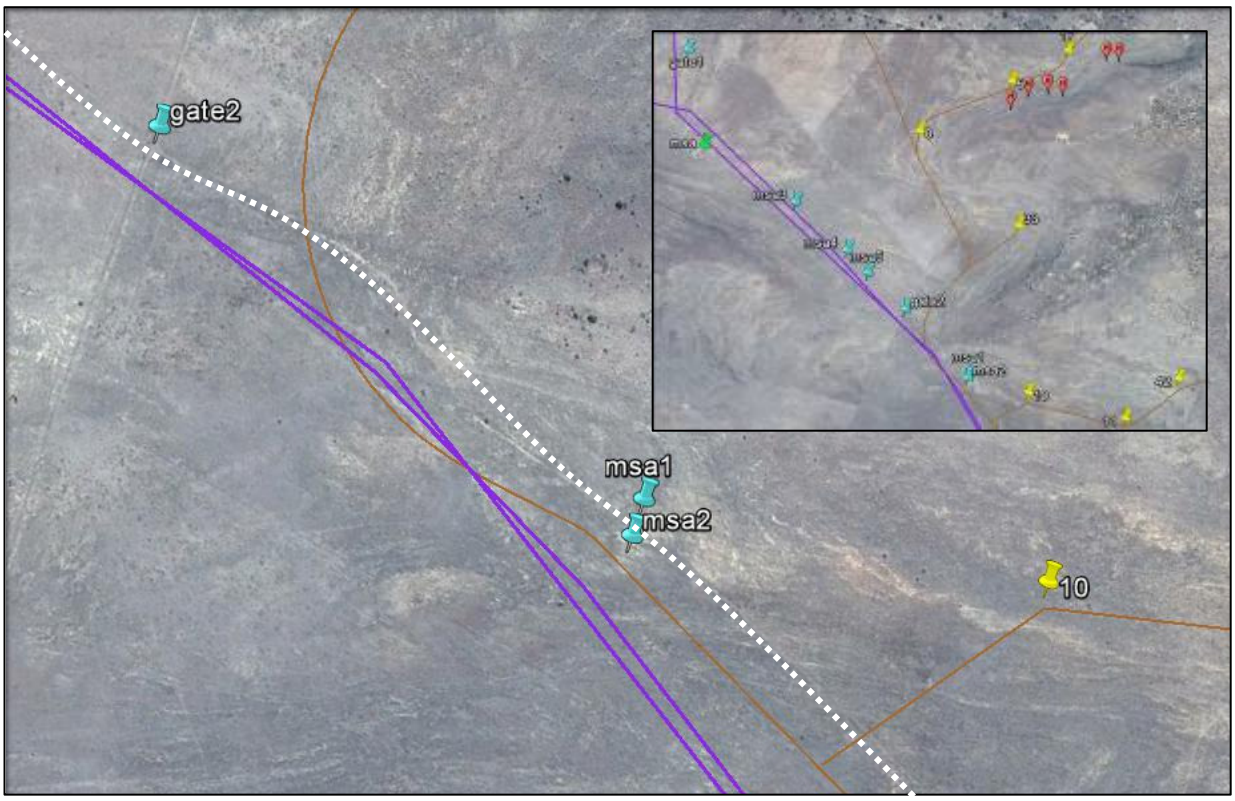


Figure 2. A view towards turbine positions 8-17-9 (main image, broken red line) and the nearby dry packed stone wall (inserts, white broken line).



Map 5. An aerial image of gate2, msa1-2 stone tool occurrences and the turbine position 10. The possible ox wagon road is marked by the broken white line.

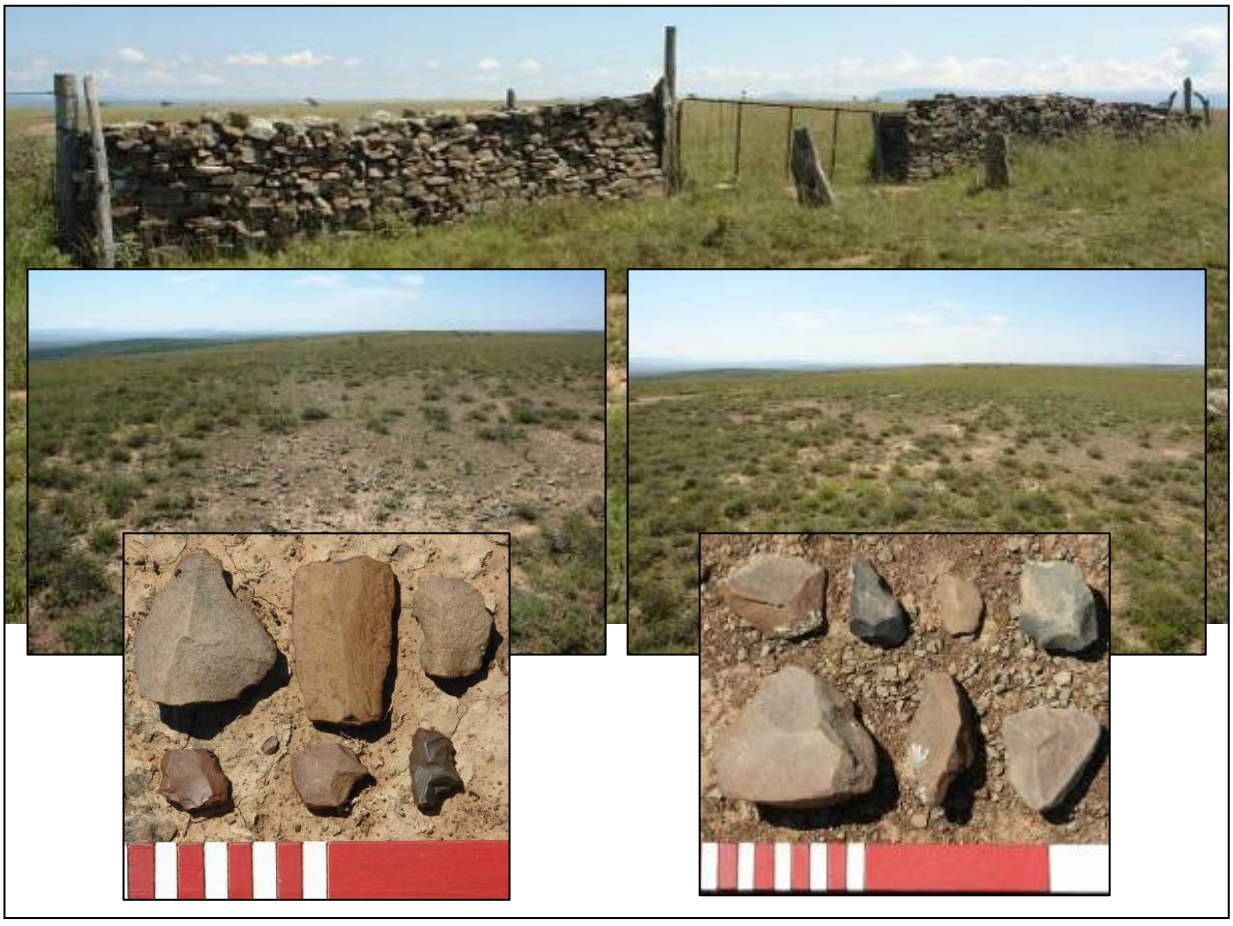
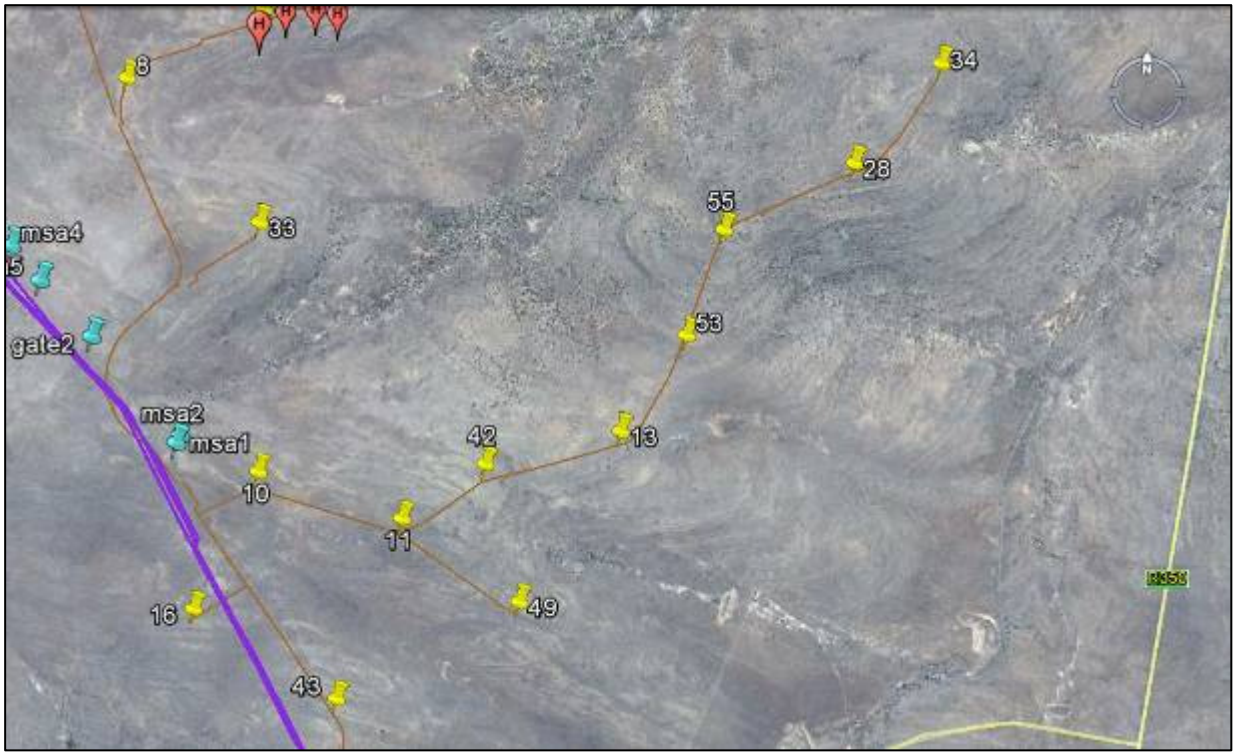
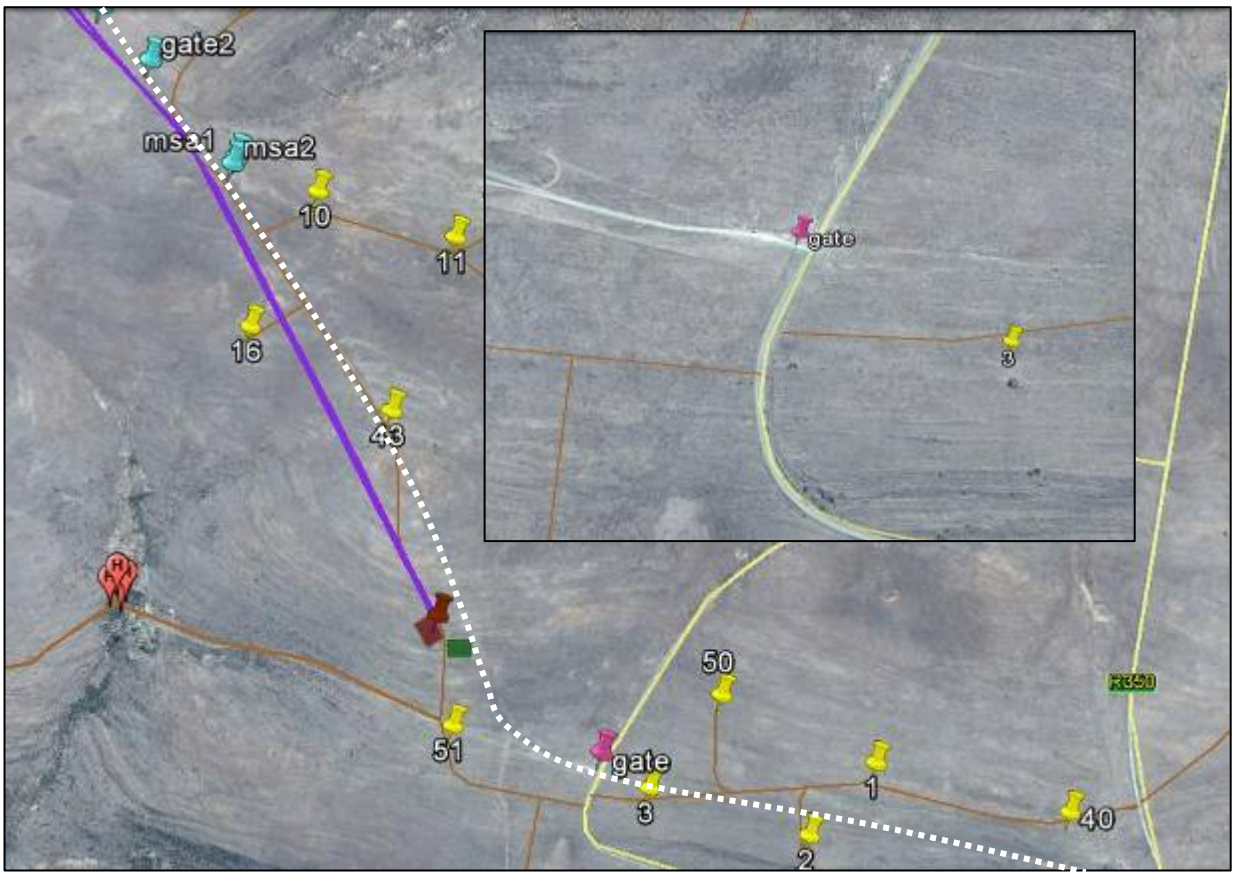


Figure 3. Views of gate2 (main image), turbine positions 10,11,42 & 49 and samples of the Middle Stone Age stone tools from msa1-2 (inserts).



Map 6. Aerial image of the turbine positions11-34.

Figure 4. Views towards turbine positions 11-53-34 along the ridge in the background (main image).



Map 7. An aerial image of the locations of the substation, maintenance yard and turbine positions 1-40-50. The possible route of the ox wagon road is marked by the broken white line.

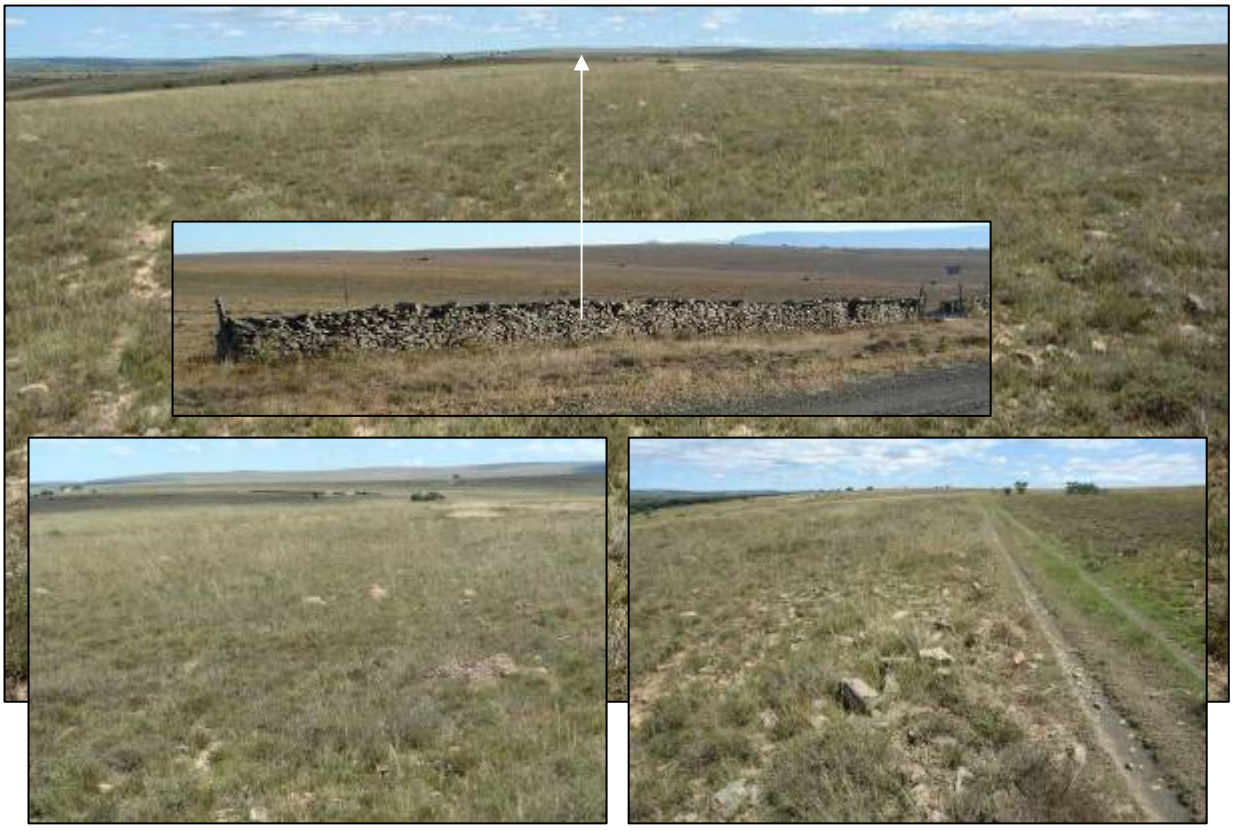
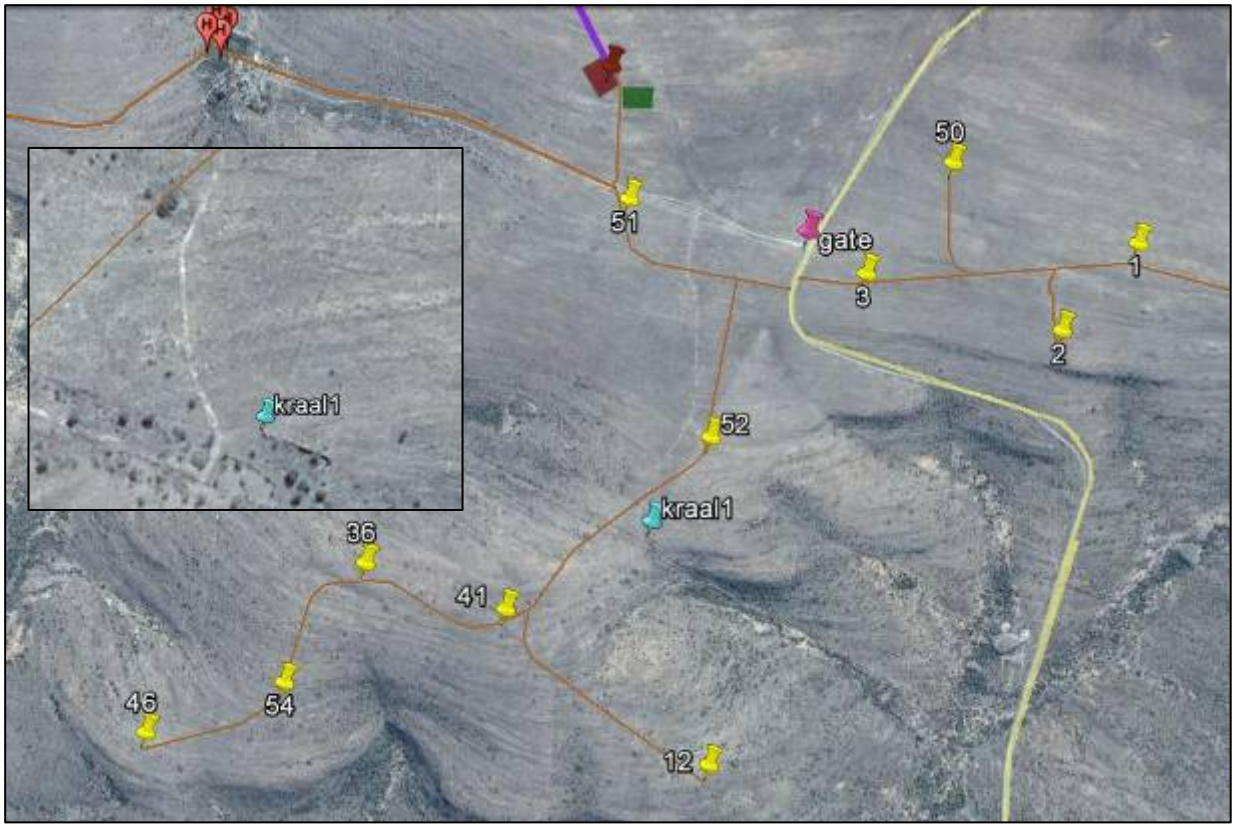
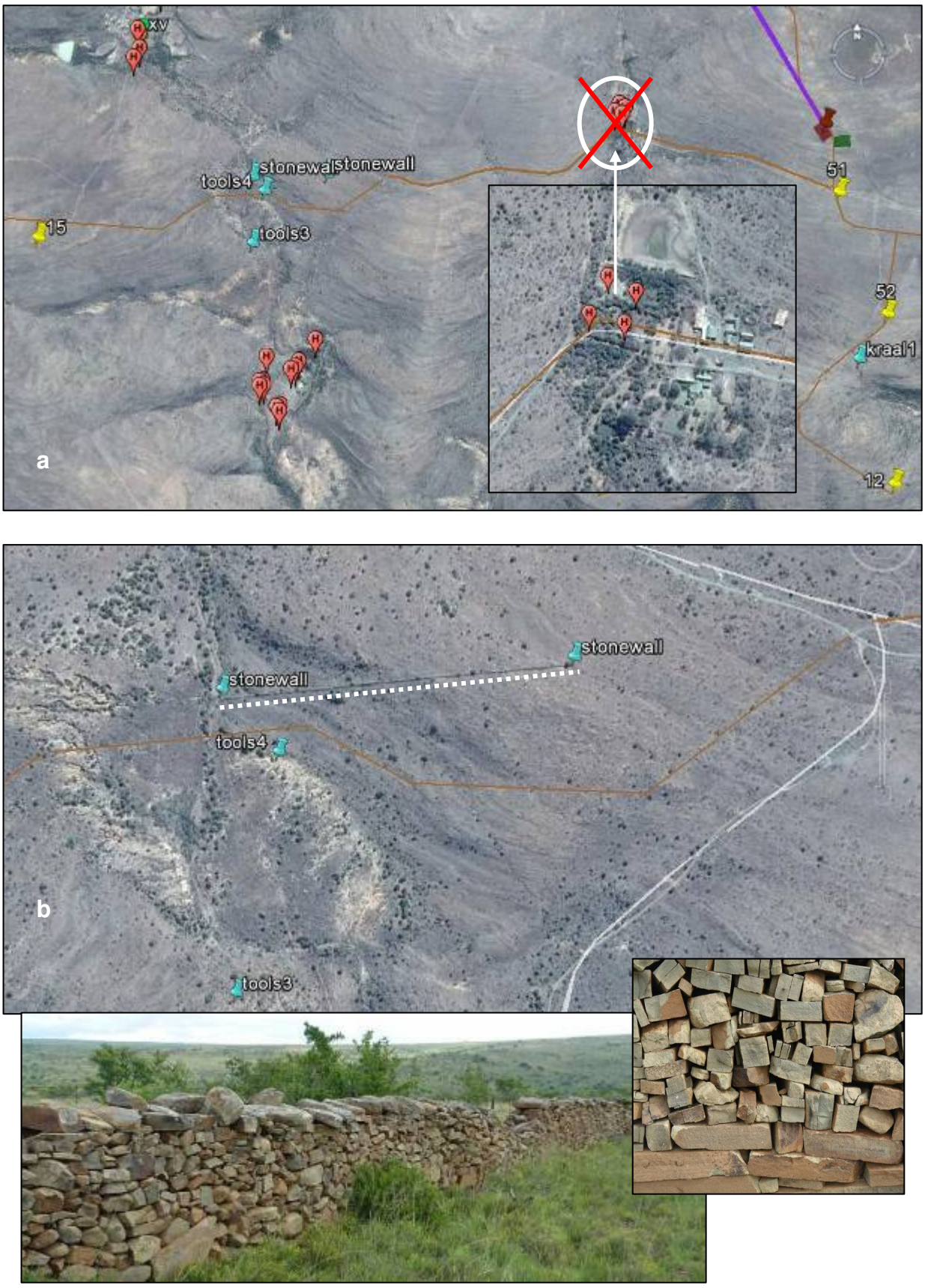


Figure 5. Views of turbine positions 1-40-50 and the dry stone packed entrance gate.



Map 8. An aerial image of the turbine positions 51-56 and the stone wall kraal1.

Figure 6. Views towards the turbine positions 51-56 (main image and left insert)and the stone wall kraal1 (right insert).



Map 9a & b. Aerial images of the service road from turbine 51 to 15 and the nearby lengthy dry packed stone wall (digital images). The white circle marks an area with graves and is a no-go area for any development.

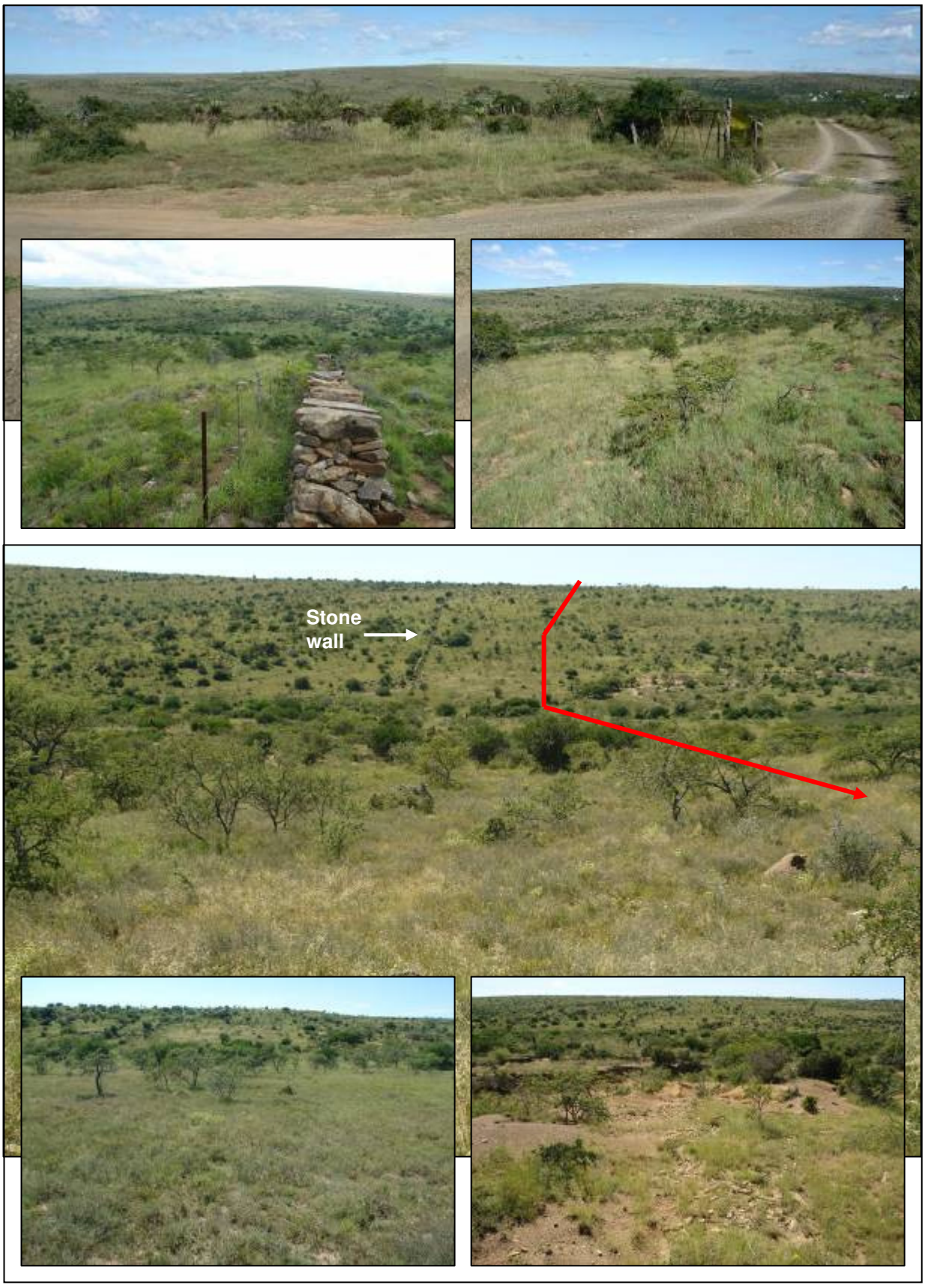
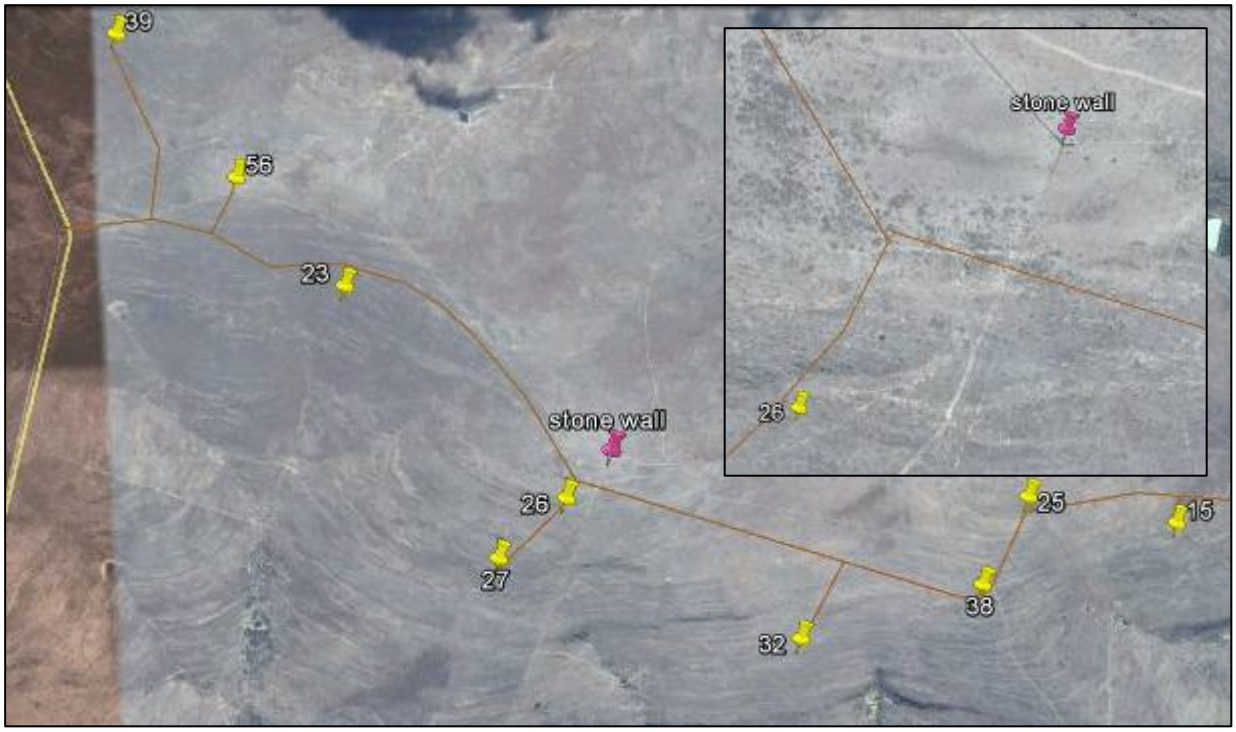
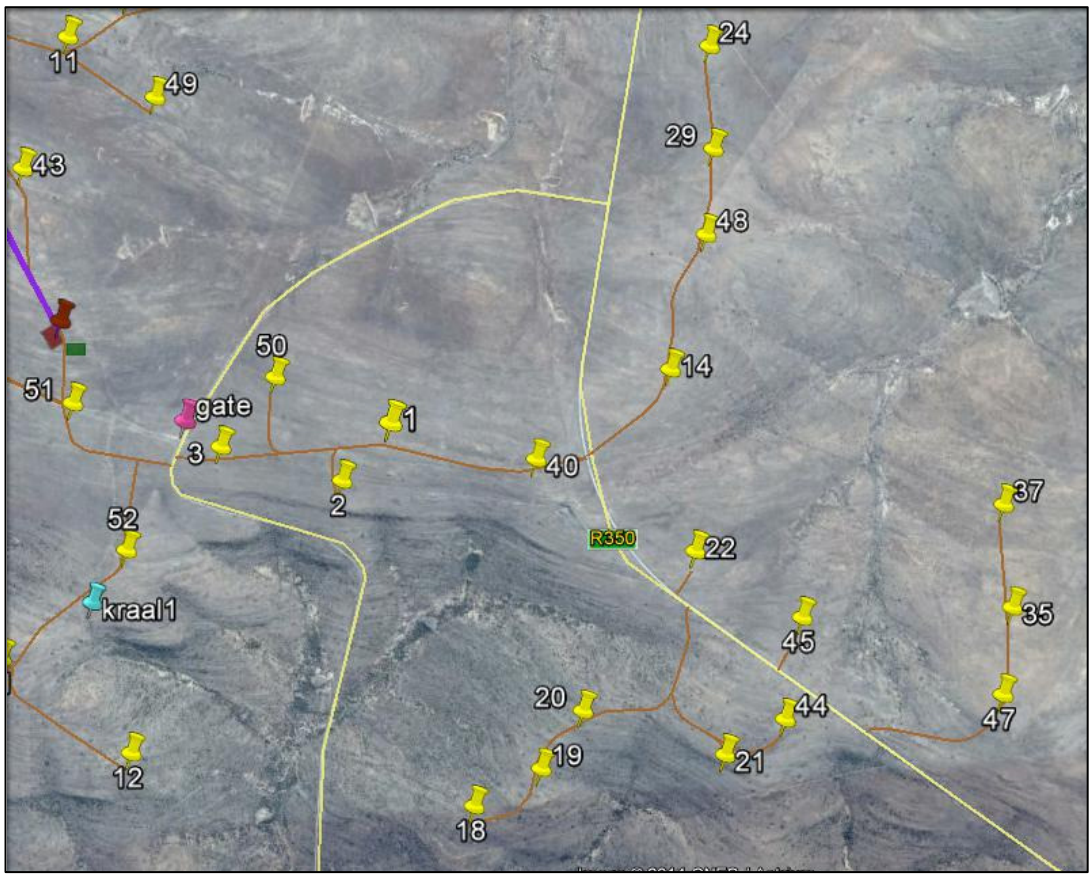


Figure 7. Views of the service road from turbine position 51 to15 - from the existing gravel farm road (top image) down the valley (top inserts), across the drainage line (bottom image) and up the other side across erosion channels (bottom inserts). The red arrow marks the approximate location of the service road.



Map. 10. An aerial image of the turbine positions 15-56 and the nearby stone wall.

Figure 8. Views towards the turbine positions 15-56 and the nearby stone wall.



Map 11. An aerial image of the turbine positions 14-24, 22, 45-18 and 37-47.

Figure 9. Views of the turbine positions 14-24 (main image), 45-18 (left insert) and 37-47 (right insert).

Figure 10. Examples of everyday functional use of stone, which include the

construction of water furrows, dams, fence posts and erosion prevention walls. These features are often changed/re-built and have little heritage value. Note the dense grass throughout the region.

January 2015

TWO AMENDMENTS FOR THE EASTERN CAPE PROVINCE HERITAGE RESOURCES AUTHORITY (ECPHRA) TO REVIEW

1. AMENDMENT: Discussion and mitigation regarding the historical ox wagon route between Grahamstown and Cradock - re: suggestion 7 above: *A more detailed archival study is conducted by a historian to establish/confirm the historic ox wagon transport road and how it will be impacted by the development (recommendations to follow).*

The main points and issues have been outlined in the report above for the Msenge Emoyeni Wind Energy Facility walkthrough and the associated power line walkthrough, also see;

Binneman, J. 2014. An archaeological walkthrough survey of the Msenge Emoyeni Wind Energy Facilty power line routes and substation location, Bedford District, Blue Crane Route Municipality, Eastern Cape Province. Prepared for Savannah Environmental Ltd. (Pty). Eastern Cape heritage Consultants. Jeffreys Bay.

After further discussions with colleagues in the fields of history and archaeology/historical archaeology we unanimously came to the following conclusions:

1. It is not possible to protect/conserve the entire route, especially if it is uncertain where the original route was. The possible location of the route is based on a small area with the 57 miles marker stone conserved by the landowner, a reconstruction/interpretation of the landowner and 'marks' visible on the landscape identified by Google Earth map images (could be originated from farming activities or any other action). No conclusive evidence on the landscape was observed during the walkthrough either.

2. The marker stone is of military origin, which indicates that the Royal Engineers constructed the road somewhere after 1851. It is uncertain if such information (documents and maps) will be found in South Africa and most probably it will only be found in the archives in England. Furthermore, even if such information is available one may not be able to precisely track it on the landscape.

3. If the route runs between the stone wall gates then it has been damaged over the past hundred years or so by farming activities, and therefore not a pristine historical feature any longer.

4. Notwithstanding, whatever the case may be, it has been recommended in the reports that a buffer zone of 50 metres must be maintained around all the three stone gates. This will guarantee at least 150 metres of protection to the possible route as a 'symbolic' indicator together with the 200 metres at the 57 miles marker stone.

To summarize, against the background that archival research most probably must be conducted overseas at great expense and that even then the precise route may not be conclusive, it is suggested that the buffer zones at the three stone gates will be sufficient to protect/conserve a large part of the possible route and that no further action is required. However, all other recommendations regarding any material exposed are still valid.

2. **AMENDMENT: Comments regarding Map 9a above - Re: Recommendation 2 above: *The same road also runs through a farm complex with historic buildings and graves, and must be re-routed (Map 9).***

The area marked by the circle on the map below is a historical farm yard with graves (high cultural significance value) – a historical cultural landscape and any development near it must be avoided. It has been recommended by the original Heritage Impact Assessment for the proposed Amakhala Emoyeni Wind Farm Facility; *Keep infrastructure at least 500 m away from farm complexes, all of which have heritage elements* (Halkett & Webley, 2010:25, 5.2 Built environment). I have supported that recommendation in my report because the graves and farm yard represent a historical complex/unit/landscape and must be avoided by development (no go area) because all these features are protected by the Heritage Act.

Against this background a 'possible alternative' route is suggested (see below). However, the route will cross a drainage line and therefore the final decision for the route lies with the specialists in the various fields of road construction/design, environmental assessment and ECPHRA.

Map 1. The red circle marks the historical farm yard with graves and the broken yellow line suggests a 'possible' route around this feature.

environmental affairs
Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

	(For official use only)
File Reference Number:	12/12/20/
NEAS Reference Number:	DEAT/EIA/
Date Received:	

Application for authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2010

PROJECT TITLE

AN ARCHAEOLOGICAL WALKTHROUGH SURVEY OF THE PROPOSED TURBINE FOOTPRINT AND INFASTRUCTURE FOR THE MSENGE EMOYENI WIND ENERGY FACILITY, BEDFORD DISTRICT, BLUE CRANE ROUTE MUNICIPALITY, EASTERN CAPE PROVINCE.

Specialist:	Dr Johan Binneman		
Contact person:	Kobus Reichert (Eastern Cape Heritage Consultants cc)		
Postal address:	P.O. Box 689Jeffreys Bay		
Postal code:	6330	Cell:	0728006322
Telephone:	042 2960399	Fax:	042 296 0399
E-mail:	jnfbinneman@gmail.com		
Professional affiliation(s) (if any)	Association of South African Professional Archaeologists		

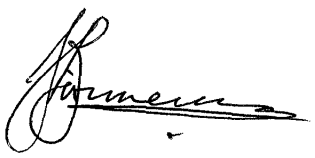
Project Consultant:	Savannah Environmental (Pty) Ltd		
Contact person:	Karen Jodas		
Postal address:	PO Box 148, Sunninghill		
Postal code:	2157	Cell:	082 655 1935
Telephone:	(011) 656 3237	Fax:	086 684 0547
E-mail:	karen@savannahsa.com		

4.2 The specialist appointed in terms of the Regulations_

I, **J.N.F. Binneman** , declare that --

General declaration:

- I act as the independent specialists in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- **all the particulars furnished by me in this form are true and correct; and**
- **I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of section 24F of the Act.**



Signature of the specialist:

Eastern Cape Heritage Consultants cc

Name of company (if applicable):

16 January 2015

Date

environmental affairs
Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

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Application for authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2010

PROJECT TITLE

AN ARCHAEOLOGICAL WALKTHROUGH SURVEY OF THE PROPOSED TURBINE FOOTPRINT AND INFASTRUCTURE FOR THE MSENGE EMOYENI WIND ENERGY FACILITY, BEDFORD DISTRICT, BLUE CRANE ROUTE MUNICIPALITY, EASTERN CAPE PROVINCE.

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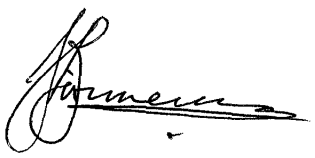
4.2 The specialist appointed in terms of the Regulations_

I, **J.N.F. Binneman** , declare that --

General declaration:

- I act as the independent specialists in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- **all the particulars furnished by me in this form are true and correct; and**
- **I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of section 24F of the Act.**



Signature of the specialist:

Eastern Cape Heritage Consultants cc

Name of company (if applicable):

16 January 2015

Date