Heritage Scoping Assessment of a proposed Wind Energy Facility to be situated on farms in the Cookhouse District, Eastern Cape.

Prepared for

Savannah Environmental (Pty) Ltd

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Prepared by

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EXECUTIVE SUMMARY

ACO Associates cc was appointed by Savannah Environmental (Pty) Ltd of behalf of the proponent Windlab Developments South Africa (Pty) Ltd to conduct a scoping level heritage assessment of portions of the farms Portion 1, 2 and Remainder of Farm 222, Portion 3 of Farm 203 (Platt House), Remainder of Farm 205 (Kop Leegte), Portion 1 of Farm 206 (Normandale), Remainder of Farm 168 (Stompstaart Fontein), 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, Portion 1, 2 and Remainder of Farm 218 (Brakke Fonteyn), Remainder of Farm 259, Remainder of Farm 260, Portion 5 of Farm 149 (Great Knoffel Fontein), Remainder of Farm 242, Portion 1 and Remainder of Farm 220 (Brak Fontein), Remainder of Farm 219 (Vogel Fontein), Remainder of Farm 169 (Olive Woods Estate), Portion 3 of Farm 141 (Brakfontein), Portion 1 of Farm 187 (Kleine Knoffel Fonteyn), situated between the towns of Cookhouse and Bedford in the Eastern Cape Province of South Africa. The proponents intend to construct a wind energy facility of up to 350 turbines, up to 3 substations, o/h and underground power lines and internal access roads on the 23 000 - 30 000 hectare area. Heritage indicators identified during this scoping study are:

In a recent study of the adjacent Cookhouse WEF, the pre-colonial component indicated that archaeology from the Holocene and Pleistocene is likely to exist in the area and may be impacted by the proposed activity. Depending on the outcome of a heritage survey of the study area, mitigation is likely to be feasible.

Historical features and buildings associated with farms are likely to be present within the study area. Preliminary historical research has indicated that the farms were granted in the early 19th century to Dutch speaking farmers and therefore there is a possibility that heritage features of this type are likely to be older than 60 years and are therefore protected by the National Heritage Resources Act. A more comprehensive archival study is needed to determine the historical significance of farms in the area. Fieldwork for the EIA will provide clues as to the probable age of buildings.

Possible impacts to cultural landscape due to visual impacts are a concern and need to be addressed in a separate Visual Impact Assessment.

The area is a known to contain important fossils. An independent palaeontological assessment is to be completed.

In heritage terms, no fatal flaws have been identified at the scoping phase for the proposed wind energy site as a whole.

Declaration:

Mr David Halkett and Dr Lita Webley are independent specialist consultants who are in no way connected with the proponent, other than delivery of consulting services.

David Halkett (MA) is an archaeologist with 23 years of working experience in heritage throughout southern Africa. He is accredited with Principal Investigator status with the Association of Southern African Professional Archaeologists.

Lita Webley (Phd) is an archaeologist with 30 years of working experience. Having served previously as Director of the Albany Museum, she is familiar with the history of the area and local heritage issues. She is also an accredited with Principal Investigator status with the Association of Southern African Professional Archaeologists.

GLOSSARY

Archaeology: *Remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years, including artefacts, human and hominid remains and artificial features and structures.*

Early Stone Age: *The archaeology of the Stone Age between 700 000 and 2500 000 years ago***.**

Fossil: *Mineralised bones of animals, shellfish, plants and marine animals. A trace fossil is the track or footprint of a fossil animal that is preserved in stone or consolidated sediment.*

Heritage: *That which is inherited and forms part of the National Estate (Historical places, objects, fossils as defined by the National Heritage Resources Act 25 of 1999.*

Holocene: *The most recent geological time period which commenced 10 000 years ago.*

Late Stone Age: *The archaeology of the last 20 000 years associated with fully modern people.*

Middle Stone Age: *The archaeology of the Stone Age between 20-300 000 years ago associated with early modern humans.*

National Estate: *The collective heritage assets of the Nation*

Palaeontology: *Any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or trace.*

Pleistocene: *A geological time period (of 3 million – 20 000 years ago).*

SAHRA: *South African Heritage Resources Agency – the compliance authority which protects national heritage.*

Structure (historic:) *Any building, works, device or other facility made by people and which is fixed to land, and includes any fixtures, fittings and equipment associated therewith. Protected structures are those which are over 60 years old.*

Wreck (protected): *A ship or an aeroplane or any part thereof that lies on land or in the sea within South Africa is protected if it is more than 60 years old.*

ACRONYMS

DEA	Department of Environmental Affairs
ESA	Early Stone Age
GPS	Global Positioning System
HIA	Heritage Impact Assessment
HWC	Heritage Western Cape
LSA	Late Stone Age
MSA	Middle Stone Age
NHRA	National Heritage Resources Act
SAHRA	South African Heritage Resources Agency

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1. INTRODUCTION

ACO Associates cc was appointed by Savannah Environmental (Pty) Ltd of behalf of the proponent Windlab Developments South Africa (Pty) Ltd to conduct a scoping level heritage impact assessment on land known variously as Portion 1, 2 and Remainder of Farm 222, Portion 3 of Farm 203 (Platt House), Remainder of Farm 205 (Kop Leegte), Portion 1 of Farm 206 (Normandale), Remainder of Farm 168 (Stompstaart Fontein), 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, Portion 1, 2 and Remainder of Farm 218 (Brakke Fonteyn), Remainder of Farm 259, Remainder of Farm 260, Portion 5 of Farm 149 (Great Knoffel Fontein), Remainder of Farm 242, Portion 1 and Remainder of Farm 220 (Brak Fontein), Remainder of Farm 219 (Vogel Fontein), Remainder of Farm 169 (Olive Woods Estate), Portion 3 of Farm 141 (Brakfontein), Portion 1 of Farm 187 (Kleine Knoffel Fonteyn), situated between the towns of Cookhouse and Bedford in the Eastern Cape Province of South Africa (Figure 1). The proponents intend to construct a wind energy facility of up to 350 turbines along with supporting infrastructure. This proposal has triggered a full EIA process, this report being the heritage component of the scoping study. At this early stage in the project the layout of the proposed facility has not been finalised. The proponent is currently conducting wind monitoring studies on site (already authorised) to inform the future specifications of the facility.

ACO Associates has recently completed a scoping and EIA study of an adjacent set of farms where it is also proposed to construct a wind energy facility (Webley & Hart 2008, Webley et al 2009). Having spent time on the ground for that project means that ACO Associates has first hand knowledge of the area in preparing the scoping stage of this project.

1.1 The need for the project

South Africa is currently experiencing an energy crisis with the national electricity provider (Eskom) being unable to produce enough power to serve the nation's peak demand. Rural areas are presently subject to frequent load shedding. In addition, global warming caused by emissions of greenhouse gasses has meant that the pressure is on globally to utilise clean and renewable energy resources. In the Eastern Cape the situation is exacerbated by the fact that the province has virtually no generating capacity of its own, with power transmitted from Gauteng and Mpumalanga being the main source of supply. Since the proposed site is very close to the Poseidon substation which is in turn linked to Port Elizabeth, the proposed WEF is ideally situated to feed into the national grid and alleviate some of the current loss that is experienced over long distance power line transmission.

1.1.1 The proposal

According to the background information supplied by Savannah Environmental, the turbines are proposed to be positioned over an area of approximately 23 000 - 30 000 hectares in extent and will have between 500 - 750Mw installed capacity. The proponents, Windlab Developments South Africa (Pty) Ltd, have identified the site as being suitable because it is situated on an elevated plateau in an area where the local topography has created a wind funneling effect.

Infrastructure associated with the wind energy facility will include:

- Up to 350 wind turbines, specifications as yet not finalised
- Concrete foundations set in the ground surface to support the turbine towers
- Underground and/or overhead cables between turbines
- Up to 3 substations
- Overhead power line (probably 132 kV distribution lines) feeding into the Eskom electricity distribution network via the nearby existing Poseidon substation.
- Access roads to the site from the main road/s within the area
- Internal access roads to each wind turbine, the substations.

During the construction period, corridors of landscape disturbance will occur as lay-down areas will need to be prepared, heavy lift cranes and abnormal load trucks brought on to the site.

While specifications have yet to be determined, each turbine typically consists of a concrete foundation on to which a steel tower is bolted. Each tower can be between 80 m and 100 m high. On top of each tower is the nacelle containing the generator and gear box, in turn powered by a wind driven rotor, the blades of which can be up to 50m in length. Turbines will be optimally positioned to make the most of ambient wind conditions, but are generally spaced several hundred meters apart. At present, studies are ongoing to determine the optimal locations for the turbines. Since wind turbines utilize such a small portion of the land surface, once the facility is established some agricultural activity can take place on the land.

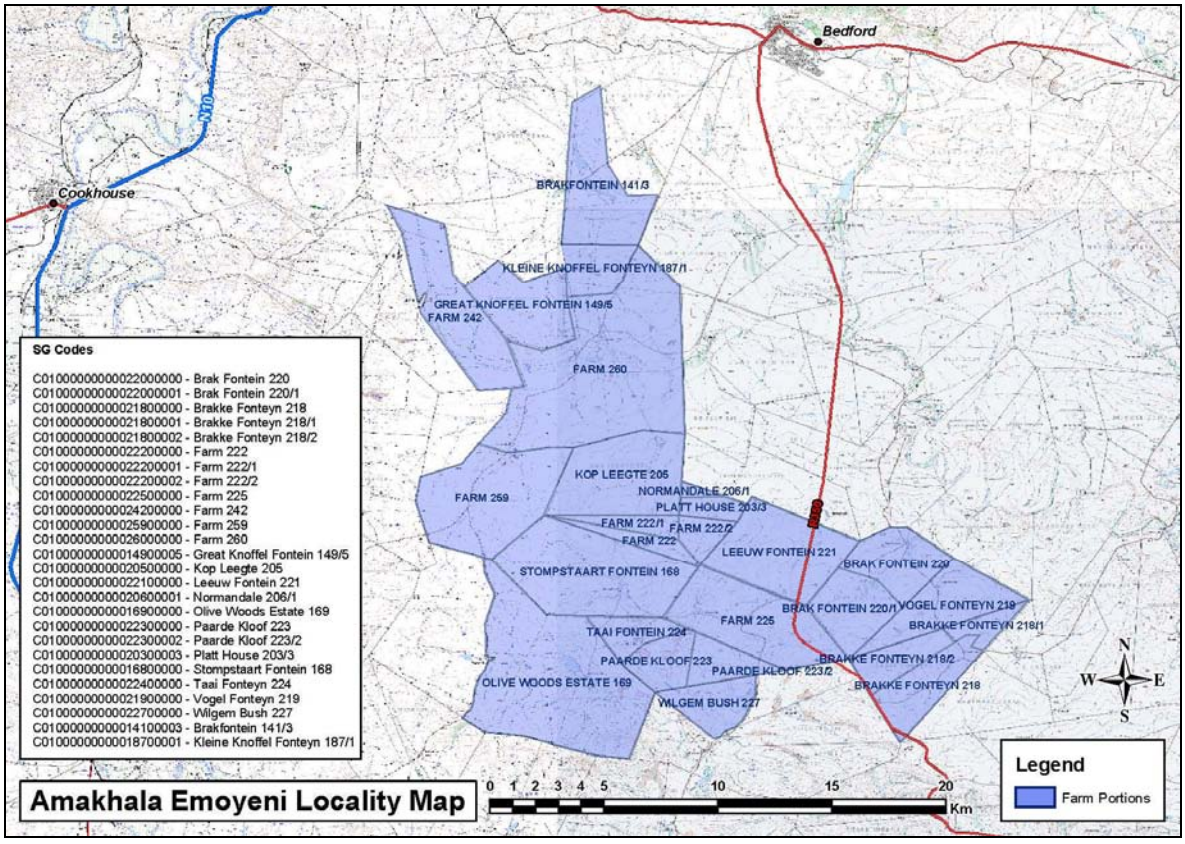

Figure 1. The study area in local geographical context (drawing supplied by Savannah Environmental (Pty) Ltd)

1.2 The receiving environment

The study area is situated on a raised plateau sandwiched in the Fish River Valley at the point where the river exits the Karoo escarpment. The town of Cookhouse lies on the N10 to the west. The R63 runs to the north through the small town of Bedford. The R350 running to the east links Bedford with Grahamstown and crosses the eastern section of the proposed WEF site. Hence the site is well situated in terms of the transport of material and components.

The main activity taking place in the study area is stock and game farming. Although it was first established as a military camp, Cookhouse owes its continued existence to the main eastern railway line from Port Elizabeth to Kimberly built by the Cape Government Railways in the 1880's. Unlike Somerset East and Bedford, it is not known as a major tourist venue.

Situated on the edge of the Karoo and the coastal plain, the landscape of the study area is characterized by grasslands and Karoo species. The edge of the escarpment overlooking Cookhouse is mountainous, with a number of deeply incised valleys, while the coastal plain is characterized by rolling grassland interrupted by river valleys. The plateau, which forms the study area, does not extend all the way to the edge of the escarpment and land slopes gently towards the north east, east and south.

1.2.1 Pre-colonial heritage

The pre-colonial heritage of the study area has not been described in the academic literature, although there are anecdotal references to finds of stone artifacts in the area. The Albany Museum, which is the official repository of all site record forms and archaeological information in the Eastern Cape has no records from the area at all (J. Binneman pers comm). The lack of records is however not an indication that there is no pre-colonial heritage in the area, but rather that no studies have taken place there. Areas of the nearby Great Karoo (eg. the catchment of the Zeekoe Valley) has been the subject of an intense study by Prof Garth Sampson of Southern Methodist University (Sampson 1992) and several post-graduate students resulting in a comprehensive body of information which we acknowledge in terms of predicting the pre-colonial sensitivity of the Amakhala area. We can now also draw on the observations of the nearby site of the Cookhouse WEF (Webley and Halkett 2009).

It is anticipated that the study area will contain artefactual material dating to the Early Stone Age and Middle Stone Age (*3 million – 20 000 years ago)*. This material is often observed in eroded areas, or on terraces in river valleys. Under very rare circumstances it is found in undisturbed contexts in association with fossil bone. Such sites enjoy massively high status in research terms as they have the potential to produce significant information about early human behaviour.

Later Stone Age sites attributable to the ancestors of the San people and later Khoekhoen pastoralists (after 2000 years ago) are likely to be found within the study area. The San frequented both the Karoo and the coastal plains. Their legacy includes numerous open sites while traces of their presence can be found in most large rock shelters, often in the form of rock paintings. They frequently settled close to permanent water sources (springs or waterholes) and

made use of natural shelters such as rock outcrops or large boulders. In the Great Karoo, natural elevated features such as dolerite dykes and ridges played a significant role in San settlement patterns. The introduction of pastoralism (sheep and goats, and later cattle) approximately 2000 years co-inciding with the arrival of the Khoekhoen was a significant event that introducing a new form of economy where previously hunting and gathering had been the only means of human subsistence for thousands of years. Before colonisation of the Eastern Cape by the British in the early 19th century, Khoekhoen herders formed powerful transhumant communities herding cattle and sheep throughout the coastal plain and from time to time making forays into the Great Karoo (Hart 1987). They enjoyed dominance as far as the Great Fish River where they shared a loose border with Xhosa farming communities to the East. The San retreated to the Great Karoo where despite being subjected to periodic incursions by the Khoekhoen, they continued their traditional hunting and gathering existence. The arrival of *Trekboer* farmers in the mid-18th century started what has come to be known as the "Bushman War" which continued for almost 60 years. Eventually the *kommandos* which were dispatched from regional centers such as Graaf Reinet prevailed, and the "wild bushman" of the Karoo were rendered extinct by the early 19th century (Hart 1987).

Prior to the arrival of Europeans, the Fish River formed a loose boundary between large Khoekhoen groups, and the most easterly of the settled agriculture communities of the Xhosa who occupied the summer rainfall areas. While the history of the interaction between the Khoekhoen and the Xhosa was never committed to paper, linguistic borrowings and Khoekhoen place names (extending into the Ciskei) attest to a long history of interaction.

European farmers (Trekboere) formed the vanguard of formal colonisation and accelerated the granting of land by the British Colonial Government. It is interesting to note that most of the farms that make up the study area were granted to Dutch speaking farmers between 1820 and 1825. The implication of this is that the farmers (probably trekboers) had by that time already occupied the land, and only later formalised by the granting of title deeds by the Colonial Government. Land which was viewed as a shared resource by the Khoekhoen was no longer available to them. The Fish River became a frontier zone between the colony of the Cape Province and the Xhosa nation, who for much of the 19th century did their utmost to drive out the settlers. Coetzee (undated) has documented more than a hundred small forts, outposts and fortified farms which are testimony to the years of attrition that took place on the Fish River frontier.

1.2.2 The colonial period

Skead (2007) refers to this zone as the sub-coastal interior, and it includes the districts of Somerset East, Bedford, Adelaide and Fort Beaufort. The area was traversed by a number of early European travellers who described what they saw. The historic road seems to have followed quite closely the route of the railway line or the N10 but meandered more towards Somerset East rather than Cookhouse after breaking into the Karoo at Kommadaggaskop. The landscape is described by Skead as having been open Karoo veld in parts, but mostly vast plains of sweet grassland. Early travelers noted the presence of large game animals on the coastal plains, as well as hippos in the Fish River. Very little comment was made on the human inhabitants of the area. Skead claims that the Xhosa had not yet settled in numbers in these game rich areas but had rather infiltrated as wandering hunters in an advance guard of possible future occupation. Moving westwards under pressure from the already settled areas behind them, they encountered

eastward-moving European settlers. The confrontation between the two groups is well documented (Mostert 1992).

Cookhouse, seems to have played a minor role in those early years, seldom receiving mention. The area derived its name from an early British military camp kitchen, of which little physical evidence of it exists today. The closest and oldest military installation close to the study area was a small fortified outpost known as the Kaka Post built at the foot of the Kaka Berg just to the west of the town of Bedford. Built in 1824 on Landrost Stockenstrom's farm "Maasstrom", it appears that very little of the outpost has survived (Coetzee undated).

Indications are that the study area does not contain physical remains relating to the frontier wars, although this point cannot be asserted until field assessment and further research is conducted. Indications are that the study area will contain built environment features, primarily related to farming that are greater than 60 years of age, akin to those in the Cookhouse WEF project. This will need to be confirmed through site inspection.

2. METHODOLOGY FOR STUDY

This study has been commissioned as a scoping assessment that attempts to predict the possible range of impacts and identify issues in terms of accumulated knowledge of the area. The source of information that is used for this process is based on the experience of the author of this report and members of the team who have all worked on other wind energy projects, specifically Dr Lita Webley (previously director of Albany Museum) who has had extensive experience working in the Eastern Cape. The author and Dr Webley have both recently worked on the EIA study of the Cookhouse WEF which lies immediately to the north west of this study area. Although there is no primary information available about the archaeology and built environment of the study area, primary and secondary sources of information for the area are readily available. The fieldwork conducted for the Cookhouse WEF has given us a much clearer idea of the range of heritage resources that are likely to be encountered, although each site always produces, in addition, its own unique set of resources. Although no site inspection has been carried out for the purposes of the scoping study, and as we can predict that heritage resources of various kinds will be encountered, a more detailed study will be undertaken during the EIA phase of the project.

2.1 Restrictions and assumptions

The study area which is substantial in size, has not been subject to a comprehensive survey at this time. This will be conducted during the course of the full EIA. The primary heritage resources that represent the issues that will need to receive detailed attention during the EIA phase are determined to be as follows:

Palaeontology (separate study);
Pre-colonial Stone Age archaeological sites (stone scatters, possible caves and/or rock paintings);
Pre-colonial farming sites (unlikely);
The Colonial period built environment including military sites and those characterising the frontier landscape (farm houses, graveyards, forts, redoubts, trenches, hunting blinds, historic roads, boundary markers, tree lines/avenues);

The cultural landscape (in particular the ability of the landscape to accommodate up to 350 wind turbines in terms of the heritage values and scenic qualities of the area);
A Visual Impact Assessment (separate study)

2.2 Legislative context

The basis for all heritage impact assessments is the National Heritage Resources Act 25 of 1999 (NHRA), which prescribes the manner in which heritage is assessed and managed.

Loosely defined, *heritage is that which is inherited*. The NHRA has defined certain kinds of heritage as being worthy of protection, by either specific or general protection mechanisms. In South Africa the law is directed towards the protection of human made heritage, although places and objects of scientific importance are also covered. The NHRA also protects intangible heritage such as sacred places or those used for traditional activities, oral histories and places where significant events happened. Generally protected heritage which must be considered in any heritage assessment includes:

- Cultural landscapes
- Buildings and structures (greater than 60 years of age)
- Archaeological sites (greater than 100 years of age)
- Palaeontological sites and specimens
- Shipwrecks and aircraft wrecks
- Graves and grave yards.

Section 38 of the NHRA requires that Heritage Impact Assessments (HIA's) are required for certain kinds of development such as rezoning of land greater than 10 000 sq m in extent or exceeding 3 or more sub-divisions, or for any activity that will alter the character or landscape of a site greater than 5000 sq m. "Standalone HIA's" are not required where an EIA is carried out as long as the component studies of the EIA adequately fulfils the provisions of Section 38.

The Eastern Cape Provincial Heritage Authority is responsible for the management and protection of all provincial heritage sites (grade 2 sites), built environment and structures (grade 3a - grade 3c sites), while the SAHRA Archaeology Unit, based in Cape Town, is responsible for the management of all archaeological and palaeontological sites in the Eastern Cape. For this particular project, in terms of section 38.10 of the National Heritage Resources Act, both the Eastern Cape Provincial Heritage Authority and SAHRA are important commenting authorities. As this study forms part of an EIA process, the compliance authority is the Department of Environment Affairs and Development Planning.

3. FINDINGS

3.1 Pre-colonial archaeology

Almost nothing is known about the frequency of sites or the "landscape" of Late Stone Age (San or Khoekhoen) sites in the study area as little research has focused here. The recent fieldwork on the adjacent Cookhouse WEF has however provided us with some firsthand observations. It is well known that historically Khoekhoen stock herders frequented the area and the remains of their sites are usually marked by the presence of indigenous pottery and/or the remains of domestic animals. The discovery of several archaeological sites containing stone artefacts without pottery, attests to the presence of San hunter gatherers and their ancestors in the area. A series of major studies conducted in the Great Karoo have demonstrated a rich pre-colonial heritage there despite the aridity of the environment (Sampson 1989, 1992, Hart 1987). A general heritage survey of the study area will be necessary as part of the EIA process.

3.1.1 Nature of impacts

The main cause of impacts to archaeological (and palaeontological) sites is physical disturbance of the material and its context. The heritage and scientific potential of an archaeological site is highly dependent on its geological and spatial context. This means that even though, for example, a deep excavation may expose archaeological artefacts, the artefacts are relatively meaningless once removed from the area in which they were found unless careful note is made of the circumstances of the find and associated information. Large scale excavations may damage archaeological sites, construction of roads and laydown areas and injudicious use of off-road vehicles can also contribute to high levels of impact. Sites which contain San rock paintings or rock engravings are very sensitive to secondary impacts such as dust and fire, while direct human intervention in the form of graffiti, wetting with various agents, and vandalism can have an even more profound effect. The frequency of this kind of impact increases when more people are introduced to an area (eg. construction teams).

3.1.2 Extent of impacts

In the case of the proposed wind energy facility, it is expected that impacts will be limited to particular nodes (local). There is a chance that the deep excavations for the tower bases could potentially impact buried archaeological material, and similarly excavation of cable trenches and clearing of access roads could also impact archaeological material. Potential impacts caused by a 132 kV power line, three proposed substations and proposed access roads are also likely to be limited and local, but the sites/routes will need to be physically searched and assessed during the EIA phase, and the routes adjusted where necessary. Local rock painting sites (if they exist) could suffer secondary impacts and if any exist clear guidelines to protect them will be established for the construction and operational phases of the project.

3.2 Colonial period heritage

Some colonial period heritage will be found within the boundaries of the study area, as it is known that this area has been subject to European settlement since possibly before the 19th century. The fact that most of the farms that make up the study area were formalized under British colonial rule in the early 19th century indicates a high likelihood of structures relating to this time or later. It is possible that associated structures such as ruins or graves may exist on the landscape. In addition it is necessary to be mindful of the possible presence of artifacts of the frontier wars- lookout posts, casual redoubts and debris from such camps. Indications are however that there are no major military installations in the study area. A more detailed study of the land grants may establish the presence of early colonial features and can be done in tandem with the EIA study and will help us to gauge the significance of the local historical landscape.

3.2.1 Nature of impacts

Historic features are as sensitive to physical damage as older pre-colonial ones. They are however generally easier to identify. Old houses, ruins, dumps are features commonly associated with farms, but more significantly are the graves and graveyards that are also associated. These are often easily identified where they are formally marked, but sometimes informal graves are more difficult to identify. Colonial sites are often context sensitive, and changes to the surrounding

landscape can affect their significance. The significance of any historic structures will need to be assessed through site inspection.

3.2.2 Extent of Impacts

Direct impacts are not expected, as the turbines and other infrastructure should avoid identified significant sites. Tree lined avenues are often associated with farms. We know these can be an issue if they are situated near to turbines. As the avenues are an integral part of the cultural landscape, every effort should be made to avoid having to remove trees. Depending on the way that historic structures are utilized during the construction and operational phases, both negative and positive impacts may result.

3.3 Cultural landscape and sense of place

The cultural landscape associated with the study area is evidently quite complex and will require "unpacking" during the EIA stages of the study. The site lies on a national road (R350) and is fairly close to the town of Bedford – the heritage qualities of the town will need to be appraised with a view to determining if the proposed development will impact the sense of history of the area. Wind Energy Facilities are a new concept in South Africa, but are relatively common in Europe and North America. Perusal of international literature indicates that visual impact and changes to *sense of place* or *setting* are among the most contentious issues that the wind energy industry has had to face in terms of finding social acceptability within a given community (Roberta 2007, Clarke 2009). Various countries in the developed world have developed best practice guidelines to deal with the kinds of complex impacts that wind energy facilities can have on the heritage and landscape qualities of an area. In Europe, there is a trend towards discouragement of large "wind parks" due to the visual impact they have on landscape. Instead, small clusters of turbines – up to 8 have been found to fit acceptably within Europe's typically green manicured fields, and from time to time the services of landscape architects have been required to place the turbines in such a way as to achieve an aesthetically pleasing result. South African landscapes are very different – typically arid and vast, and as such will have different capacities in terms of their "aesthetic absorption" ability. As yet, South Africa does not have well developed guidelines or the benefit of experience within our own landscapes, and is an issue that should be addressed by the South African Heritage Resources Agency. From this perspective the assessment of wind energy proposals within the South African context is ground-breaking.

3.3.1 Nature of impacts

Cultural landscapes are highly sensitive to accumulative impacts and large scale development activities that change the character and public memory of a place. In terms of the National Heritage Resources Act, a cultural landscape may also include a rare/unique natural landscapes or areas having scientific significance. The construction of a large WEF facility is likely to result in profound changes to the overall sense of place of a locality, if not a region. The proposed activity is essentially a visual intrusion that is very difficult to measure due to the fact that there is little reference material on which the sense of change can be gauged in a local context. It is expected that some form of impact will result, and will need to be informed by a visual impact assessment. On a smaller scale, comparatively minor factors such as ill-conceived and distasteful signage, "overpowering" entrance gates to sites or security fences adjacent to natural/country areas and

scenic drives will constitute a bothersome aesthetic irritation than can cause serious accumulative damage to the qualities of a "place". These however are easily mitigated through sensitive use of materials and design.

3.3.2 Extent of impacts

Massed wind turbines, are without doubt conspicuous structures which will affect the atmosphere of the "place". While this impact may be considered local in terms of physical extent, there may be wider implications in terms of the change in "identity" of the area and the cumulative effect this could have on future tourism potential (not necessarily negative). This means that the potential for alteration to the cultural landscape and sense of place is considered an issue that will need further attention in the EIA phase.

4. MITIGATION AND CONSERVATION

4.1 Archaeological heritage

It is expected that much of the impacts to surface archaeological heritage (pre-colonial and colonial) will be mitigated through avoidance of sensitive areas. Micro-adjustment of turbine footings, moderate deviations in service trenches, road alignments or power lines are expected to be all that will be required in terms of mitigation of open pre-colonial/colonial sites. If for any reason mitigation by avoidance is not feasible, the usual process is to record and sample the archaeological site before its destruction is permitted.

4.2 Unidentified archaeological material, fossils and fossil bone

There is always a chance that archaeological material may be exposed during bulk excavation for services and foundations where there was no evidence of such on the surface (unmarked graves are a case in point). All archaeological material over 100 years of age is protected by the NHRA and may only be altered or removed from its place of origin under a permit issued by SAHRA. In the event of anything unusual being encountered, the SAHRA archaeology unit must be consulted immediately so that mitigation action can be determined and be implemented if necessary (find-stop scenario). Mitigation is at the cost of the developer, while time delays and diversion of machinery/plant may be necessary until mitigation in the form of conservation or archaeological/palaeontological sampling is completed.

4.3 Built Environment

It is not expected that the built environment will be directly impacted by the proposal unless it becomes necessary to demolish structures that are greater than 60 years of age. It is possible that use of farm houses may change as a result of the activity (domestic to commercial), in which case application of the requirements of the NHRA is appropriate to any alterations, the responsibility for which falls on the landowner. It is anticipated that in most, if not all instances, it will be possible to adjust turbine locations to avoid impacts.

4.4 Cultural landscape and sense of place

This is perhaps the most difficult heritage impact to address. There is no doubt that the wind turbines will affect the prevailing landscape qualities of the site and the degree of that impact will

be very closely related to the visual impacts of the proposed activity (the visual impact will be separately addressed). Locating of infrastructure close to historical farms and settlements may result in impacts to the quality of the place and detract from sense of history and/or wilderness. From this perspective the layout of the facility will need to respond to the findings of the heritage impact component of the EIA in conjunction with input from the visual specialist.

5. CONCLUSION

Indications are that in terms of archaeological heritage and built environment the proposed activity is viable, and impacts on physical heritage are expected to be limited and controllable.

In terms of the natural cultural landscape qualities of the site, impacts are expected. The degree and nature of the impact is going to depend on how the wind turbines are arranged on the landscape, and the ability of the topography to absorb their presence. This is an issue which will require close attention during the course of the EIA.

In terms of the information available at this time, no fatal flaws are anticipated.

5.1 Further work

The EIA phase study needs to fulfill the requirements of heritage impact assessment as defined in section 38 of the NHRA. This means that the assessment has to cover the full range of potential cultural heritage as defined by the term “culture” contained in the National Heritage Resources Act 25 of 1999.

The proposed study area needs to be subject to a detailed survey by a heritage specialist (archaeologist) who will need to examine the site in relation to the planned activities, recording details and locations of any heritage material found. The significance of each find will need to be assessed and potential impacts identified. Mitigation measures will need to be identified.

Proposed routes of linear infrastructure (access roads, underground services, power lines) will need to be ground-proofed to establish the impacts of the proposed activity and determine where mitigation (if any) will be required.

The colonial period historical significance of the site will need to be established through archival and deeds surveys and the assessment and grading of the built environment. Impacts resulting from the WEF on the historical significance and sense of “place” must be considered.

In terms of cultural landscape, more research is required to determine what would be best practice in terms of the carrying capacity of South African landscapes. A separate specialist visual impact assessment will no doubt address this issue.

Follow up heritage work such as monitoring of excavations or archaeological sampling may be required as part of an environmental management plan depending on the findings of the EIA.

7. REFERENCES

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