

Heritage Impact Assessment of the proposed Amakhala-Emoyeni Wind Energy Facility, Cookhouse District, Eastern Cape.

Prepared for

Savannah Environmental (Pty) Ltd

October 2010



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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 heritage impact assessment of the proposed Amakhala Emoyeni Wind Energy facility on parts of the farms known 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. 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:

Pre-colonial archaeology from the Holocene and Pleistocene periods exists in the area and could be impacted by the proposed activity. The majority of these sites are of low significance but a smaller number would require mitigation if they were to be disturbed by proposed activities.

Historical features, buildings and graveyards associated with farms are present within the study area. Preliminary historical research has indicated that farms in the area were granted in the early 19th century to Dutch speaking farmers and buildings of this period are present on the site. A number of structures are clearly older than 60 years and are therefore protected by the National Heritage Resources Act (Act 25 of 1999). No physical impacts to the occupied farm settlements are anticipated, but abandoned settlements and their associated features could be damaged in a number of ways. These impacts can be mitigated through avoidance and management. Although owners have consented to the proposed development, they will experience changes to the cultural and visual landscape as a result of the activities at both construction and operational phases.

Possible impacts to cultural landscape due to visual impacts of the proposed project are a concern and are addressed in a separate specialist Visual Impact Assessment. There is concern about the potential for cumulative impacts due to other WEF applications adjacent to the proposed Amakhala Emoyeni site

The area is a known to contain fossils. An independent palaeontological assessment is being undertaken to address this issue.

In heritage terms, no fatal flaws have been identified for the proposed Amakhala WEF as a whole, but a number of graveyards are present and they must be identified and avoided during the construction and operational phases of the project. Overall, the impact of the proposal is considered to be moderate – low negative with respect to physical heritage, but medium – high

with respect to cultural landscape.

Final positions of turbines, roads, powerlines (above and below ground) and substations must be assessed close to time of construction and the necessary mitigation carried out during that stage.

Declaration:

Mr David Halkett, Dr Lita Webley, Mr Jayson Orton and Mr Hugo Pinto 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.

Mr Jayson Orton (MA) is an archaeologist with 11 years of working experience in heritage. He is 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
EMP	Environmental Management Plan

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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 heritage impact assessment of the proposed Amakhala Emoyeni Wind Energy facility on parts of the farms known 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 impact component of the study. While we have been provided with positions for the turbines for the purposes of fieldwork, the layout of other components of the proposed facility have 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 cc has recently completed scoping and EIA studies of 2 adjacent sites (Cookhouse Wind Energy Facility close to Bedford, Cookhouse Wind Energy Facility east of Fish River) where it is also proposed to construct additional wind energy facilities (Webley & Hart 2008, Webley et al 2009, Hart & Webley 2010). Having spent time on the ground for those projects means that ACO Associates has first hand knowledge of the broader project area in preparing the impact assessment 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.

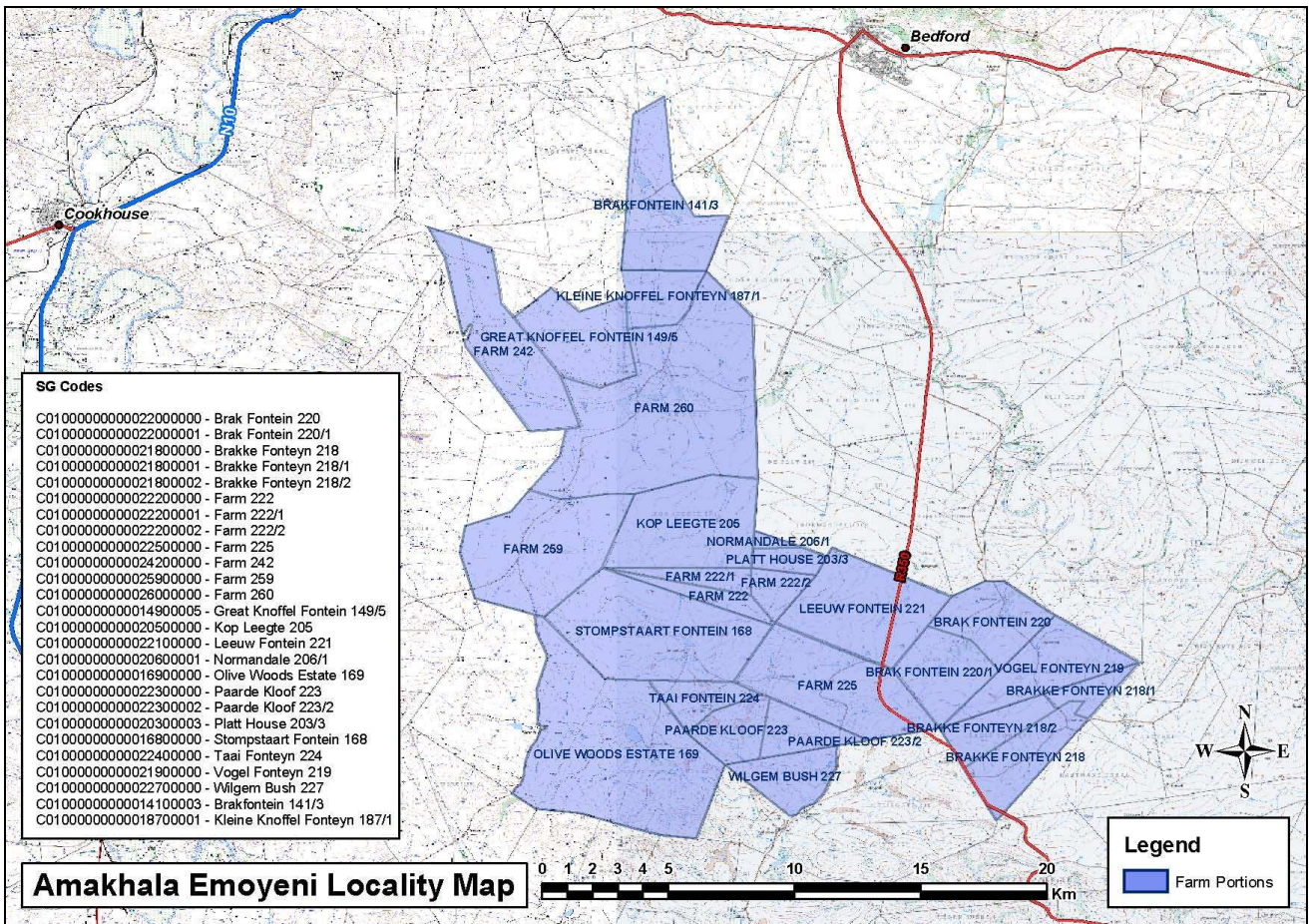


Figure 1. The study area in local geographical context (drawing supplied by Savannah Environmental (Pty) Ltd)

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 and will have between 500 - 750Mw installed capacity (Figure 2). The proponents, Windlab Developments South Africa (Pty) Ltd, have identified the site as being suitable, situated as it is on an elevated plateau in an area where the local topography has created a wind funneling effect. The site consists of privately owned farms.

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 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;
- O/h cables linking the turbines to the substations;

- Internal access roads to each wind turbine, and 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 farming can continue with minimal disruption.

1.2 Legislative context

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

Loosely defined, *heritage is that which is inherited*. The National Heritage Resources Act 25 of 1999 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 covered. The National Heritage Resources Act also protects intangible heritage such as 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 graveyards.

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 EIA contains an adequate HIA component that fulfils Section 38 provisions. The Eastern Cape Provincial Heritage Authority is responsible for the management and protection of all provincial heritage sites (grade 2), built environment and structures (grade 3a - grade 3c) in the Eastern Cape. SAHRA's Archaeology Unit based in Cape Town is responsible for the management of all archaeological and palaeontological sites in the Eastern Cape. As this study forms part of an EIA, both the Eastern Cape Heritage Authority and SAHRA are commenting bodies. The Department of Environment Affairs and Development Planning is the compliance authority (in terms of section 38.10 of the National Heritage Resources Act).

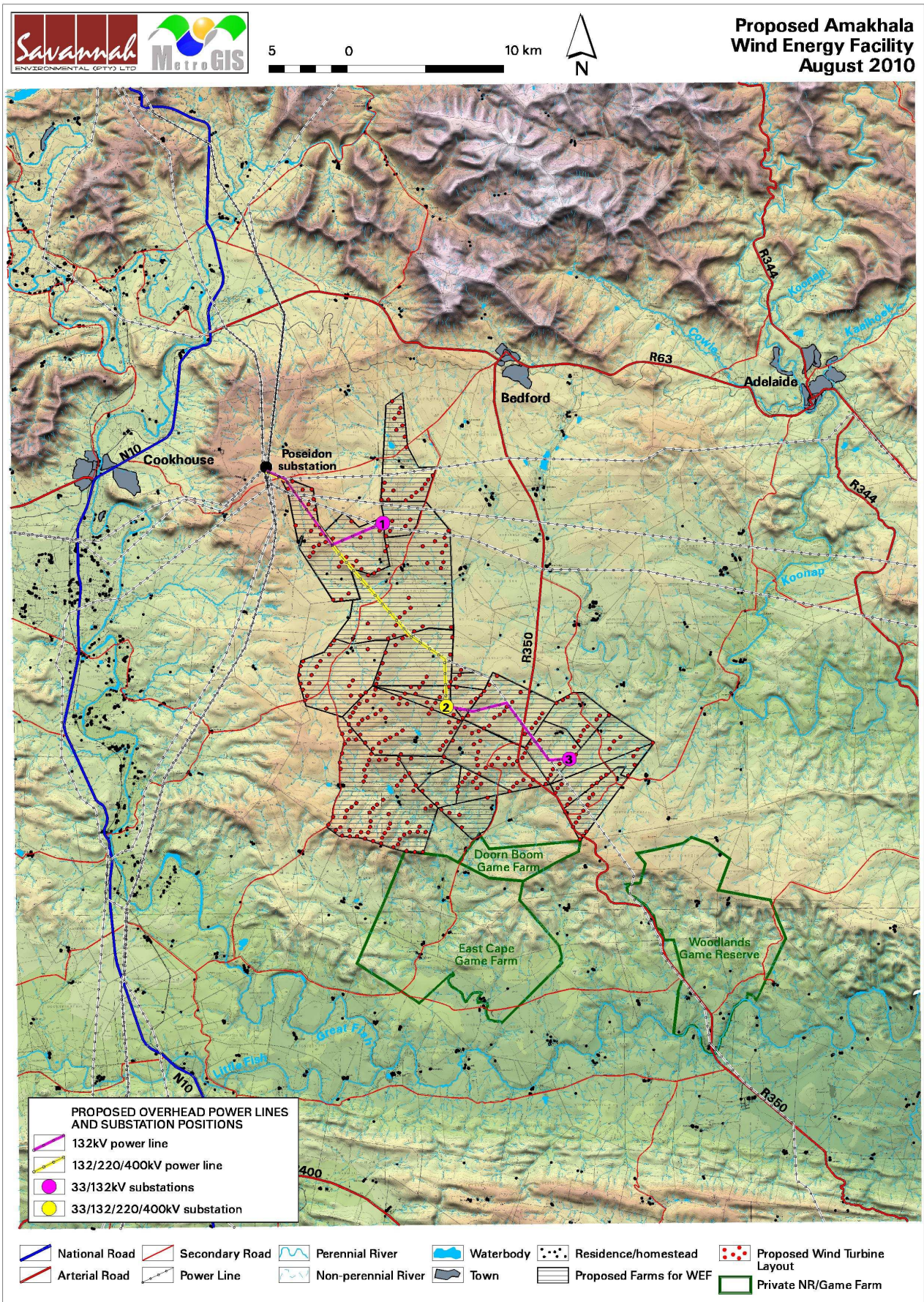


Figure 2: Turbine, powerline and substation positions (drawing supplied by Savannah Environmental (Pty) Ltd)

1.3 The receiving environment

The study area is situated on a raised plateau sandwiched in the Fish River Valley at the point where the Fish River exits the Karoo escarpment. The town of Cookhouse lies on the N10 to the west. The R63 runs to the north of the site connecting the small town of Bedford and Adelaide further to the east to the N10. The R350 running to the east of and through the southern-most farms of the WEF, links Bedford with Grahamstown. Hence the site is well situated in terms of the transport of material and components. A railway line runs through Bedford that ultimately connects Port Elizabeth and East London to an number of small inland towns. It is not clear if this line is still used or not.

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. Major rivers occur many kilometers to the west and south (Great Fish River) while the Koonap flows to the east. The plateau, which encompasses 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. Non-perennial streams such as the Riet River and Goba River flow through the site. Gobas' Drift was a well used crossing point on the river in historical times. Both the Goa and the Riet are shown on the early survey diagrams.

1.3.1 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 artefacts in the vicinity. 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 here, but rather that no studies have taken place. 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 Emoyeni area. The study team can now also draw on the field observations made during the impact assessments of both the adjacent Cookhouse (Webley and Halkett 2009), and Terra Power WEF's (Hart and Webley 2010).

It was anticipated that the study area would 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 such material is found in undisturbed contexts in association with fossil bone. These latter sites enjoy high status

in research terms as they have the potential to produce significant information about early human behaviour.

We also anticipated finding Later Stone Age sites attributable to the ancestors of the San people and later Khoekhoen pastoralists (after 2000 years ago) within the study area. The San frequented both the Karoo and the coastal plains. Their legacy includes numerous open sites with artefact scatters 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 - much like later farmers) 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 coincided 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* that were dispatched from regional centers such as Graaf Reinet prevailed, and the "wild bushman" of the Karoo were subjugated 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 westernmost 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 the earlier farms that make up the study area were surveyed around 1825 and title granted after 1830. The implication of this is that the farmers (probably trekboers) had by that time already occupied the land, 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 (Mostert 1992). 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.

1.3.2 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 travelers' 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 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 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 more detailed research is conducted. We anticipated that the colonial period would be the most visible on the landscape marked by built environment features, primarily related to farming.

2. METHODOLOGY FOR STUDY

A field survey of the study area was conducted by Mr J. Orton and Mr H. Pinto of ACO Associates cc from the 2-6 August 2010. Telephonic contact was made with each land owner in advance of the fieldwork to gain access to the properties, and then again once in the field to arrange face to face meetings where they were questioned about heritage resources on their farms. The area was then examined where possible by vehicle and on foot, with particular emphasis being placed on the proposed location of the turbines. Prior to the fieldwork, the GPS locations for the turbines had been loaded onto our hand-held Garmin GPS devices, allowing these locations to be targeted. The track-ways recorded during the fieldwork for the survey are shown in Figure 3. Features of heritage interest were recorded via a large number of digital photographs and positions established with GPS. A selection of photographs that characterise the heritage environment is presented in Appendix 2.

2.1 Restrictions and assumptions

Due to the size of the study area it is not possible to achieve a highly detailed survey. The relatively open terrain, plus the experience gained from the study of adjacent wind energy sites, meant however that we could sub-sample areas and make predictions with respect to heritage sites, and their possible distribution, density and significance in other areas, while acknowledging that new areas always produce, in addition, their own unique set of resources. Despite sub-sampling, some farms (e.g. Remainder Brak Fontein 220, Brak Fontein 220/1 and Brakke Fonteyn

218/2) could not be physically inspected, however it is possible to anticipate the broad pattering of heritage material.

No substation footprints, powerline or road alignments were provided at time of field work, but have now been made available. We feel that we are in a position to comment broadly on these placements. Road alignments have not yet been finalised and will only be once layouts of other infrastructure is finalised.

The receiving environment provides good ground visibility, aided by the fact that drought conditions prevail at the current time.

3. FINDINGS

The observations made during the survey are presented as a table in Appendix 1. The table groups observations by farm. Other information includes the site numbers that were allocated in the field, site GPS co-ordinates, site type, significance, and a brief description of the resources. The distribution of sites is visually presented on a compilation of 1:50 000 scale maps of the area (Figure 3). The scale of the geographical area makes it difficult to show the heritage sites in detail on a single map (a shape file of the sites has been provided to the client). While the quantity of heritage observations is large, many are of low significance, particularly where isolated pre-colonial artefacts are recorded. The information has been retained to show the general distribution of material on the landscape.

3.1 Pre-colonial archaeology

To summarise very briefly the more detailed information in Appendix 1, diffuse and isolated scatters of **stone artefacts** were observed on a number of farms. In general, many appear to be of **Middle and/or Early Stone Age (ESA)** date and comprise very heavily patinated (weathered) cores, chunks and flakes (Plates 6-11). A few classic bifacially flaked handaxes were observed. Some flakes appear to have retouch along one or more margins. They are generally made on indurated shales (hornfels) or quartzitic sandstones. These stone tools are frequently found along the margins of small depressions in the bedrock where rain water has collected. However, some stone tools were found along rocky ridges and frequently in areas where the ground has been scarred by erosion. While millennia of geological processes has undoubtedly resulted in movement of artefacts, there would appear to be some level of spatial integrity in overall distribution on the landscape. Since there appear to be no associated organic remains, the scientific information value is reduced and sites of this type are considered to be of low significance (with some exceptions e.g. the sites OWE/23 - 27 where material is concentrated). In general the material is sparsely distributed on the rolling hills.

A number of **Later Stone Age (LSA)** sites were also recorded. These variously contain stone artefacts consisting of cores and flakes and other debitage. Recognisable forms include retouched artefacts such as scrapers. Dark indurated materials such as hornfels seem to be favoured. Grindstones, both upper and lower, are often found in association (plates 12-24). Such sites tend to be closer to "rivers" particularly on sandy areas. **Pottery (indigenous type)** was observed in places. Often red in colour, thickness was generally less than 8mm, although

some thicker fragments were noted. Two pot lugs were in the possession of Mr Derek Bowker and were collected from Site PK2/7. The type is consistent with Khoi wares that are widely distributed across southern Africa. These usually postdate 2000 BP. Two "bored stone" fragments were also in his collection and are also characteristic of the Later Stone Age. Although we have an obvious pre-colonial herder signature, no clearly identifiable pre-colonial kraals were observed.

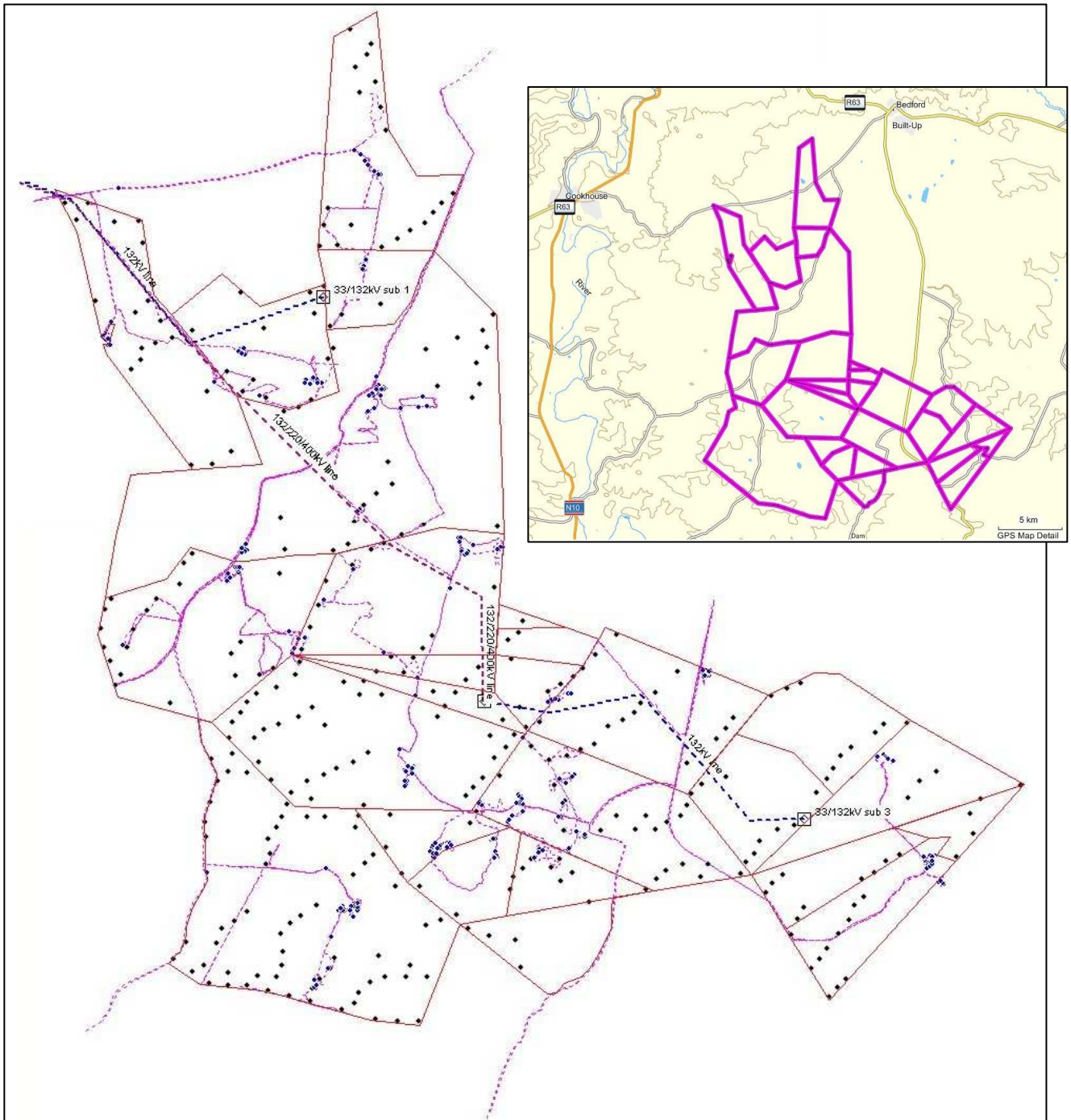


Figure 3. The main map shows farm boundaries (polygons), turbines (black dots), track paths (magenta), heritage sites (blue dots), proposed powerline route and substation positions. The small insert shows the context of the site in relation to main towns and indicating the fairly flat relief.

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 geographic 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 therefore may damage archaeological sites, similarly, construction of roads and laydown areas and injudicious use of off-road vehicles can also contribute to high levels of impact. The transmission lines themselves have less of an impact as their footprint is smaller, although installation activities can be problematic. The frequency of impact increases when more people are introduced to an area (e.g. 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 (~15x15x3m) could potentially impact buried archaeological material, and similarly excavation of cable trenches and particularly clearing of access roads could also impact archaeological material. Potential impacts caused by a 132 kV power lines and three proposed substations likely to be limited and local. Road alignments will have local effects but these can be destructive as they are very extensive in nature. The near-final sites/routes will need to be checked at desktop level, and if need be, physically searched and assessed as part of the EMP, and the routes/sites adjusted where necessary. Clear guidelines to protect them will be established for the construction and operational phases of the project.

Table 1

Nature: The potential impact of the construction of the turbines, substations, access roads and transmission lines on surface and sub-surface pre-colonial archaeology		
	Without Mitigation	With Mitigation
Extent	Local (1)	Local (1)
Duration	Permanent (5)	Permanent (5)
Magnitude	Minor (4)	Minor (2)
Probability	Probable (3)	Probable (3)
Significance	Medium < 30	Low < 24
Status (positive or negative)	Negative	Neutral
Reversibility	No	No
Irreplaceable loss of resources?	Yes	Yes
Can impacts be mitigated?	Yes	n/a
Mitigation: Inspect road alignments. Some mitigation is proposed in the form of avoidance. If avoidance is not possible then some sampling and/or excavation may be required.		
Cumulative impacts: The cumulative impact is not likely to differ from the above.		
Residual impacts: Yes. Damage will have occurred which is irreversible and lasting into the future		

3.2 Colonial period heritage

The scoping exercise, drawing on the observations made at other WEF sites in the vicinity, identified the strong likelihood of colonial period heritage within the boundaries of the study area and there are historical accounts of European settlement in this area since before the 19th century. An examination of the available survey diagrams for the farms proposed for this project confirms that they were surveyed around the 1820's (earliest 1825) and that quitrent was granted in the 1830's (many in 1836). In addition to the existing **historic farmhouses**, the architectural styles of which are consistent with the 19th century and in some cases still occupied, there are also a number of **abandoned/semi-ruinous/ruinous structures** identified during the survey. Some are clearly old farmsteads, while others are the remains of **laborer's cottages, farm buildings** etc (Plates 25, 26, 31-41). One of the buildings on the farm Olive Woods Estate (site 439) is purported to be the house of Louis Triegaardt (one of the leaders of the "Great Trek"). While we have not researched this fact in great detail, we have ascertained that Trichardt¹ farmed in various parts of the Uitenhage and Graaff-Reinet districts. After his marriage in 1810 he developed his famous farm Boschberg, the site of the present town of Somerset East, where Lord Charles Somerset in 1814 laid out an experimental farm for the Eastern Province. In 1826, Louis and his son Carel (Carolus) acquired adjacent farms, Elizabeth and Klipplaat², on the Riet River, 30 km south of present-day Bedford³.

Period **artefacts** are frequently found scattered about the old settlements. In some instances these are concentrated and probably mark the positions of **refuse dumps/middens**. Ash and charcoal with such finds will indicate some degree of intactness and the likelihood of finding more material below the surface. Artefactual material includes **ceramics** (mostly refined earthenwares) dating to the early and late 19th century, but **glass** and **metal** is also present (Plates 27 - 30). The decoration on the ceramics can be an indication of the date of the material. Site F259/2 is a well preserved, largely unaltered post-Victorian farmhouse (Plate 36 - 37). Now abandoned, it is beginning to suffer the effects of neglect. The house contains many **original fittings**, right down to kitchen appliances (from a more recent time) but also light fittings etc (Plates 38 - 39) These items are likely to be at risk given that there will be an increase of construction crews on site, and during the operational phase.

There are also a number of **stone features** consisting of loose aggregations of boulders which could represent the remains of early settlements or possibly graves. In some cases piles include brick and cement suggesting the remains of more recent cottages.

Other features include: farm buildings, numerous **stone kraals** and **kraal complexes** some with associated dipping facilities (42 - 46), **stone boundary markers, stone boundary walls**, at least one circular threshing floor (Plates 51 - 52). Some of the **dams** are indicated on the original survey diagrams and therefore indicate a long history of use. Occasional **water furrows** are noted. It is a clear indication that the land was being farmed before the official surveys of the 1820's. A number of **roads** are also shown on the survey diagrams. Some of these have become

¹ There are numerous versions of the spelling

² The farm Elizabeth was later incorporated into Olive Woods Estate and Klipplaat into Wilgem Bush

³ SESA (Standard Encyclopedia of Southern Africa) at <http://ancestry24.com/louis-trichardt/>

formalised and are still in use today.

A number of **formal cemeteries** (fenced or walled) as well several more **informal groupings of graves** were identified during the survey (Plates 53 - 63). Only a few of the graves have headstones with names. In the majority of cases, the individuals are unnamed and almost certainly contain the remains of farm workers. Many of the graves are over-grown while some are being damaged by the activities of burrowing animals, thought to be aardvark. Others are well maintained and in some cases continued to be used. Graves are rated as having very high significance in terms of heritage value and are afforded special protection by the NHRA.

Indications are that there are **no military installations** in the study area. The nearest known was the Kaka Post, at, or close to the town of Bedford

3.2.1 Nature of impacts

Historic features are as sensitive to physical damage as older pre-colonial ones. Lack of maintenance is an added risk that can lead to disintegration of the building fabric (and the trend for farm owners to move to towns, often as a result of crime, is having an effect on the integrity of the cultural landscape). Colonial features are generally easier to identify than pre-colonial sites and avoidance is therefore easier, but can also make them a target for vandalism and theft of fittings and building materials. Old houses, ruins, dumps are commonly associated with farms and settlements, as are the graves and graveyards of the earlier inhabitants. Graves and graveyards are often easily identified where they are formally marked with stone mounds or some form of headstone or marker, but informal graves are more difficult to identify once markers disappear. Cemeteries and graves may be subjected to physical damage by the construction of new access roads, and possibly by the widening of existing ones. In addition, the construction of turbines in close proximity to graveyards could impact on their sense of place.

Colonial sites are often context sensitive, and changes to the surrounding landscape can affect their significance. In terms of the agreement between the developer and the farmers, no turbines will be constructed closer than ~1km from occupied farm buildings thereby greatly reducing the potential for direct impacts. Our observations have shown repeatedly that many heritage resources are found immediately around settlement nodes.

3.2.2 Extent of Impacts

Direct impacts on the distinctive historic structures are not expected but inevitably some will occur. However, buffer zones around cemeteries and graveyards will need to be implemented to ensure that they are not damaged during the construction of access roads or other infrastructure. A significant negative impact will result from the disturbance of graves. Long term use of the site will introduce many people to the site and as a result, the possibility for theft of fittings and materials from heritage buildings increases.

Turbines and other infrastructure should avoid identified significant sites. Tree lines or stands of trees are often associated with settlements or farming related features. They are an integral part of the cultural landscape, and every effort should be made to avoid having to remove any.

Depending on the way that historic structures are utilised during the construction and operational phases, both negative and positive impacts could result.

Table 2

Nature: The potential impact of the construction of the turbines, substations, access roads and transmission lines on historic buildings, ruins and other structures, excluding graveyards		
	Without Mitigation	With Mitigation
Extent	Local (1)	Local (1)
Duration	Permanent (5)	Permanent (5)
Magnitude	Moderate (6)	Minor (3)
Probability	Highly probable (4)	Improbable (2)
Significance	Medium < 48	Low < 18
Status (positive or negative)	Negative	Neutral to positive
Reversibility	No	n/a
Irreplaceable loss of resources?	Yes, in a few cases	No
Can impacts be mitigated?	Yes	n/a
Mitigation: Road alignments, substations to be inspected if need be. Built environment features and other cultural landscape indicators to be avoided. Buildings with heritage content are a distinct target for theft of fittings. Vandalism can result as a secondary impact from such activities		
Cumulative impacts: The cumulative impact is not likely to differ from the above.		
Residual impacts: No. Mitigation measures should control impact. Some positive results if certain buildings are adaptively re-used during construction and operation phases		

Table 3

Nature: The potential impact of the construction of the turbines, substations, access roads and transmission lines on cemeteries and graves		
	Without Mitigation	With Mitigation
Extent	Local (1)	Local (1)
Duration	Permanent (5)	Permanent (5)
Magnitude	Very High (8)	Small (1)
Probability	Probable (3)	Probable (3)
Significance	Medium > 42	Low > 19
Status (positive or negative)	Negative	Neutral
Reversibility	No	No
Irreplaceable loss of resources?	Yes	Yes
Can impacts be mitigated?	Yes	n/a
Mitigation: Road alignments, substations to be inspected before construction. Mitigation is proposed as the heritage resources are of high significance. Mitigation should take the form of implementing no-go buffer zones around all cemeteries and graves. If unmarked burials are discovered during construction, a plan of action must be in place to deal with the situation.		
Cumulative impacts: The cumulative impact is not likely to differ from the above.		
Residual impacts: Irreversible damage and negative perceptions will occur if a grave is disturbed		

3.3 Cultural landscape and sense of place

Although the National Heritage Resources Act does not clearly define the term “cultural landscape”, the concept attempts to explain the temporal and spatial relationship/interaction between people and their environment and it may therefore be seen as “a particular configuration of topography, vegetation cover, land use and settlement pattern which establishes some coherence of natural and cultural processes” (Patrick 2009).

The natural landscape although it has qualities that make it typical of the area, is not one which is likely to attract much tourism, except where hunting may be involved. The aesthetic appeal is considered to be on the lower end of the scale.

The cultural landscape associated with the study area is quite evident. Although people have been utilising the area for thousands of years, it was only recently (post-1800AD) that the natural landscape was transformed by farming which has left its distinctive signature. This is marked by the distinctive structures, grand Victorian farmhouses, workers cottages and agricultural buildings, and especially the numerous stone kraals and kraal complexes built with local stone. Adding to this are the associated trees, roads, and historical features such as stone boundary markers and stone boundary walls. Graves and cemeteries have become an integral part of this landscape and recount the past lives that shaped the area, as a part of the social history.

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 policy with regard to the visual impact of wind energy facilities developed from experience within our own landscapes, and is an issue that should be addressed by the South African Heritage Resources Agency as a matter of urgency. From this perspective, the assessment of wind energy proposals, which are suddenly numerous as South Africa seeks to broaden its energy sources, is groundbreaking, and we must attempt to find a good balance between the landscape on the one hand, and the proposed activity on the other.

3.3.1 Nature of impacts

The proposed facility is crossed in part by the R350, and a number of secondary roads link the R350 to the N10 some 30km to the west. The extreme northern parts of the site are relatively

close to the town of Bedford (~7-8km). Greatest exposure to the public is likely to be where the R350 passes through the eastern parts of the facility before descending into the Great Fish River valley.

Cultural landscapes are highly sensitive to accumulative impacts and particularly large scale development activities that change the character and public memory of a place. In essence, one is imposing an industrial component into the prevailing rural agricultural landscape. In terms of the National Heritage Resources Act, a cultural landscape may also include 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 the locality, if not the 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. While the turbines are the obvious negative visual aspects of the facilities, creation of an extensive network of roads for the construction and service of the turbines can result in extensive scarring. Adequate measures will be necessary to control erosion.

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 (although initially the wind energy facilities may create some tourism opportunities). There are times of the year when tourism into the Bedford area increases but generally it is not what one could define as a major tourist center. This means that the potential for alteration to the cultural landscape and sense of place is considered an issue but is probably moderate. Other facilities are planned in the area, which could add to the cumulative effects of the interventions and will most definitely detract from the rural character.

Table 4

Nature: The potential impact of the construction of the turbines, substations, access roads and transmission lines on the cultural landscape		
	Without Mitigation	With Mitigation
Extent	Local (4) (possible regional implications)	Local (4) (possible regional implications)
Duration	Long term (5)	Long term (5)
Magnitude	Moderate (6)	Moderate (6)
Probability	Definite (5)	Definite (5)
Significance	High >60	High >60
Status (positive or negative)	Negative	Negative, possibly neutral

Reversibility	Yes (life span of facility)	Yes
Irreplaceable loss of resources?	Possible	n/a
Can impacts be mitigated?	No	No
Mitigation: The presence of turbines and other infrastructure will have a negative impact regardless of localised mitigation. Removal of turbines will reduce visual impact but landscape will be permanently scarred particularly by road network, which would need to be rehabilitated.		
Cumulative impacts: The cumulative impacts may be significant as further wind farms are planned for adjoining properties.		
Residual impacts: Scarring of the landscape (particularly road network) can never be fully rehabilitated		

4. MITIGATION AND CONSERVATION

There are a number of mitigation measures which will need to be considered during the construction, operation and decommissioning of the facility and these have been briefly alluded to in the tables above. Details pertaining to mitigation and conservation of heritage resources is detailed below:

4.1 Archaeological heritage

The ephemeral **ESA and MSA stone tool scatters** recorded during this survey are of low significance and mitigation will not be necessary in most cases (with the exception of OWE/23-27). **LSA sites** tend to be in valleys and would not generally be impacted by turbines. The provisional plan provided for the location of the turbines and substations therefore indicates that they are likely to be in areas where there is little to no archaeological issues. However, no diagrams have been provided indicating the access roads as these will only be finalised once the positions of infrastructure is fixed after the consideration of the comments of the specialists in the EIA. It is presumed that use will be made of existing roads, where some may have to be widened to accommodate large trucks and cranes, and new roads will need to be constructed to access turbines in isolated portions of the study area. A professional heritage consultant will need to examine the proposed routes before construction commences, but major mitigation is not anticipated as being required for this type of material apart from some realignments and 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, graves, fossils and fossil bone

There is always a chance that archaeological material may be exposed during bulk excavation for services and foundations and service roads where there was no evidence of such on the surface (unmarked graves are a case in point - see 4.4 below). 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. Diversion of machinery/plant may be necessary until mitigation in the form of conservation or archaeological/palaeontological sampling is completed.

4.3 Built Environment

Based on the provisional information supplied for the survey, it is not expected that any stone structures such as the ruins of old buildings, kraals, etc will be directly impacted by the proposal (Figure 3). 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 some 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. Theft of fittings and building material could be an issue at the construction and operational phase. This will largely be mitigated by management procedures, and audits. It is anticipated that in most, if not all instances, it will be possible to adjust turbine locations to avoid impacts. Road alignments must be inspected before construction commences.

4.4 Cemeteries and graves

None of the identified cemeteries and graves will be directly impacted by the placement of the turbines or substations. Some graveyards are located close to farm roads (e.g. F242/3-8). There is a very real possibility that they may be impacted during the construction phase if the farm road is used. A series of GPS points defines polygons around graves and cemeteries. These should be considered no-go areas. While graves tend to be associated with settlements, and usually on silt terraces, they are unlikely to be impacted by turbine positions. Unmarked graves can however occur in unpredictable locations.

4.5 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 as a specialist report). 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.

4.6 Fatal flaws

No fatal flaws have been identified from a heritage perspective for the proposed development on the site.

5. CONCLUSIONS AND RECOMMENDATIONS

It is recommended that the following mitigation measures are implemented:

5.1 Archaeological heritage

- Existing farm tracks must be re-used or upgraded as far as possible in order to change to untransformed landscape;
- In general terms, construction of turbines and new roads in valley bottoms should be kept to a minimum;
- During the detailed planning phase, drawings of proposed road alignments, infrastructure and near-final turbine positions should be submitted to an archaeologist for review and field-proofing. Micro-adjustment of alignments and turbine positions is likely to be sufficient to achieve adequate mitigation;
- A "walkdown" of final cable routes, and power lines and access roads will be required to be conducted by a certified professional archaeologist / heritage consultant prior to construction commencing;
- If farm buildings are to be re-used, the refuse middens should be protected;
- It is illegal at all times to destroy or change an archaeological site without a permit.

5.2 Built environment

- Conserve old buildings, kraals, dams and wall alignments – do not demolish or damage;
- Do not demolish wind pumps. Some of these are protected structures;
- Follow a policy of non intervention – particularly with respect to old farm buildings;
- Theft of fittings from historic buildings (particularly abandoned ones) needs to be monitored and culprits fined and charged under NHRA;
- Seek guidance from a heritage consultant if any buildings are to be restored for use during either construction or operational phases;
- Keep infrastructure at least 500 m away from farm complexes, all of which have heritage elements;
- Apply to the relevant provincial/national heritage authorities to demolish or alter historic structures (buildings, walls, kraals etc over 60 years).

5.3 Cultural landscape

- Turbines must be positioned in such a way that they are at least 500m away from farm complexes, all of which have heritage elements;
- Turbines must be positioned in such a way that shadow flicker does not affect any farm complexes;
- Road alignments must be planned in such a way that the minimum of cut and fill operations are required and erosion measures are in place;
- Guarantees for demolition of turbines after their useful life must be in place as a condition of

approval.

5.4 Final remarks

This report has identified the most significant heritage issues (Appendix 1) which are potentially threatened by the facility. They include:

- Pre-colonial sites (low - medium significance);
- Graveyards (high significance);
- Historic buildings - standing (medium - high significance);
- Historic buildings - ruins (medium - low significance);
- Stone kraals and kraal complexes (medium - high significance);
- Historic boundary stones and stone walls (medium significance);
- Historic trees (medium significance);
- Cultural landscape including visual intrusion of the turbines on the historical and natural landscape (medium - high significance).

In terms of the 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 it has been recommended that a visual impact expert consider the placement of the turbines. It is important that trees are maintained where they form aspects of the broader cultural landscape

6. Environmental Management Plan (EMP)

Action required during the proposed activity

Objective: Preserving the heritage resources on the Amakhala-Emoyeni WEF site	
Project component/s	Widening existing, and construction of, new roads. Construction of sub-stations, turbines, powerlines, construction camps.
Potential impact	Loss of physical heritage resources (through direct impact - i.e. construction. Loss by secondary impact i.e. theft/vandalism) and impact to the cultural landscape.
Activity/risk source	New road construction, modifying existing roads, sub-station construction, powerline construction, turbine construction. Use of existing buildings resulting in changes and removal/theft of original fittings.
Mitigation: Target/Objective	Inspect all proposed road alignments, substation sites, turbine sites through site inspection to determine what adjustments are necessary to mitigate impacts on heritage resources. To be undertaken once layout finalised and plans provided. Propose management measures in the event of disturbance of grave/graves, and to control access to buildings to mitigate

	loss of heritage fixtures and materials.
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Mitigation: Action/Control	Responsibility	Timeframe
Inspect (via walkdown) all road alignments, sub-station and turbine sites propose micro adjustment of above to avoid impacts to heritage. Mark buffer zones around sensitive sites	Heritage practitioner/Prop onent/Contractor	After layouts finalised
Compile plan of action if graves of any nature are disturbed.	Heritage practitioner	Before construction commences.
Compile plan of action to safeguard fittings and materials in heritage buildings on the site.	Heritage practitioner	Before construction commences.
Compile final listing of heritage sites that will potentially be affected by developments.	Heritage practitioner	After walkdown of final routes/sites
Undertake periodic inspection during construction and operational phases to determine compliance	Heritage practitioner	After construction begins (visits to be determined based on scheduling of activities); After operation begins.
A record to be kept of all instances of accidental/deliberate disturbance of heritage material	Contractor/Opera tor/Heritage practitioner	A record to be kept of all instances of accidental disturbance of heritage material

Performance Indicator	If the walkdown is comprehensive, and a policy of avoidance is adopted, then this is less important. The indicator of success would be no disturbance of the comprehensive list of heritage sites that will be finalised after inspection of final infrastructure, and particularly, no incursion into identified buffer zones. A record to be kept of all instances of accidental disturbance of heritage material, as well as post construction review of impacts on landscape context.
Monitoring	All final infrastructure positions assessed and signed off and final list of heritage sites compiled; Periodic inspection during construction phase to check compliance. Rate the compliance/non-compliance in a report to proponent/operator, heritage authority. Report serves as a log of visits; Periodic inspection during operational phase to check compliance. Rate the compliance/non-compliance in a report to proponent/operator, heritage authority Report serves as a log of visits.

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The Surveyor Generals Office, Cape Town.

APPENDIX 1

SUMMARY TABLE OF OBSERVATIONS

Field no	Farm/Site no	Lat/Lon (decimal deg)	Type	Significance	Description
464	BEF/1	S32.9240608 E26.1606379	historic structure	med	One room cottage with internal corner fireplace.
465	BEF/2	S32.9243545 E26.1613739	historic structure	med - high	Stone and mud shed with later plaster and additions.
466	BEF/3	S32.9247837 E26.1613361	historic structure	med	Brick longhouse with additions. Windows and doors in back of main house bricked up as lean-to addition is in ruin. Arched doorway at back. Porch seems Victorian but is probably older. Ash dump out the back. House still occupied.
466B	BEF/4	S32.9252447 E26.1615232	historic artefacts	low	2nd ash dump. Glass and ceramics of various age are widely broadcast in this area.
467	BEF/5	S32.9257848 E26.1609889	graves?	high	?graves. 4 or 5 piles of stone, 2 with bricks.
468	BEF/6	S32.9250331 E26.1617572	historic structure	low	Stone foundation of a rectangular enclosure. A few bricks lying around as well.
469	BEF/7	S32.9245865 E26.1623601	historic artefacts	low	Pile of slag. Age unknown but probably historical.
470	BEF/8	S32.9246508 E26.1624953	historic feature	low	Stone feature/paved embankment, ?dam. Totally overgrown so cannot tell.
471	BEF/9	S32.9236007 E26.162463	historic structure	low	Stone-lined furrow alongside what was probably an agricultural field.
472	BEF/10	S32.9223959 E26.1632119	historic structure	low	Stone enclosure above river.
473	BEF/11	S32.9226212 E26.1627277	graves	high	Small fenced graveyard with 8 graves. Enclosure is diamond-shaped, not square. 6 are neatly stone-packed, 2 have cement surrounds.
474	BEF/12	S32.9224499 E26.1617861	graves	high	Small graveyard ?6/7 graves, some in very poor shape. 4 formal and mostly aligned E-W
B367	BEF/13	S32.9254223 E26.160695	pre-colonial artefacts	low	ESA flake.
B368	BEF/14	S32.9256282 E26.160787	pre-colonial artefacts	low	ESA flake.
B369	BEF/15	S32.9248291 E26.1620546	pre-colonial artefacts	low	Hornfels core and qzite flake.

B370	BEF/16	S32.9225562 E26.1625031	pre-colonial artefacts	low	Hornfels scraper.
B371	BEF/17	S32.9227548 E26.1601119	historic structure	low	Stone kraal poorly preserved
544	BFN/1	S32.7404729 E26.0140322	historic structure	med - high	Farm complex. Farmhouse is Victorian dating to 1904 and is in excellent condition. Original building was an inn known as Gobasdrift Hotel from c1855. Now modified and added to (house with green trim). Other structures include outbuildings for carriages and a ?store. 20 th c garages added to carriage building. An old road ran from just in front of Penderry (also Victorian see site 483), up over the hill to the inn. It continued to a farm called Vleiplaas where it joined the main road to Craddock. Info provided by father of current owner whose father acquired the farm in 1903.
545	BFN/2	S32.7416772 E26.0149551	recent structure	low	Dairy complex. Some structures early 20 th c, others newer. Was always a dairy farm (since 1903) but changed to beef recently.
546	BFN/3	S32.7434148 E26.0174921	historic artefacts	low	Quantity of glass and ceramic. Typical late 19th/early 20th century wares.
547	BFN/4	S32.7439728 E26.0183371	graves	high	Farm workers' graves. ~29 but hard to tell due to very poor condition and variety of styles. Open area but with one grave fenced. One grave has a big stone mound but rest are all smaller or have only head and/or foot stones. A peculiar feature is that half the graves are aligned NW/SE while most of the others are aligned SW/NE. Two are aligned closer to E/W.
547A	BFN/5	S32.7439539 E26.0182039	graves		"
547C	BFN/6	S32.7440715 E26.0180115	graves		"
547D	BFN/7	S32.7441373 E26.0182143	graves		"
548	BFN/8	S32.7441041 E26.0175465	historic artefacts	low	Historical scatter but probably all 20th C.
549	BFN/9	S32.7432893 E26.0165328	recent structures	low - med	6 labourers cottages in a row but with two only at floor level. 2 others in a different style behind them but with 1 only at floor level. The rear windows of each type are similar but front door and windows configured differently.

553	BFN/10	S32.7389302 E26.01301	landscape element	low	Row of Argentinian pepper trees along part of the driveway running towards 554 but not all the way. Other younger trees present for remaining distance.
554	BFN/11	S32.737658 E26.0114451	historic feature	low	Gate posts of unknown age at entrance to Albertvale.
396	F222/1	S32.8804604 E26.0274012	historic structure	low	Isolated stone terrace wall, dry-packed, about 0.5 m high
397	F222/1/1	S32.8758329 E26.0278836	historic structure	low - med	Stone walls and gate (age uncertain)
B359B	F222/2/1	S32.8815361 E26.0628459	historic structure	med - high	dry stone wall (contd)
B359C	F222/2/2	S32.8820782 E26.0618626	historic structure	med - high	dry stone wall (contd)
412	F225/1	S32.9089028 E26.0553532	historic structures	med	Homestead, old stone buildings, Victorianised with additions, 1930s/40s additions and steel window frames, modern addition. Stables early 20th C w gable. Assortment of outbuildings, with 1800's buildings having 1930's/40's additions and modifications. Also one corrugated iron building of uncertain age.
413	F225/2	S32.9068087 E26.0544362	recent structures	low - med	Labourers village, mostly 20th C
413A	F225/3	S32.9066793 E26.0547438	recent structures	med?	green and pink building (age?)
413B	F225/4	S32.906535 E26.0542739	recent structures	med?	1 pole and daga on brick
413C	F225/5	S32.9070313 E26.0544978	recent structures	med?	1 old mud brick structure
414	F225/6	S32.907367 E26.0549968	pre-colonial artefacts	low	3 flakes in dam. Stone dressing flakes?
415A	F225/7	S32.9083993 E26.0544237	graves	high	Labourers graveyard, very poorly kept, about 50-70 graves (bush too thick for accurate count). All graves oriented E-W but one is NNE-SSW.
415B	F225/8	S32.9087165 E26.054215	graves		"
415C	F225/9	S32.9085695 E26.0537938	graves		"

415D	F225/10	S32.9081955 E26.054087	graves		"
416	F225/11	S32.9083535 E26.0541937	pre-colonial /historic artefacts	low	3 sherds of LSA pottery and 2 historic ceramic fragments
417	F225/12	S32.9082002 E26.0541059	pre-colonial artefacts	low	Lower grindstone and upper grindstone (with facet) alongside graveyard (no flakes seen).
418	F225/13	S32.9091183 E26.0447547	pre-colonial artefacts	low	1 ESA flake.
419	F225/14	S32.9083848 E26.0439832	pre-colonial artefacts	low	ESA hand-axe made on flake, broken and possibly unfinished.
420	F225/15	S32.9109258 E26.0553433	historic structures	med	Ruined stone kraal. ~26x51m, 2 enclosures of 26x20 and 26x31.
421	F225/16	S32.9117936 E26.0526746	historic artefacts	low	Isolated blue bottle base.
422	F225/17	S32.9134207 E26.0514249	recent structures	none	Stone alignment? along footpath, probably marking a subsurface pipe.
422B	F225/18	S32.9129001 E26.0517175	recent structures		"
426	F225/19	S32.920565 E26.0673749	pre-colonial artefacts	low	3 Flakes (1 retouched), 1 lower grindstone near tree
427	F225/20	S32.9159675 E26.069486	pre-colonial artefacts	low	1 flake.
428	F225/21	S32.9122662 E26.0648252	pre-colonial artefacts	low	1 flake.
429	F225/22	S32.9032648 E26.0665384	pre-colonial artefacts	low	LSA stone artefacts. Qzite flakes, HF bipolar core. (intrusive glass and tin)
430	F225/23	S32.8914901 E26.0553903	historic structures	low	Stone walls and gate (age uncertain)
B353	F225/24	S32.9086827 E26.0437728	pre-colonial artefacts	low	ESA Quartzite core
B354	F225/25	S32.9169335 E26.071502	pre-colonial artefacts	low	weathered ESA flake

B355	F225/26	S32.908626 E26.065844	pre-colonial artefacts	low	Broken retouched piece; quartzite (scraper?)
B356	F225/27	S32.9023599 E26.0649644	pre-colonial artefacts	low	Quartzite core; 80x70x40mm
B357	F225/28	S32.9011339 E26.0689387	pre-colonial artefacts	low	2 HF and 1 Qtz flake in eroding area in valley. Also broken quartz flake.
B358	F225/29	S32.9018423 E26.0683241	pre-colonial artefacts	low	Broken qzite flake
517	F242/1	S32.7855716 E25.9461754	historic structure	low -med	?New house on old foundation, various building phases. Several outbuildings of mixed age. Stone reservoir converted to swimming pool.
518	F242/2	S32.7861145 E25.9457948	historic structure	med - high	Much older house of stone and brick but with 20th century buildings added to the northern side. New part has some Art Deco features, also some wooden and some metal window frames. Old part is much smaller than the new additions. Two tall palm trees in front of new part and one palm tree behind the building.
521	F242/3	S32.7881033 E25.9469677	graves	high	Graveyard. Mostly Vosloo. (Might be in next farm - boundary unclear).
522	F242/4	S32.7885659 E25.9468356	graves	high	Farm workers' graves. ~43. Open area, no fence.
522B	F242/5	S32.7888697 E25.9468715	graves		"
522C	F242/6	S32.7888425 E25.9470335	graves		"
522D	F242/7	S32.7887172 E25.9470521	graves		"
522E	F242/8	S32.7885553 E25.9469388	graves		"
523	F242/9	S32.7885167 E25.9475563	pre-colonial artefacts	low	ESA radial core and 3 flakes.
524	F242/10	S32.7875521 E25.9472481	pre- colonial/historic artefacts	low	3 Upper grindstones, 1 lower grindstones and several historical glass and ceramic fragments. One bottle base is ?retouched to a scraper or game-counter (broken).
527	F242/11	S32.7864359 E25.9455031	pre-colonial artefacts	low	ESA in driveway. 1 handaxe and several flakes.

528	F242/12	S32.7824639 E25.9478039	historic feature	high	Road markers.
542	F242/13	S32.7981703 E25.9746994	pre-colonial artefacts	low	Single core on a qzite slab.
543	F242/14	S32.7647133 E25.9494039	landscape element	med - high	Set of gum trees near a dam. GPS point must be moved about 200m to the west.
499	F259/1	S32.8483546 E25.9809693	recent structures	low	Stone reservoir and windpump base.
500	F259/2	S32.8476285 E25.981056	historic structure	high	Farmhouse, maybe 1910 or so. Looks original with no modern additions. Lots of early fittings inside, wooden floors throughout except small entrance foyer on north end. Interior woodwork mostly very good. Windows and shutters in poor condition. Definite Grade 2 building. Outbuilding, stone and yellow-painted corrugated iron. 2nd small corrugated iron shed as well.
501	F259/3	S32.8637934 E25.9942035	pre-colonial artefacts	low	ESA scatter in washout.
504	F259/4	S32.8469342 E25.9801188	graves	high	De Klerk graveyard, 5 graves (1921, 1929, 1948, 1956, 1961).
505	F259/5	S32.8470196 E25.9809103	historic structure	low	Possible older house. Also some glass and ceramics scattered about here.
506	F259/6	S32.8470001 E25.9812864	historic feature	low	Slightly raised terrace with low stone alignment.
507	F259/7	S32.8504473 E25.977988	recent structures	low - med	Four 1930s/1940s workers' cottages. Red brick and mud with grey cement plaster on the outside.
508	F259/8	S32.8487493 E25.9782816	pre-colonial/historic artefacts	low	Weathered ESA flake and small ?moulded bottle base alongside river.
509	F259/9	S32.8496378 E25.9787977	grave?	high	Probable grave, headstone only but it is securely buried
B377	F259/10	S32.8672658 E25.9509268	pre-colonial artefacts	low	Large qzite flake.
481	F260/1	S32.799541 E26.0182631	graves	high	Fenced graveyard with two graves: Hobson 1965 and Hobson 1990. Also 1 possible sandstone headstone with nothing else but seems unlikely.

482	F260/2	S32.7990706 E26.0176201	historic structure	med	Stone wall and gum plantation. Some big gums but mostly young trees.
483	F260/3	S32.7995659 E26.0169874	historic structure	high	Victorian farmhouse in excellent condition. Outbuildings at the back of similar age but with steel windows and some old additions (probably very soon after original construction). Bell on concrete foundation. It looks old and hangs from a roughly hewn beam. Owner says it used to be on a wooden pole on other side of yard and they moved it. Bell imported from New York. Possible school.
484	F260/4	S32.8002419 E26.017026	historic structure	high	Stone house apparently c1830. Mostly newly plastered but with stone sticking out in places (probably plastered when windows inserted). Front seems more original with sash windows. Old tree outside front door. Building behind is of brick and mud. It extends a long way and south end has stone additions. Modern addition on eastern side. Historical ceramics in driveways, yards.
485	F260/5	S32.8019372 E26.0183164	historic structure	high	Stone kraal complex. Also long wall linking it to main werf. Wagon standing alongside wall.
486	F260/6	S32.8013577 E26.0160803	historic structure	high	Stone kraal, still in use. Building on its west side. Rectangular stone foundation immediately alongside kraal to its south.
487	F260/7	S32.8018484 E26.01513	recent structures	low	Labourers cottages. All 20 th c. 4 rondawels probably early 20th C, the rest likely not more than 20 years old.
488	F260/8	S32.8050195 E26.0164682	historic structure	high	Long straight wall. GPS point is at the western end of it.
489	F260/9	S32.8059717 E26.0150273	graves	high	Unfenced farm workers' graveyard ~76 graves. Mostly packed with small cobbles but a few have larger rocks. 2 at NE corner have lower grindstones on them (one with a shallow but well developed groove). 2 cement headstones with 1965 (in middle of area), 2 metal "signs" with 1993 & 1994 (these at south end). Also several LSA flakes noted in the area. The 2 lg's on the graves may have been collected here. Also some glass and ceramics and a fragment of writing slate with a bevelled edge.
489B	F260/10	S32.8059908 E26.0146519	graves		"
489C	F260/11	S32.8063883 E26.0147493	graves		"
489D	F260/12	S32.8060879 E26.0150536	graves		"

490	F260/13	S32.8315182 E26.0125876	pre-colonial artefacts	low - med	ESA scatter with variable weathering from heavily rolled to well wind-abraded. Good concentration here with nothing else around. Site located at low point (saddle) between hills.
491	F260/14	S32.831602 E26.0128148	pre-colonial artefacts	low	Concentration of ESA in deflation in saddle area.
492	F260/15	S32.8052275 E26.0235494	pre-colonial artefacts	low	Qzite flake.
493	F260/16	S32.8048464 E26.028163	pre-colonial artefacts	low	ESA flakes in erosion gulley.
494	F260/17	S32.8044973 E26.0304066	pre-colonial artefacts	low	ESA flakes in erosion gulley.
495	F260/18	S32.8020605 E26.0291903	pre-colonial artefacts	low	ESA flakes in erosion gulley.
496	F260/19	S32.7968377 E26.0172223	landscape element	med	Gum plantation alongside main road.
497	F260/20	S32.8001088 E26.0191806	graves	high	3 graves out in the open on the east side of the river opposite farmhouse. Typical stone covered graves. 19 th c glass and ceramics near graves.
498	F260/21	S32.8003186 E26.0184415	historic structure	med?	Stone dam.
510	F260/22	S32.8422939 E25.9825986	historic structure	med	Small 1930s/40s ?store room.
511	F260/23	S32.8425676 E25.9832989	graves	high	De Klerk graveyard, 6 graves (1973, 1967(2), 1936, 1963(2), 1969). Fenced with stone-lined path down the middle between the rows of graves.
512	F260/24	S32.8428 E25.9828088	historic artefact scatter	low	Low density historical ceramic scatter. It continues up the hill towards the house and a few glass fragments are included.

513	F260/25	S32.8430729 E25.9819727	historic structure	med - high	House with 4 palm trees. Stone terraces on north side of house. East half of house is old with a 1920's/1930's addition with a porch on the west side. Peculiar in that a second intermediate wall was built up against the original such that middle wall is now ~1m thick. Original stone walls are about 0.5m and later addition's walls are ~0.3m but the one they added in the middle was thicker maybe to support stone wall?). Several water tanks, a barrel water heater, an outbuilding and a newer concrete reservoir all on south side of house, also a small modern addition attached to south end of 1930's half. Also a separate house floor with ?bay window. Bricks strewn all over general area to the east of house.
514	F260/26	S32.8406255 E25.9830038	historic structures	med	Two workers' cottages, one totally ruined, the other still standing and roofed. Vernacular flat-roofed structure with one room, an internal corner hearth, steel windows. Bricks strewn everywhere. Also found old car wreck and a bottle base with '1905' on it in area to the north of the cottages.
515	F260/27	S32.8408498 E25.9830518	graves	high	Two graves. One dated 1994, other date fallen off but likely similar period.
B372	F260/28	S32.8013951 E26.0162336	pre-colonial artefacts	low	Two qzite flakes, 1 retouched.
B373	F260/29	S32.8018161 E26.0161863	?historic structures	low	~10 demolished workmen's cottages marked by piles of bricks and rubble, each representing individual dwelling; associated ceramics and glass
B374	F260/30	S32.8322199 E26.0120422	pre-colonial artefacts	low	Quartzite flake; broken and heavily eroded
B378	F260/31	S32.8420773 E25.9818017	historic structure	med	Outbuilding/roofed stock enclosure: mainly dry-stone walling, but some sections with mud mortar and one wall with cement render on outer face; corrugated iron roof (flat) supported by outer stone walls on 3 sides and by brick-built square pillars along eastern (front) face of structure. Gum tree line standing in middle of the triangle formed by the three buildings (512, 513, B378), oriented more or less north-south.
B379	GKF/1	S32.7900085 E25.9823276	historic feature	med - high	Series of at least 6 terraced levels to ENE of and associated with farmhouse at site 530; lowest terrace retained with dry-stone wall on bank of NW-SE stream; B379 marks NE extent of terracing, B379B marks SE extent
B379B	GKF/2	S32.791071 E25.9826393	historic feature		"

B380	GKF/3	S32.7984975 E26.0016256	historic structure	med - high	Outbuilding/ wagon house: built as 2 abutting rectangular buildings on E-W alignment; southern half built of dressed stone/brick; northern has stone foundation and brick walls, contains well preserved horse-carriage. Ruin of farmhouse associated with and immediately (S)E of outbuildings described above: brick built on dressed-stone footings; mainly locally produced, coarse bricks; some 20th C additions to southern end of house, with concrete and bricks with rectangular 'I' shaped frog; mud mortar throughout; likely to be 19 th c foundations of farmhouse extended c1930's. Also a trapvloer.
529	GKF/4	S32.7903882 E25.9810648	historic structure	med - high	Stone kraal made of dolerite blocks (this is unique - all other buildings and ruins are with sandstone/qzite). Much rougher than sandstone/qzite kraals. Has tall rock 'pillars' as gate posts.
530	GKF/5	S32.7909129 E25.9817911	?historic structure	med - high	One-roomed stone and brick cottage on a larger stone platform. L-shaped wall footing at rear. Brick feature as well. Lots of bricks scattered around ruin. Area well planted with gum trees to SW of house, Argentinean peppers to east of house and a dense hedge of trees to the NE of the house.
531	GKF/6	S32.7893969 E25.9823816	historic feature	med	Earth wall dam with stone-built outlet at base of wall..
532	GKF/7	S32.7970365 E26.0005902	recent structure	med	Small two-room 20th C cottage on cement foundation. Stone platform in front.
533	GKF/8	S32.7976568 E25.9985531	historic feature	low	Stone alignment and two upright stone posts (?gate posts).
534	GKF/9	S32.7984982 E25.9984367	historic feature	high	Stone wall 100-150m NW of this GPS point
535	GKF/10	S32.7985983 E25.9985704	historic feature	low	Small stone quarry.
536	GKF/11	S32.7989963 E25.9995348	historic feature	med	Stone wall, extends south from 536.
536B	GKF/12	S32.7987645 E25.9996061	historic feature		"
536C	GKF/13	S32.798122 E26.00115	historic feature		"
536D	GKF/14	S32.7980994 E26.0016741	historic feature		"

537	GKF/15	S32.7987853 E25.9994317	pre-colonial artefacts	medium	Stone artefact scatter with pottery. Includes qzite, Hornfels and 1 grey CCS. Hornfels scraper. Pottery all thin (5-6mm) and orange both sides. This is the densest LSA scatter yet seen though other sites had more obvious pottery.
538	GKF/16	S32.7987114 E25.9997027	graves	high	Single grave with two rock piles to the west. Piles unlikely to be graves. The headstone is for multiple individuals.
539	GKF/17	S32.7984403 E26.002867	historic structure	high	Stone kraal still in use. Tall stones at gate (just like dolerite kraal at 529). A second kraal to the east abuts a retaining wall.
540	GKF/18	S32.7973638 E26.0014414	historic feature	low	Stone terrace.
541	GKF/19	S32.8019363 E25.9865734	historic feature	high	Line of stone posts running NE/SW for some distance.
550	KKF/1	S32.7662252 E26.0144422	recent structure	low - med	Shed. 3 sides, brick on stone foundation, no roof. Walls are wire-reinforced. 1 late 19 th c. ceramic found.
551	KKF/2	S32.7680734 E26.0137358	?historic feature	med	Earth dam (with stone lining) Old gum tree rows along wall and sides.
551B	KKF/3	S32.7689649 E26.0135729	?historic feature		"
552	KKF/4	S32.7689325 E26.0136028	pre-colonial artefacts	low	ESA core.
398	KL/1	S32.8526081 E26.0364985	historic structures	high	Farm "werf", 2 room house with external oven, ?1930s. 3 other structures: (1) pole and daga with 2 stone buttresses, (2) round daga, (3) round stone. Also 1 ?grave. Artefacts all 20th C and not recorded.
399	KL/2	S32.8432187 E26.0392035	historic structures	med?	Large circular structure for police horses.
399B	KL/3	S32.8433471 E26.0396777	historic structures		"
399C	KL/4	S32.8430231 E26.0395571	historic structures		"
400	KL/5	S32.8434825 E26.0395102	historic structures	med	Stone ruin.
401	KL/6	S32.8428199 E26.0395112	historic structures	high	Stone kraal with several enclosures, paved floor.

402	KL/7	S32.8433909 E26.0401817	historic structures	med	Brick ruin with stone foundation. A few historical artefacts, quite a bit of bone
403	KL/8	S32.8436506 E26.0403608	historic structures	high	Stone kraal and dipping facility.
404	KL/9	S32.8434471 E26.0407389	historic structures	low - med	Stone-lined dam, 1 willow pattern ceramic seen on dam wall.
405	KL/10	S32.842927 E26.0409777	historic structure	med - high	Massive enclosure with stone walls. Variable preservation.
405B	KL/11	S32.8424089 E26.0394132	historic structure		"
405C	KL/12	S32.8392897 E26.0386571	historic structure		"
405D	KL/13	S32.8392154 E26.0392576	historic structure		"
405E	KL/14	S32.8411864 E26.0424727	historic structure		"
406	KL/15	S32.8404726 E26.0389437	historic feature	low	?quarries
407	KL/16	S32.8418142 E26.05008	pre-colonial artefacts	low	?ESA flake
408	KL/17	S32.8423472 E26.0493073	pre-colonial artefacts	low	Very weathered ESA flake.
409	KL/18	S32.8418163 E26.0497041	pre-colonial artefacts	low	Very weathered ESA flake.
410	KL/19	S32.8475514 E26.0110354	pre-colonial artefacts	low	Artefact scatter in deflation/washout. Age uncertain.
411	KL/20	S32.86923 E26.0189421	historic structures	high	Paved kraal with 3 enclosures. Still in use.
502	KL/21	S32.8653356 E25.9982781	pre-colonial artefacts	low	ESA scatter.
503	KL/22	S32.8696626 E25.995109	historic feature	high	Y-shaped stone wall at farm intersection but only two sides match the fences. Several flakes and other debris scattered around suggest on-site stone dressing.

B351	KL/23	S32.8421855 E26.0487416	pre-colonial artefacts	low	Weathered Qzite ESA flake.
B352	KL/24	S32.855554 E26.0033505	pre-colonial artefacts	low	Qzite flake
B375	KL/25	S32.8655898 E25.996819	pre-colonial artefacts	low	ESA qzite flake and core fragment.
B376	KL/26	S32.8681967 E25.9955902	pre-colonial artefacts	low	Quartzite flaked piece; found in deflated/ sandy area.
431A	LF/1	S32.8815947 E26.0647746	historic structures	high	Long stone wall on edge of ridge. One end on Farm 222/1 (S32.877338 E26.056073) and the other end on Leeuw Fontein (S32.877338 E26.075152). It does not correspond with current cadastral boundaries.
431B	LF/2	S32.8800487 E26.0672985	historic feature		"
431C	LF/3	S32.8801 E26.0679935	historic feature		"
B359	LF/14	S32.8814493 E26.0639596	historic structures		Same dry stone wall as 431 A-C extending in other direction where it degenerates and becomes a line of intermittent aloes. Crosses 2 farms. 0.5-0.6m width. Extends on same alignment as GPS B359C
432	LF/4	S32.8748343 E26.102726	historic feature	high	Stone feature, probably not a grave. Treat as a grave though!.
433	LF/5	S32.875456 E26.1028009	historic structures	high	Stone and brick house. Inside plastered, evidence of whitewash outside. Lots of changes, internal and external additions, roof changes. Few artefacts (bits of ceramic, glass and lead, but seem not too old).
434	LF/6	S32.8753388 E26.1030172	historic structures	high	Outbuilding, ruined down to foundation level, one wall makes a slight terrace behind main house.
435	LF/7	S32.8739527 E26.1024549	recent structures	low	Enclosure with packed clay floor. Probably just fenced with corrugated iron. Adjoins another fenced enclosure. Seems not that old but some historical glass and ceramics inside. Screws and washers show roof type and a few fragments of corrugated iron lying about.
436	LF/8	S32.8744332 E26.1041623	graves	high	Graveyard, 8 graves, 3 with slate top, 1 without, 4 with gravestones (1 fallen) Marine shells on 1 grave) (see Graveyard 2). Broli, Green, Weichman, dates 1816-1914

436B	LF/9	S32.8743401 E26.1042034	graves		"
437	LF/10	S32.8739624 E26.1042708	graves	high	12 farm workers graves, badly disturbed by animals.
437B	LF/11	S32.8741914 E26.1041794	graves		"
438	LF/12	S32.8739432 E26.1031821	historic feature	low	Old road alignment, slightly scooped out with dirt banked on each side.
438B	LF/13	S32.8742772 E26.1029383	historic feature		"
B360	LF/15	S32.8754375 E26.1040441	historic feature	low -med	Terrace walling near house. Revetment dry-stone wall of rectilinear terrace, NE of farmhouse; SE extent of revetment wall.
B360B	LF/16	S32.8751824 E26.1035198	historic feature	"	SW corner of revetment.
B360C	LF/17	S32.8744235 E26.1040495	historic feature	"	NW extent of revetment; up to edge of cemetery.
439	OWE/1	S32.936614 E26.0122537	historic structures	high	House, 1820's with Victorian additions in two styles. Louis Trichaardt is believed by the inhabitants to have departed on the Great trek from this house (unconfirmed). (He may well have owned the farm at one stage). Barn looks Victorian, brick building on stone foundation. Other outbuildings are newer, 1 corrugated iron and 1 mid-20 th c.
440	OWE/2	S32.9359027 E26.0121809	historic feature	med	Leiwat channel of unknown age, not very modern cement.
440B	OWE/3	S32.9350048 E26.0111296	historic structures	low - med	cement weir
441	OWE/4	S32.93553 E26.0109762	historic structures	high	Large stone kraal with internal metal fences, 50 x 30 m. Still in use and in very good condition.
442	OWE/5	S32.9355932 E26.0106189	pre-colonial/historic artefacts	low	Scraper, retouched flake and historical glass and ceramics.
443	OWE/6	S32.9366586 E26.0101224	historic artefacts	low	Low density glass and ceramic scatter and old wagon on level sandy area close to river. Also some sort of informal structure and an ash dump.

444	OWE/7	S32.9380383 E26.0103984	pre-colonial/historic artefacts	low	Low density historical scatter on sloping gravel clearings overlooking farmhouse. Also 1 ESA flake.
444B	OWE/8	S32.9383152 E26.0108271	pre-colonial/historic artefacts	low	lower density scatter to south
445	OWE/9	S32.9383535 E26.0111983	grave	high	Isolated grave, baby. ESA core nearby
446	OWE/10	S32.9354526 E26.0083554	pre-colonial/historic artefacts	low	LSA stone artefact scatter and one blue glass fragment.
447	OWE/11	S32.9357809 E26.0078043	pre-colonial artefacts	low	LSA flakes
448	OWE/12	S32.9361035 E26.0078645	graves	high	Farm workers graveyard, approx 50+ , head and foot stones, soil mounds with stones, much disturbance
448B	OWE/13	S32.9362004 E26.0075821	graves		"
448C	OWE/14	S32.9363677 E26.0076442	graves		"
448D	OWE/15	S32.9363479 E26.0078544	graves		"
B362	OWE/32	S32.9361629 E26.0078698	graves		"
449	OWE/16	S32.936399 E26.0076243	pre-colonial artefacts	low	1 hornfels scraper, thin LSA pottery.
449B	OWE/17	S32.9363822 E26.00778	pre-colonial artefacts	low	Pottery (1 is a thick sherd), some flakes, 1 Upper grindstone.
449C	OWE/18	S32.9364853 E26.0079325	pre-colonial artefacts	low	Flakes, 2 scrapers, 2 adzes. Artefacts in qzite and hornfels.
450	OWE/19	S32.9367903 E26.0073146	pre-colonial artefacts	low	Extensive low density scatter, LSA pottery and flakes. Also 1 upper grindstone.
451	OWE/20	S32.9365119 E26.0085583	historic feature	low	Stone alignment. The GPS points indicate orientation only, it is much longer.

451B	OWE/21	S32.9369147 E26.0079873	historic feature		"
452	OWE/22	S32.936677 E26.0082738	pre-colonial artefacts	low	LSA artefact scatter.
453	OWE/23	S32.9562915 E26.0018301	pre-colonial artefacts	med	Selection of ESA flakes and ?retouched artefacts on top of hill near an outcrop of boulders (weathered ?dolerite dyke). 1 burnt OES (?LSA) seen at burrow.
454	OWE/24	S32.9566847 E26.0014653	pre-colonial artefacts	med	ESA flakes, 1 hand-axe.
455	OWE/25	S32.9569761 E26.0010397	pre-colonial artefacts	med	ESA scatter
456	OWE/26	S32.9567735 E26.0009782	pre-colonial artefacts	med	3 flakes, 1 is a hornfels notched flake (very thin and likely of MSA age).
457	OWE/27	S32.9562355 E26.0014758	pre-colonial artefacts	med	Low density scatter. 1 big cleaver-like artefact. The entire area of this ESA site should be avoided as there is actually quite a lot of material here. Enough to study further without doubt! It seems quite localised and does not extend to SW or NE.
458	OWE/28	S32.9548615 E26.0009521	pre-colonial artefacts	low	Cores and 3 flakes). Age uncertain.
459	OWE/29	S32.9347789 E26.0122301	graves	high	Graves, 4 and possibly 5. 2 formal and 2 stone packed. Headstones indicate Schoeman, dates 1875, 1887
460	OWE/30	S32.9255827 E26.0038821	recent structure	low	Small drift formalised with stone wall
461	OWE/31	S32.9268888 E25.972708	historic structures	high	Stone kraal near modern house along main road.
B363	OWE/33	S32.9436335 E26.0052852	pre-colonial artefacts	low	Heavily weathered ESA flake.
B364	OWE/34	S32.9517878 E26.0045284	pre-colonial artefacts	low	Heavily weathered ESA flake.
423	PK1/1	S32.9210897 E26.060544	pre-colonial artefacts	low	Isolated lower grindstone in gravel area (almost certain).
424	PK1/2	S32.9216696 E26.0594701	pre-colonial artefacts	low	Isolated lower grindstone in gravel area (almost certain).

425	PK1/3	S32.92287 E26.0585081	pre-colonial artefacts	low	1 ESA flake.
356	PK2/1	S32.918055 E26.0481565	pre-colonial artefacts	low - med	LSA Bored stone, Iron Age pottery, historical glass, lower grindstones
357	PK2/2	S32.918063 E26.0473786	pre-colonial artefacts	low - med	LSA pottery, big flakes, silcrete adze, some grindstone fragments, lots of upper grindstones.
358	PK2/3	S32.9185737 E26.0470609	pre-colonial artefacts	low	Lower grindstones and flakes.
359	PK2/4	S32.9181098 E26.0470616	pre-colonial artefacts	low-med	HF scraper, shale pebble adze, other bipolar core. Bored stone collected from this site by owner and kept at house.
360	PK2/5	S32.9179521 E26.0473224	pre-colonial artefacts	low	LSA flake selection.
361	PK2/6	S32.9180535 E26.0476616	pre-colonial artefacts	low	Mound with LSA pottery eroding out, also a ccs flake.
362	PK2/7	S32.9224856 E26.0484071	pre-colonial artefacts	low	Flakes scattered in this area. Erosion gully shows deep silts but with one other lag surface in it similar to current surface. Two horizontally-pierced pot lugs collected from this site and kept at the house.
363	PK2/8	S32.9228939 E26.0481679	pre-colonial artefacts	low	Lower grindstone with core and pottery scatter, 1 other Lower grindstone.
364	PK2/9	S32.9229687 E26.0478473	pre-colonial artefacts	low	Flakes and incised pottery. Also an upper grindstone nearby. Sites 362-364 are all part of the same site.
365	PK2/10	S32.921256 E26.0482922	pre-colonial artefacts	low	Flake scatter
350	SSF/1	S32.9028237 E26.0248137	graves	high	Triegaardt grave + 2 other unknown graves
351	SSF/2	S32.9030817 E26.0249246	graves	high	Farmworkers graveyard containing approx 30 farm graves dating ~1930 onwards, aligned E-W. GPS N and S ends
351A	SSF/3	S32.9027628 E26.0250105	graves		"
352	SSF/4	S32.9042816 E26.0244557	graves	high	Farm graveyard containing approx 52 graves dating ~1830 onwards. GPS N and S ends.
352A	SSF/5	S32.9038097 E26.0248619	graves		"

353	SSF/6	S32.9042043 E26.0244473	pre-colonial artefacts	low	MSA flake.
354	SSF/7	S32.9028373 E26.0244865	pre-colonial artefacts	low	LSA? Artefact scatter
355	SSF/8	S32.9002527 E26.0249077	historic structures	high	Main house. Original part 1830. c.1870 stone additions, c.1930s/40s additions to front. Also some outbuildings of 1930s/40s. Complex looks Victorianised. Many 19 th c stone outbuildings. Grafitti on c.1870 addition: "WHEB1870" (owner Dereck Bowker's grandfather)
388	SSF/9	S32.9010297 E26.0263558	historic structures	high	1830s dry stone wall.
388B	SSF/10	S32.9005475 E26.0264856	?		"?"
389	SSF/11	S32.8999624 E26.0264895	historic structures	high	Stone retaining wall and stairs.
390	SSF/12	S32.8988857 E26.0266962	graves	high	Grave: Arther Hugh Barber.
391	SSF/13	S32.8992964 E26.0265392	pre-colonial artefacts	low	Occasional flakes
392	SSF/14	S32.8995113 E26.0266856	graves	high	Family graveyard ringed by fence and tall poplar trees. 8 graves, (Bowker, Palmer and Taylor) Dates 1895 through 1942.
393	SSF/15	S32.8996209 E26.0265128	historic structures	med	Dry stone wall and big pepper tree.
394	SSF/16	S32.8990115 E26.0253395	historic structures	med	Old stone outbuilding
395	SSF/17	S32.8946104 E26.0232366	historic features	med	Piles of brick that look like they may have been fired there Also some hollows there that may have been clay source.
366	TF/1	S32.922609 E26.0322904	graves	high	~28 unknown graves, with 2 possible outliers. Also historical bottle neck.
366A	TF/2	S32.9229121 E26.0322408	graves		"
366B	TF/3	S32.9226927 E26.0320802	graves		"

367	TF/4	S32.9215512 E26.0311338	graves	high	Approx 21 unknown graves. More formal with drystone walls over shafts, mostly collapsed. Some graves only covered with packed stone, 3 with head and footstone only.
367A	TF/5	S32.9215319 E26.0313712	graves		"
367B	TF/6	S32.9212993 E26.0313363	graves		"
367C	TF/7	S32.9213152 E26.0311407	graves		"
368	TF/8	S32.9218841 E26.0320728	historic artefacts	low	Dumped demolition rubble and bottle neck. Rubble cleared away from werf during cleaning up of complex.
369	TF/9	S32.9218152 E26.0328279	historic feature	low	Standing stone and three dogs graves in small fenced field.
370	TF/10	S32.9219717 E26.0325678	historic artefacts	low	Brick dump and assoc historical ceramics. Coarse porcelain and flow blue pattern refined earthenware.
371	TF/11	S32.9211769 E26.033087	historic artefacts	low	Historical dump next to farm road.
372	TF/12	S32.9208004 E26.0331096	historic feature	high	Stone tethering post (horses). Still in original location.
373	TF/13	S32.9206815 E26.0333847	historic structure	high	Renovated building. 25 October 1857 graffiti inside front door on section of old wall retained for display. Original alignments mostly retained during rebuilding.
374	TF/14	S32.9204003 E26.0336236	historic structures	med-high	Ceramics, dressing flakes, ruin, stone-lined dam.
375	TF/15	S32.9193477 E26.0347053	historic feature	high	Spring, dug out and stone lined. Never failed in living memory.
376	TF/16	S32.9190123 E26.0354553	pre-colonial artefacts	low	1 flake.
377	TF/17	S32.9196412 E26.0356107	pre-colonial artefacts	low	Lower grindstone/anvil frag, flakes. Also a big lgst near here.
378	TF/18	S32.9198488 E26.0356754	pre-colonial artefacts	low	Lower grindstone
379	TF/19	S32.9199338 E26.0352761	pre-colonial artefacts	low	2 lower grindstones and some flakes.

380	TF/20	S32.9200824 E26.0352936	pre-colonial artefacts	low	2 lower grindstones and some flakes.
381	TF/21	S32.9200738 E26.035618	pre-colonial artefacts	low	Lower grindstone and some flakes. Some nice fine-grained black stone material here.
382	TF/22	S32.9197468 E26.0338991	historic features	med	2 big gum trees and 1 pepper tree.
383	TF/23	S32.9198138 E26.0337066	historic structures	low	Small ruin and historical ceramic fragment.
384	TF/24	S32.9203779 E26.0329905	historic structures	med	Collapsed stone and brick ruin and historical artefact dump. Also a big grindstone chunk that used to be in the wall.
385	TF/25	S32.9200773 E26.0316568	historic structures	high	Stone kraal with 2 enclosures. Total area is approx 16 x 32 m.
386	TF/26	S32.9195502 E26.0320775	pre-colonial artefacts	low	2 flakes.
387	TF/27	S32.918937 E26.0324964	pre-colonial artefacts	low	1 flake.
B350	TF/28	S32.9189496 E26.0363177	historic feature	low	Dry-stone wall, with rubble packing, 0.5 to 0.6m thick.
B350B	TF/29	S32.9194853 E26.0366785	historic feature		"
475	VF/1	S32.8958971 E26.1497136	historic structures	med	Stone kraal.
476	VF/2	S32.8964549 E26.1502277	historic structures	high	Ruined stone cottage
477	VF/3	S32.8968156 E26.1504523	?historic structures	med	Brick and stone shed with recent changes.
478	VF/4	S32.8970602 E26.1507321	historic features	med - high	Stone road markers and tree line running NE-SW.
479	VF/5	S32.8977209 E26.15231	graves	high	Graveyard with 2 formal graves. Fenced with small, ornate gate.
480	VF/6	S32.8964353 E26.1482223	recent structures	med	2 small cottages, pole and daga, still occupied!

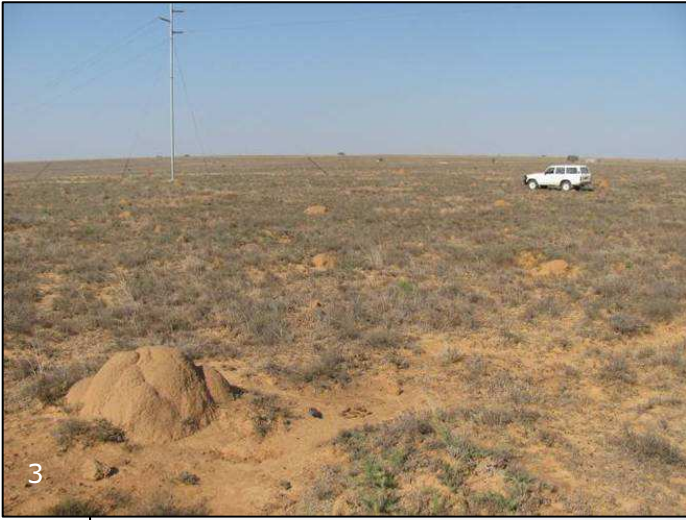
462	OUTSIDE	S32.9292891 E26.1641428	recent structures	n/a	Small flat-roofed cottages of brick, pole and daga rondawel, ash and rubbish dump 30m south of rondawel. Rubbish all looks 20 th c as do buildings. Some stone and brick paving.
463	OUTSIDE	S32.9298561 E26.1654013	?historic features	n/a	Remains of a small enclosure with lots of rubbish.
B365	OUTSIDE	S32.9294329 E26.1652265	?historic structures	n/a	Small gabled one room stone cottage ruin (6x5m), small (2m diameter) round stone ruin and a 4x4m foundation to the east. Also lots of modern rubbish but occasional older bits in between.
B366	OUTSIDE	S32.9290800 E26.1646400	pre-colonial artefacts	n/a	1 ESA and 1? Stone dressing flake and 1 almost hand-axe.
519	OUTSIDE	S32.7871246 E25.9460821	historic structures	n/a	Stone kraal.
520	OUTSIDE	S32.7873352 E25.9464300	pre-colonial artefacts	n/a	ESA flake.
525	OUTSIDE	S32.7871004 E25.946967	pre-colonial artefacts	n/a	ESA flake.
526	OUTSIDE	S32.7868920 E25.9469351	historic features	n/a	Stone water furrow.

APPENDIX 2

CULTURAL LANDSCAPE INDICATORS
(SELECTED PHOTOGRAPHIC IMAGES)

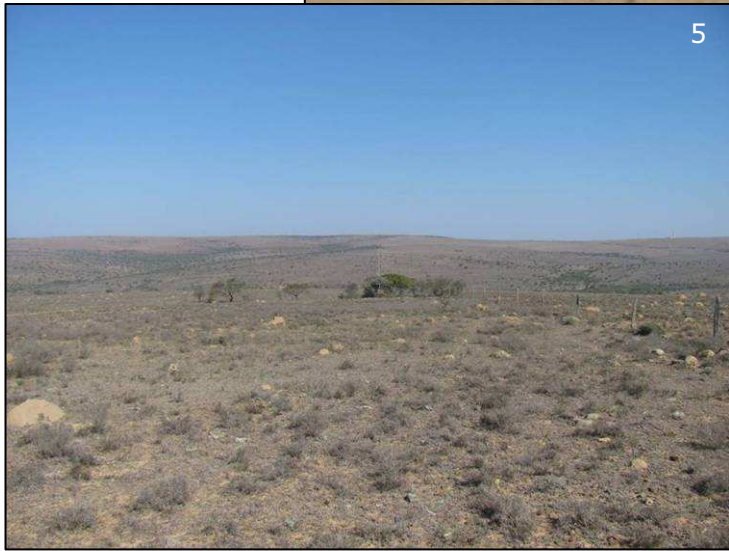
LANDSCAPE

- 1.** View NE from T063 on Olive Woods Estate
- 2.** View NE from T283 on Kop Leegte
- 3.** View E on Farm 260



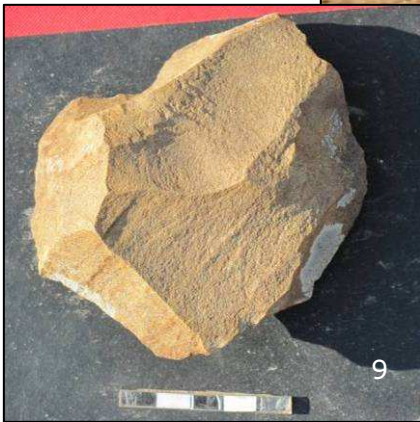
LANDSCAPE

- 4.** View S from T020 on Farm 260
- 5.** View S from T179 towards T200 on Olive Woods Estate



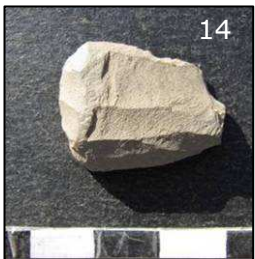
EARLY AND MIDDLE STONE AGE INDICATORS

- 6.** F260/14 Concentration of ESA in deflation in saddle area. (similar to F260/13)
- 7.** F225/14 ESA hand-axe made on flake, broken and possibly unfinished.
- 8.** F225/25 ESA weathered flake
- 9.** F225/24 ESA Quartzite core
- 10.** F260/14 Selection of ESA artefacts
- 11.** OWE/23 Selection of ESA flakes and retouched artefacts on top of hill near an outcrop of boulders



LATE STONE AGE INDICATORS

- 12.** OWE/16 LSA scraper made on hornfels
- 13.** OWE/5 LSA scraper made on hornfels
- 14.** OWE/5 LSA scraper made on ?silcrete
- 15.** PK2/2 LSA Lower grindstone made on local stone slab
- 16.** F260/9 Lower grindstone found on a grave.
- 17.** OWE/19 Upper grindstone on extensive low density scatter, LSA
- 18.** PK2/2 One of several upper grindstones found on this LSA site
- 19.** PK2/7 Two pot lugs, horizontally-pierced, collected from this site by farmer and kept at house.
 - 20.** PK2/2 Fragments of LSA pottery
 - 21.** PK2/9 Decorated LSA pottery
 - 22.** PK2/4 Broken bored stone collected by farmer
 - 23.** GKF/15 Stone artefacts and pottery fragments
 - 24.** PK2/4 Typical location for LSA sites in valleys



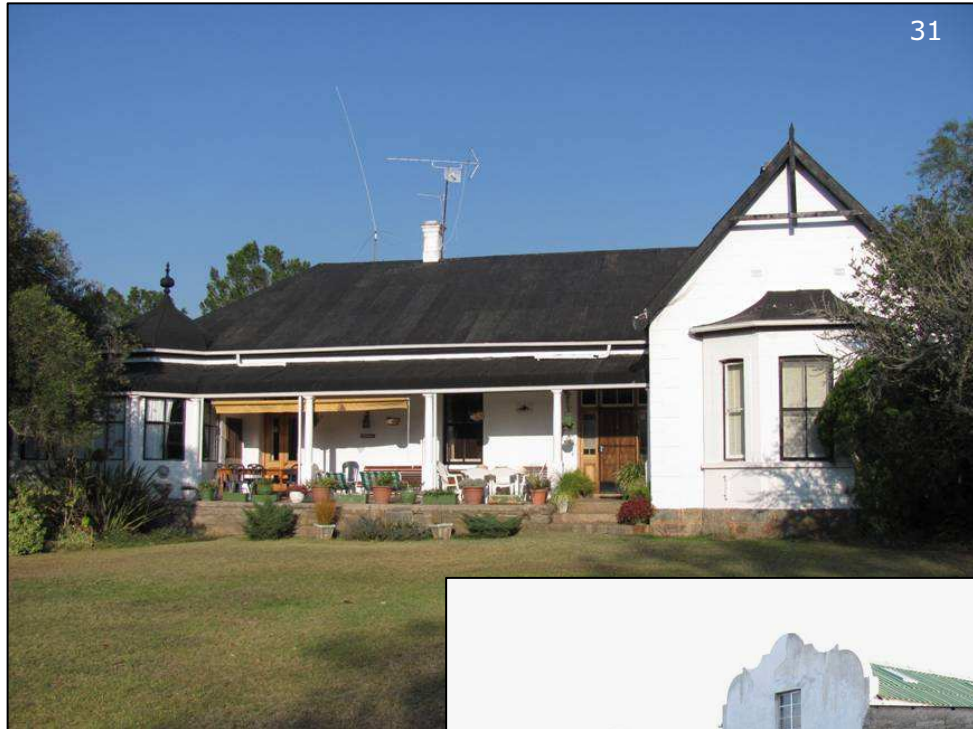
HISTORICAL ARCHAEOLOGY INDICATORS

- 25.** GKF/3 remains of a trapvloer (threshing floor) at abandoned farm settlement
- 26.** LF/5 Ruined farm building
- 27.** F260/24 19th century ceramics all refined earthenware with typical decoration (incl shell edged pearlware and annular ware)
- 28.** TF/14 19th century ceramics all refined earthenware with typical decoration (incl annular ware)
- 29.** TF/10 19th century ceramics
- 30.** TF/11 19th century ceramics and glass from a dump next to a road (incl a flattened brass Martini Henry cartridge)



HISTORIC BUILDINGS

- 31.** F260/3 Victorian farmhouse in excellent condition (occupied)
- 32.** BEF/9 Small cottage (occupied)
- 33.** GKF/5 Ruined one-roomed stone and brick cottage
- 34.** F225/1 Homestead, old stone buildings, Victorianised with additions,
- 35.** BEF/2 Stone and mud shed with later plaster and additions



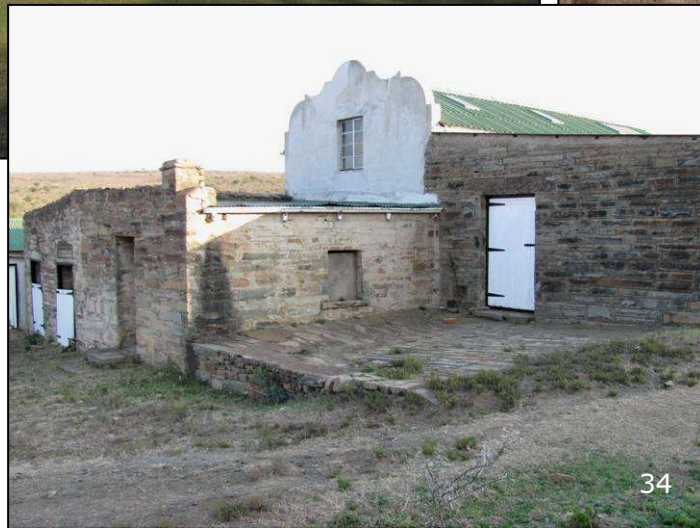
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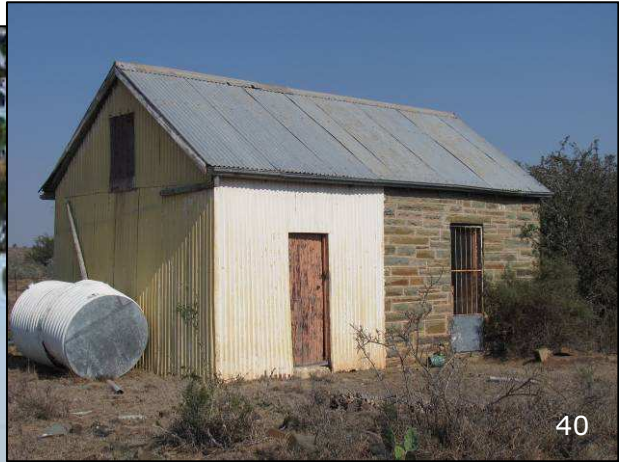
35

HISTORIC BUILDINGS (contd)

- 36. F259/2 Abandoned post - Victorian farmhouse. Many original elements
- 37. F259/2 Abandoned post - Victorian farmhouse
- 38. Coal/wood stove in the kitchen
- 39. Paraffin iron
- 40. F259/2 Stone and corrugated iron outbuilding
- 41. VF/2 Abandoned farm building



36



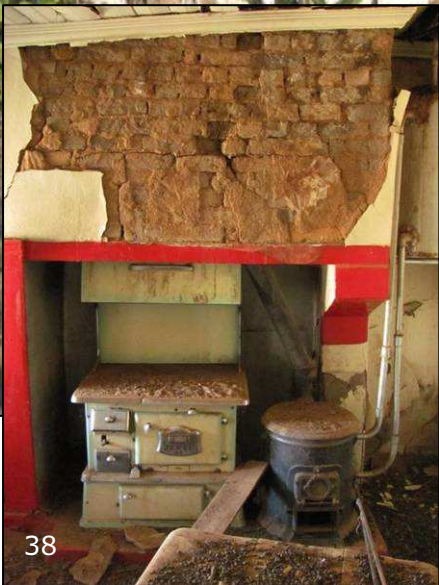
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41



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38



39

KRAALS AND KRAAL COMPLEXES

- 42. OWE/4 Big stone kraal with internal metal fences, 50 x 30 m. Still in use and in very good condition.
- 43. KL/8 Kraal complex
- 44. KL/6 Stone kraal with several enclosures, paved floor.
- 45. OWE/31 Stone kraal near modern house along main road
- 46. KL/6 Stone kraal with several enclosures, paved floor



42



43



44



45



46

HISTORICAL FEATURES AND LANDSCAPE ELEMENTS

47. KKF/2 Old gum trees along wall and sides of earth dam (with stone lining)

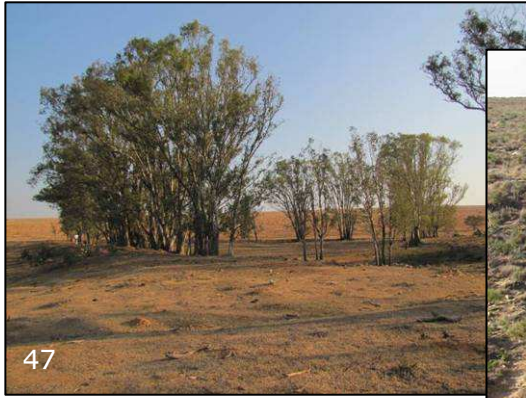
48. F225/26 view to the east showing occasional endemic trees

49. TF/27 One of numerous erosion control walls. These are functional and for the most part have no heritage significance

50. LF/1,2,3 Long stone wall along the edge of a ridge. No correspondence with recent or historical cadastral boundaries. Probably a stock control wall.

51. F242/12 Stone boundary markers along the edge of a farm road

52. TF/12 Stone bridle post. Still retained in original place in the grounds of the farmhouse (information from farmer).



GRAVES AND GRAVEYARDS

- 53.** SSF/14 Family graveyard ringed by fence and tall poplar trees. 8 graves, (Bowker, Palmer and Taylor) Dates 1895 through 1942.
- 54.** F242/3 Graveyard. Mostly Vosloo. (Might be in next farm - boundary unclear).
- 55.** VF/5 Graveyard with 2 formal graves. Fenced with small, ornate gate.
- 56.** BEF/12 Small graveyard ?6/7 graves, some in very poor shape. 4 formal and mostly aligned E-W
- 57.** LF/8 Graveyard, 8 graves, 3 with slate top, 1 without, 4 with gravestones (1 fallen). Marine shells on 1 grave). Broli, Green, Weichman, dates 1816-1914
- 58.** F260/9 Unfenced farm workers' graveyard ~76 graves. Mostly packed with small cobbles but a few have larger rocks. 2 at NE corner have lower grindstones on them (one with a shallow but well developed groove). 2 cement headstones with 1965 (in middle of area), 2 metal "signs" with 1993 & 1994 (these at south end). Also several LSA flakes noted in the area (see also plate 61).



59. SSF/2 Farmworkers graveyard containing approx 30 farm graves dating ~1930 onwards, aligned E-W. GPS N and S ends

60. F242/4 Farm workers' graves. ~43. Open area, no fence.

61. F260/9 Typical grave with rounded stones forming the mound (see description for plate 58)

62 & 63. F260/27 Two graves. One dated 1994, other date fallen off but likely similar period. Many recent workers' graves have these "number plate" style markers with the deceased persons details.

