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**A PHASE 1 ARCHAEOLOGICAL IMPACT ASSESSMENT (AIA) FOR THE PROPOSED
COOKHOUSE II WIND ENERGY FACILITY, BLUE CRANE ROUTE LOCAL
MUNICIPALITY, EASTERN CAPE PROVINCE**

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Note: This report follows the minimum standard guidelines required by the South African Heritage Resources Agency for compiling Phase 1 Archaeological Impact Assessment (AIA).

EXECUTIVE SUMMARY

Purpose of the Study

The purpose of the study was to conduct a phase 1 archaeological impact assessment (AIA) for the proposed Cookhouse II Wind Energy Facility, Blue Crane Route Local Municipality, Eastern Cape Province. The survey was conducted to establish the range and importance of the exposed and *in situ* archaeological heritage materials and features, the potential impact of the development and, to make recommendations to minimize possible damage to these sites.

Brief Summary of Findings

Isolated surface scatters of predominantly Middle Stone Age (MSA) stone artefacts were observed within the exposed and eroded areas within the proposed area for development. It is unlikely that these Middle Stone Age stone artefacts scatters are *in situ* and are, therefore, considered to be in a secondary context. Although it is possible that stone artefacts may occur *in situ* under the dense grass vegetation cover over the entire area proposed for development. No sites containing any depth of deposit or other archaeological material associated with the stone tool artefacts were observed within the area. One Later Stone Age (LSA) site comprising a variety of flakes, cores and formal tools manufactured on various local and non-local raw materials was recorded within close proximity of the farmstead on the Farm Van Wyks Kraal. A few sherds of historical ceramics were also documented within the area of the Later Stone Age stone artefact surface scatter near the farmstead. The Later Stone Age stone artefact scatter may also be in secondary context. The proposed area for development is considered as having a medium-low cultural significance, and the following recommendations must be taken into consideration prior to the construction activities.

Recommendations

The general area is of a medium-low cultural sensitivity and development may proceed as planned, although the following recommendations must be considered (see end of report for full recommendations):

1. A professional archaeologist (with the appropriate collection permit) must be appointed during vegetation clearing and excavations to monitor possible encounters of archaeological material remains or sites that may be uncovered within the dense grass vegetation and between the surface and 50-80cm below ground.
2. If concentrations of archaeological heritage material and human remains are uncovered during construction, all work must cease immediately and be reported to the Albany Museum (046 622 2312) and/or the South African Heritage Resources Agency (SAHRA) (021 642 4502) so that systematic and professional investigation/excavation can be undertaken.
3. Construction managers/foremen must be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites.

BACKGROUND INFORMATION

The phase 1 archaeological impact assessment (AIA) report is required for the environmental impact assessment (EIA).

African Clean Energy Developments (Pty) Ltd (ACED) are proposing to establish a commercial wind energy facility and associated infrastructure on a site located approximately 20km east of the town of Cookhouse. A broader area of approximately 35km² is being considered within which the facility is to be constructed.

The site comprises land directly adjoining the already authorised ACED Renewables (Pty) limited 200 turbine Wind Energy Facility. The Cookhouse II wind energy facility is proposed on farm portions: Van Wyks Kraal 73 (Portions 0 – remaining extent 1 and 4), Roberts Kraal 72 (Portion 0 remaining extent), Gallants Kloof 70 (Portion 3), Request 71 (Portion 0 remaining extent, Portion 11, Portion 12) and Farm 75 (Portion 2).

Associated infrastructure with the wind energy facility will include:

- Up to 50 wind turbines units of 2MW each, consisting of 80m to 100m high steel towers, with up to 100m diameter rotors with 3x50m blades;
- Concrete foundations of up to 30m x 30m x 4m set in the ground surface to support the turbine towers;
- Underground cables between turbines;
- New access roads connecting the individual turbines and from the main road/s.

The area for the proposed Cookhouse II Wind Energy Facility is located between the small towns of Cookhouse and Bedford, bordered by the N10 national road to the west, the R350 regional road to the east, the R63 route to the north and a secondary road linking Bedford and the N10 running through a portion of the proposed WEF area to the south. The proposed area is mostly covered in subarid thorn bushveld and comprises mainly dense grass vegetation dominated by *Themeda triandra* (Redgrass) and other grasses and bushclumps and individual occurrences of *Acacia karroo* (Sweet Thorn) trees. The dense grass vegetation made archaeological visibility difficult. The proposed area has been disturbed by general farming activities such as grazing and laying underground water pipes; the construction of powerlines and telephone lines, fences, farm roads, farm dams and soil erosion.

Developer:

African Clean Energy Development (Pty) Ltd (ACED)

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Terms of Reference

To conduct a survey of possible archaeological heritage sites within the area for the proposed Cookhouse II Wind Energy Facility, Blue Crane Route Local Municipality, Eastern Cape Province. The survey was conducted to establish the range and importance of the

exposed and *in situ* archaeological heritage materials and features, the potential impact of the development and, to make recommendations to minimize possible damage to these sites.

Brief legislative requirements

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

Archaeology, palaeontology and meteorites

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

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

Burial grounds and graves

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

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

Heritage resources management

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

- (a) *the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;*
- (b) *the construction of a bridge or similar structure exceeding 50m in length;*
- (c) *any development or other activity which will change the character of the site –*
 - (i) *exceeding 5000m² in extent, or*
 - (ii) *involving three or more erven or subdivisions thereof; or*
 - (iii) *involving three or more erven or divisions thereof which have been consolidated within the past five years; or*
 - (iv) *the costs of which will exceed a sum set in terms of regulations by SAHRA, or a provincial resources authority;*
- (d) *the re-zoning of a site exceeding 10 000m² in extent; or*
- (e) *any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must as the very earliest stages of initiating such a*

development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

BRIEF ARCHAEOLOGICAL BACKGROUND

Literature review

Little is known about the archaeology of the immediate area as no systematic archaeological research has been conducted. However, archaeological background information has been sourced from relevant archaeological impact assessments (AIA's) conducted within the surrounding area and records held at the Albany Museum in addition to archaeological research conducted within the wider region and South Africa. A heritage desktop scoping study and heritage impact assessment have been conducted for the already authorised Cookhouse Wind Energy Facility (Webley *et al.* 2009).

The Early Stone Age (ESA) spans a period of between 1.5 million and 250 000 years ago and refers to the earliest that *Homo sapiens sapiens* predecessors began making stone artefacts. The Acheulian Industry which replaced the Olduvai Industry approximately 1.5 million years ago is attested to in diverse environments and over wide geographical areas. The hallmark of the Acheulian Industry is its large cutting tools (LCTs or bifaces), primarily handaxes and cleavers. Bifaces emerged in East Africa more than 1.5 million years ago (mya) but have been reported from a wide range of areas, from South Africa to northern Europe and from India to the Iberian coast (Sharon 2009). One of South Africa's most important Earlier Stone Age sites, Amanzi Springs, was excavated by H.J. Deacon during the 1970's (Deacon 1970). In a series of spring deposits a large number of stone artefacts were found to be *in situ* to a depth of 3-4 meters. Wood and seed material preserved remarkably very well within the spring deposits, and possibly date to between 800 000 to 250 000 years old. The Albany Museum database includes records of occurrences of Acheulian handaxes between Middelburg and the Camdeboo National Park near Graaff Reinet. Sampson (1985) located a large number of sites and there is also a collection in the Albany Museum from the Cradock area, Early Stone Age stone artefacts in the Addo Elephant National Park, and amongst the gravels of old river terraces which line most of the Coega River and estuary. A scatter of some possible Early Stone Age stone artefacts was recorded on one of the adjacent properties with the area of the already authorised Cookhouse Wind Energy Facility (Webley *et al.* 2009).

The large Early Stone Age handaxes and cleavers were replaced by smaller stone tools called the Middle Stone Age (MSA) flake and blade industries. The Middle Stone Age spans a period from 250 000-30 000 years ago and focuses on the emergence of modern humans through the change in technology, behaviour, physical appearance, art, and symbolism. Surface scatters of these flake and blade industries occur widespread across southern Africa although rarely with any associated botanical and faunal remains. It is also common for these stone artefacts to be found between the surface and approximately 50-80cm below ground. Fossil bone may be associated with Middle Stone Age occurrences. These stone artefacts, like the Earlier Stone Age handaxes are usually observed in secondary context with no other associated archaeological material. The Albany Museum database holds records of the occurrence of Middle Stone Age stone artefacts around the Cradock area and the Department of Archaeology has curated Middle Stone Age stone artefacts in its collection from the Cradock area including Highlands Rock Shelter excavated by H.J. Deacon during the 1970's. Surface scatters of weathered and patinated Middle Stone Age stone artefacts made predominantly on hornfels raw material comprising flakes, blades, cores, and a large scraper were documented on the adjacent properties within the area of the already authorised Cookhouse Wind Energy Facility (Webley *et al.* 2009).

The Later Stone Age (LSA) spans a period from 30 000 years ago to the historical period (the last 500 years) until 100 years ago and is associated with the archaeology of San

hunter-gatherers. The majority of archaeological sites date from the past 10 000 years where San hunter-gatherers inhabited the landscape living in rock shelters and caves as well as on the open landscape, inland and along the coast. The open sites are difficult to locate because they are in the open veld and often covered by vegetation and sand and those along the coast are sometimes opened and closed by the movement of the dunes. Sometimes these sites are only represented by a few stone artefacts and fragments of bone. The preservation of these sites is poor and it is not always possible to date them (Deacon & Deacon 1999).

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

Simon Hall (1990) conducted archaeological along the banks of the Fish River, near the Fish River and Koonap River confluence, exposed fresh water shell middens dating between 5 500 and 4 000 years ago. Research conducted in the nearby Winterberg Mountain Range has recorded a Later Stone Age stone artefact manufacture site and ceramic sherds (C. Booth pers ob.). One of the most complete archaeological surveys in South Africa was conducted in the Agter Sneeuberg region in the central and upper Seacow River Area some 180 km north-west (Sampson 1985). Later Stone Age lithics and rare Khoekhoe pottery sherds were uncovered during systematic surveys of the area (Sadr & Sampson 1999).

The Early Iron Age first-farming communities during the first millennium AD generally preferred to occupy river valleys within the eastern half of southern Africa owing to the summer-rainfall climate that was conducive for growing millet and sorghum. Thus far the closest documented and well-researched Early Iron Age site is located within the Great Kei River Valley. There has in the past been some speculation that Early Iron Age populations may have spread well south of the Transkei into the Ciskei, possibly up to the Great Fish River (Binneman et al. 1992), however, no further research has been undertaken to confirm these statements. Thicker and decorated pottery sherds, kraals, possible remains of domesticated animals, upper and lower grindstones and storage pits are associated for identifying Early Iron Age sites. The sites are generally large settlements, but the archaeological visibility may in most cases be difficult owing to the organic nature of the homesteads. Metal and iron implements are also associated with Early Iron Age communities. Hilltop settlement is mainly associated with Later Iron Age settlement patterns that occurred during the second millennium AD. The Later Iron Age communities later moved from settlement in river valleys to the hilltops. Later Iron Age settlements have been formally recorded by the Albany Museum and cover a relatively extended area including within the nearby Koonap River Valley between Bedford and Grahamstown.

Rock art is generally associated with the Later Stone Age period mostly dating from the last 5000 years to the historical period. It is difficult to accurately date the rock art without destructive practices. The southern African landscape is exceptionally rich in the distribution of rock art which is determined between paintings and engravings. Rock paintings occur on the walls of caves and rock shelters across southern Africa. Rock engravings, however, are generally distributed on the semi-arid central plateau, with most of the engravings found in the Orange-Vaal basin, the Karoo stretching from the Eastern Cape (Cradock area) into the Northern Cape as well as the Western Cape, and Namibia. Numerous rock shelters within the wider region, north into the Kaga and Baviaans River

mountains and to the south extending to Grahamstown, contain rock paintings (Albany Museum database).

Historical archaeology refers to the last 500 years when European settlers and colonialism entered into southern Africa. There are records of Observation Posts that were constructed under the leadership of Sir John Cradock, to keep the Xhosa from crossing the Fish River. These were in place and functioning between 1812 and 1817. Positions of observation posts include Addo Heights Post (Addo), Rautenbach's Drift (Addo), Sandflats (Paterson), Coerney, Swartwaterspoort and Kommadagga (Coetzee 1994). The original railway between Cookhouse and Bedford runs over the Farm Request as well as the original road between Cookhouse and Grahamstown. Several historical features and buildings were recorded during the survey for the already authorised Cookhouse Wind Energy Facility.

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DESCRIPTION OF THE PROPERTY

Area surveyed

Location data

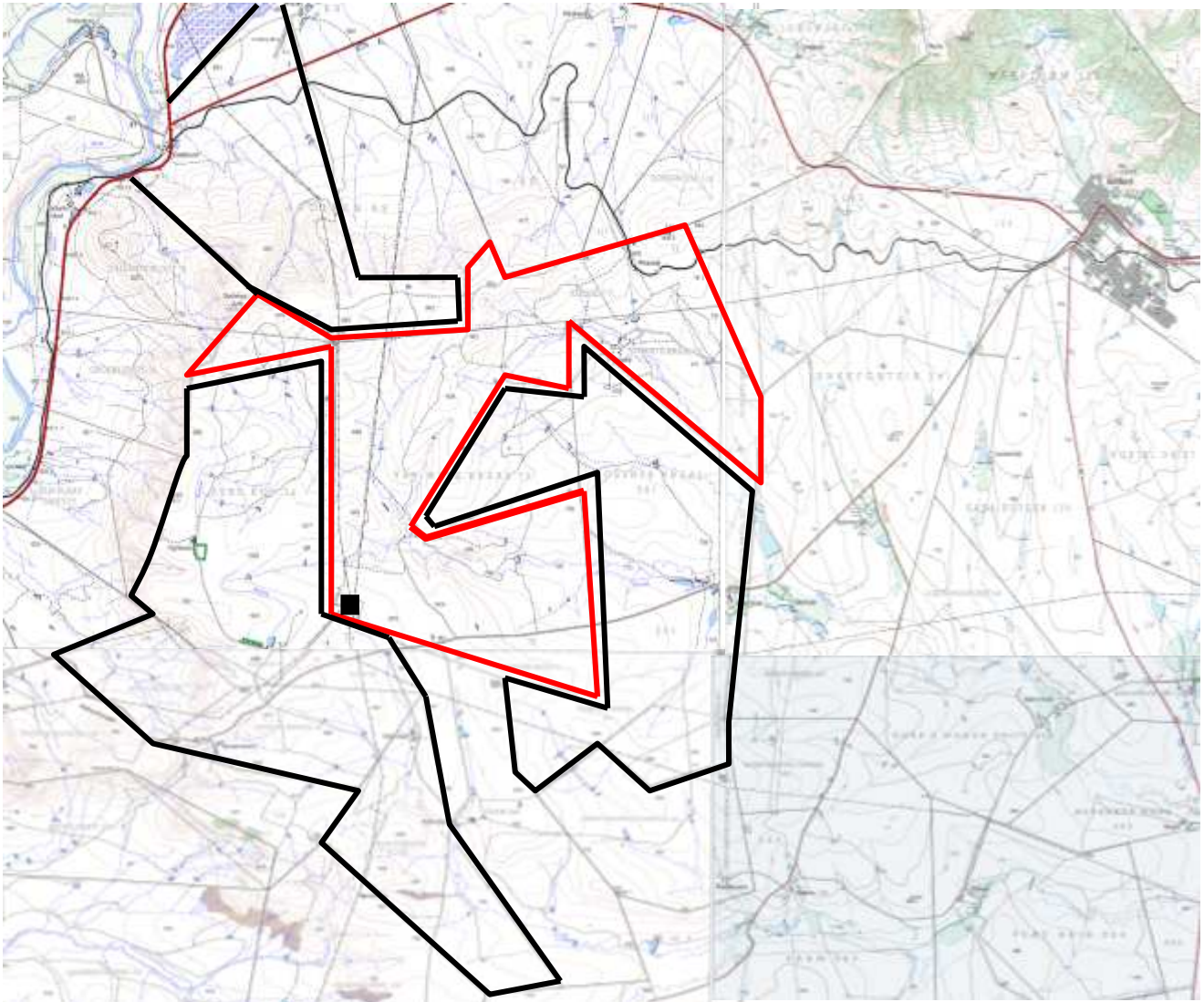
The area for the proposed Cookhouse II Wind Energy Facility is located between the small towns of Cookhouse and Bedford, bordered by the N10 national road to the west, the R350 regional road to the east, the R63 route to the north and a secondary road linking Bedford and the N10 running through a portion of the proposed WEF area to the south. The proposed area is situated in the savanna biome, referred to as subarid thorn bushveld. The proposed area is mostly covered in dense grass vegetation dominated by *Themeda triandra* (Redgrass) and other shorter grasses as well as bushclumps and individual *Acacia karroo* (Sweet Thorn) trees. In some instances the dense grass vegetation made archaeological visibility difficult; however, overall, archaeological visibility was good over most of the proposed area. The proposed area has been disturbed by general farming activities such as

grazing and laying underground water pipes; the construction of powerlines, fences, farm roads, farm dams and soil erosion.

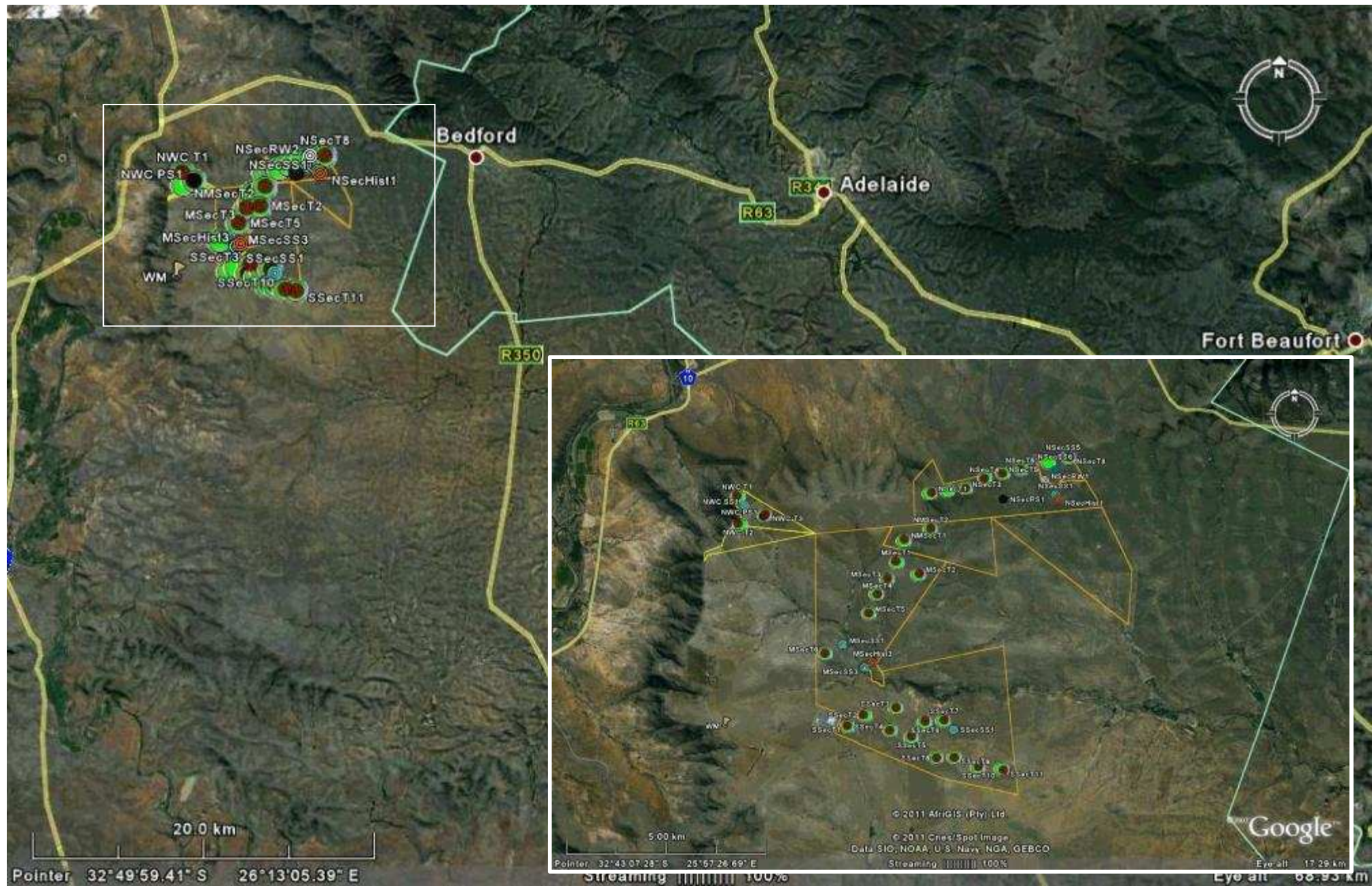
The site comprises land directly adjoining the already authorised ACED Renewables (Pty) limited 200 turbine Wind Energy Facility. The Cookhouse II wind energy facility is proposed on farm portions: Van Wyks Kraal 73 (Portions 0 – remaining extent 1 and 4), Roberts Kraal 72 (Portion 0 remaining extent), Gallants Kloof 70 (Portion 3), Request 71 (Portion 0 remaining extent, Portion 11, Portion 12) and Farm 75 (Portion 2).

Map

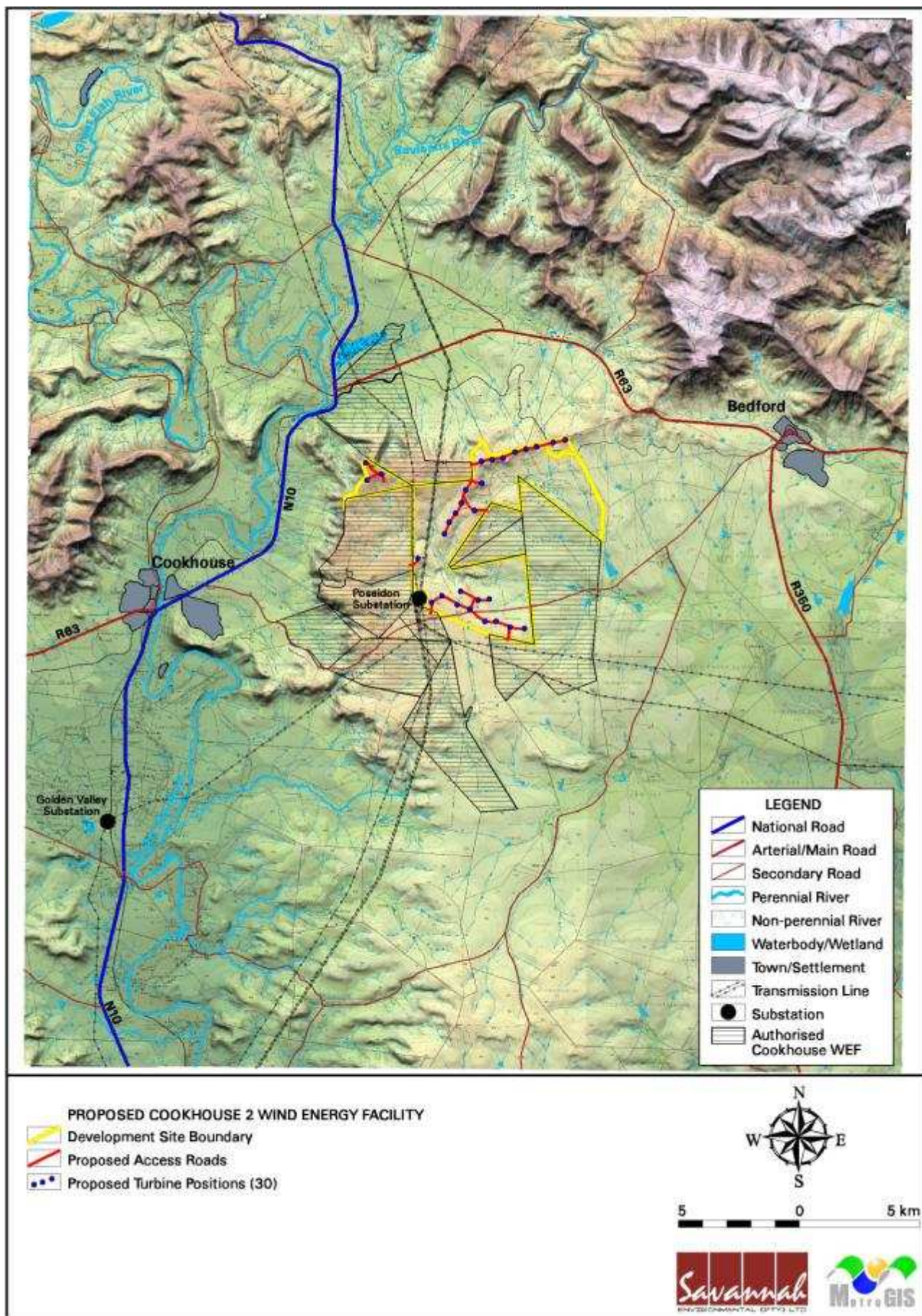
1:50 000 Maps: 3225 DB COOKHOUSE; 3225DD GOLDEN VALLEY; 3226CA BEDFORD; and 3226CC HERBERT'S HOPE (Map 1).



Map 1. 1:50 000 maps showing the location and farms for the proposed Cookhouse II Wind Energy Facility (Red: Cookhouse II WEF; Black: Authorised Cookhouse WEF; Black Dot: Eskom Poseidon Substation).



Map 2. Aerial view of the extent of the proposed area for the Cookhouse II Wind Energy Facility.



Map 3. GIS map of the location and positions of the wind turbines and associated new access roads for the proposed Cookhouse II Wind Energy Facility (map courtesy of Savannah Environmental (Pty) Ltd).

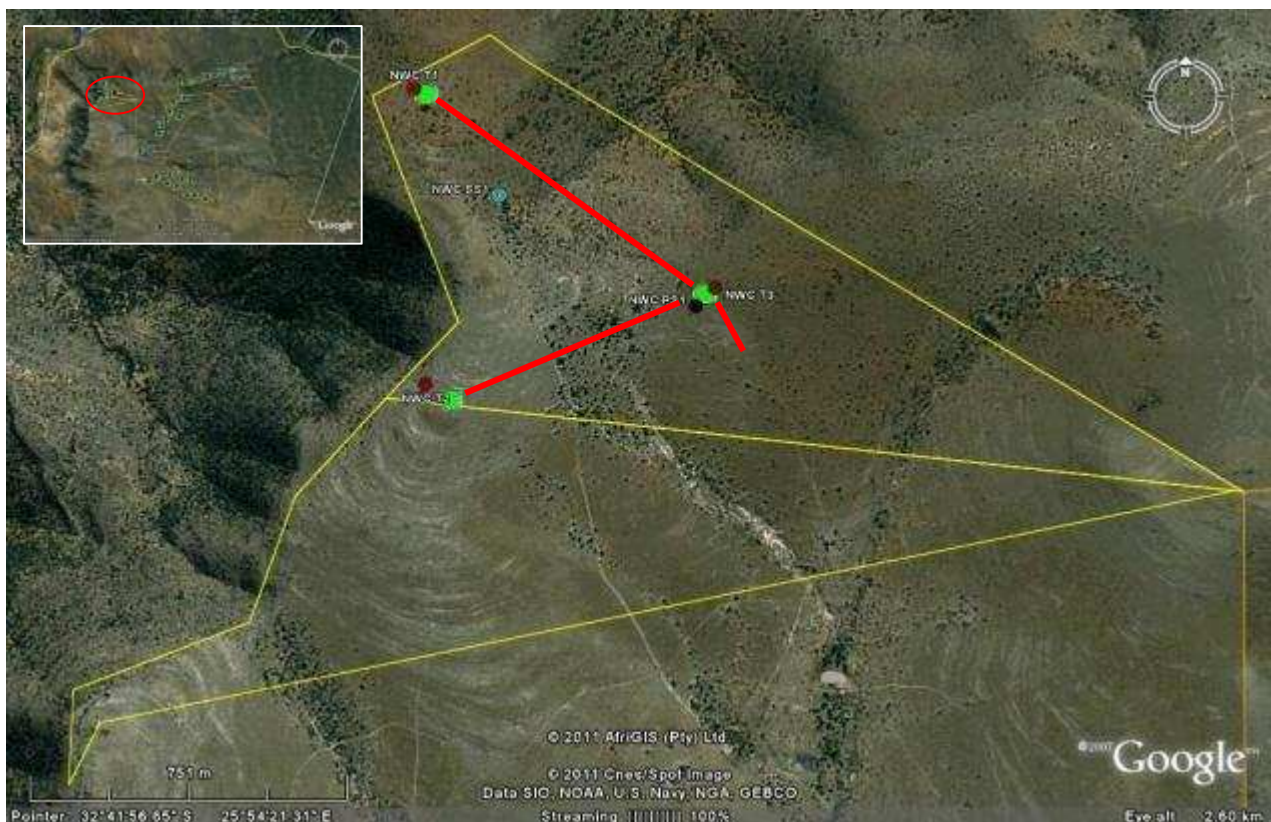
ARCHAEOLOGICAL INVESTIGATION

Methodology

The survey was conducted on foot by focusing on the areas for proposed positions of the individual turbines and the route of the associated underground cables and proposed new access roads. Archaeological visibility was generally good throughout the proposed area, although thick dense grass vegetation hindered visibility in some instances. Disturbed, exposed and eroded areas were investigated for the possible remains of archaeological remains. GPS readings were taken using a Garmin Oregon 550 (Table 1). The GPS readings have been plotted on Map 2 and Maps 4 - 7. Map 3 is the GIS generated outlay and shows the area for the already authorised Cookhouse Wind Energy Facility and the proposed positions of the individual turbines and the new access roads connecting the individual turbines to each other and the main entrances for the proposed Cookhouse II Wind Energy Facility.

The area for the proposed Cookhouse II Wind Energy Facility has been divided into hypothetical sections according to the area of the positions of the proposed turbines. These hypothetical sections on the various farms will be described separately for more descriptive explanation of the environment and archaeological material remains encountered.

Gallants Kloof 70 (Portion 3) and Farm 75 (Portion 2) [North-Western Corner]:



Map 4. Close-up aerial view of the North-Western Corner on the Farm Gallants Kloof (Portion 3) and the Farm 75 (Portion 2) showing the turbine areas (green and red dots), routes for the underground cables and proposed new access routes (red lines, not to scale), the stone artefact scatter (blue dot) and a possible packed stone feature (black dot).

The positions of the proposed turbines situated on the Farm Gallants Kloof (Portion 3) and Farm 75 (Portion 2) are situated in the north-western corner of the proposed area for the Cookhouse II Wind Energy Facility. Three turbines are proposed to be constructed on this section of the proposed development with underground cables and new access roads connecting the individual turbines from the existing farm gravel road.

The proposed area is mostly covered in short dense grass vegetation and bushclumps of *Acacia Karroo* trees (Figs 1-2). The area was surveyed on foot by investigating the exposed and eroded areas within the grass vegetation cover (Figs 3-4). The proposed area is relatively undisturbed from general farming activities; only a boundary fence extends near one of the

turbines (NMC T1).



Figs 1-2. Views of the landscape and vegetation cover.



Figs. 3-4. Examples of the exposed areas investigated.

One surface scatter of three weathered Middle Stone Age stone artefacts was encountered on a ridge overlooking a steep kloof (NWC SS1). The surface scatter comprised of three flakes made on a local shale raw material, two of the flakes contained significant retouch resembling scraper-like implements. The surface scatter may have been slightly disturbed by both natural and animal influences, and therefore is in a secondary context. NWC SS1 is situated out of the proposed areas for the construction of the individual turbines, underground cables, and new access roads (Fig 5).



Fig 5. Surface scatter of weathered Middle Stone Age stone artefacts.

A possible packed stone feature was encountered (NWC PS1) close to one of the proposed areas for the turbines (NWC T3) and is situated on the route of the underground cables and new access road connecting two of the turbines (Fig 6). It is often difficult to determine

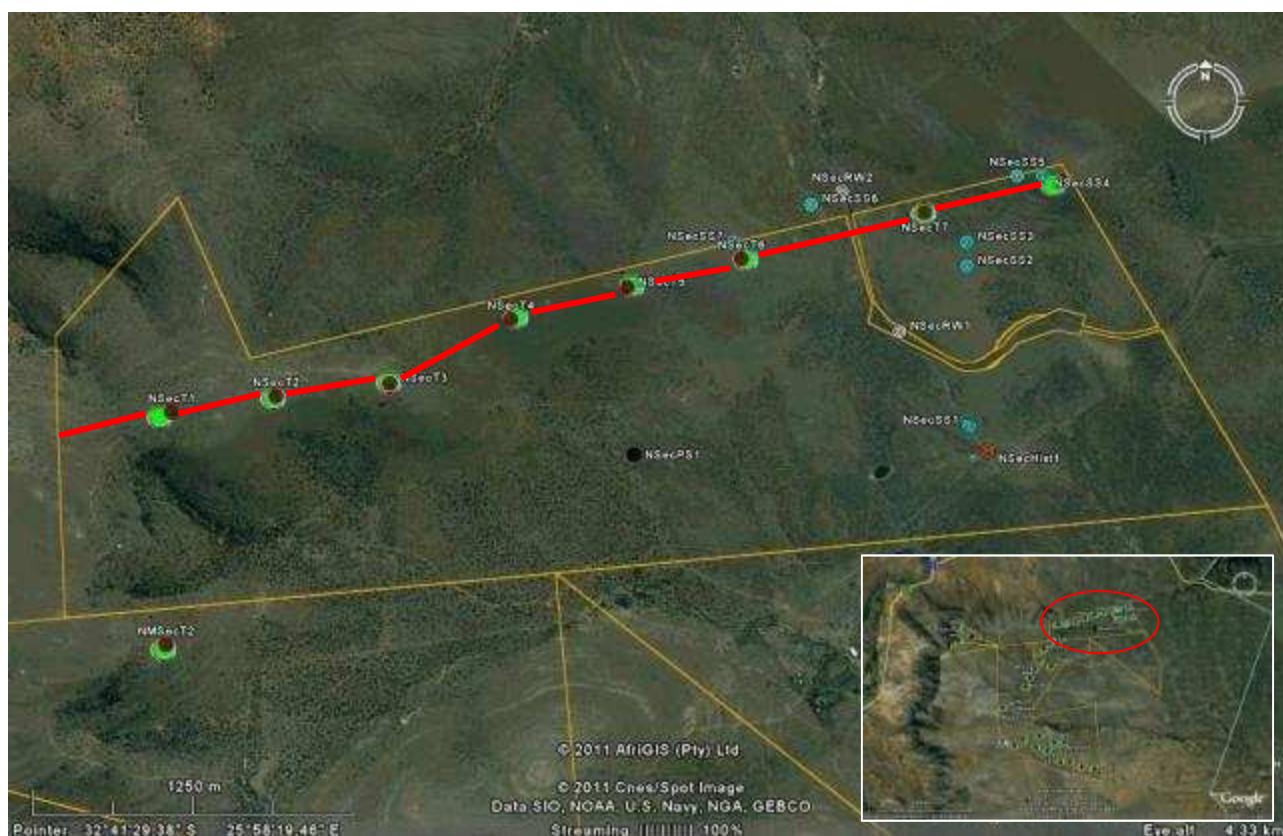
exactly weather such packed stone features may be possible informal burials, however, similar stone features have been identified in the already authorised area for the Cookhouse Wind Energy Facility (Webley *et al.* 2009).



Fig 6. Possible packed stone feature.

The proposed area for the construction of the turbines, underground cables and new access roads on the Farm Gallants Kloof (Portion 3) and Farm 75 (Portion 2) is of a low-medium cultural significance owing to only one encounter of a surface scatter of Middle Stone Age stone artefacts outside of the proposed area to be impacted. The possible packed stone feature may be of a higher significance if it is an informal burial area.

Request 71 (Portion 0 remaining extent, Portion 11, Portion 12) and Roberts Kraal 72 (Portion 0 remaining extent) [Northern Section]:



Map 5. Close up aerial view of the Farm Request 71 (Portion 0 remaining extent, Portion 11, Portion 12) and the Farm Roberts Kraal 72 (Portion o remaining extent) showing the proposed positions of the individual turbines (green and red dots), routes for the underground cables and proposed new access routes (red lines, not to scale), stone artefact scatters (blue dots), a packed stone feature (black dot), and historical features (orange dot).

The Farms Request 71 (Portion 0 remaining extent, Portion 11, Portion 12) and Roberts Kraal 72 (Portion 0 remaining extent) are situated in the northern-most or north-east corner of the proposed area for the Cookhouse II wind energy facility. Eight turbines are proposed to be constructed on this section of the proposed development with underground cables and new access roads connecting the individual turbines from the existing farm gravel road.

The proposed area is mostly covered in dense grass vegetation on the hilltops and bushclumps of *Acacia Karroo* trees on the flat areas below the slopes. The area was surveyed on foot by investigating the exposed and eroded areas within the grass vegetation by following the proposed line for the underground cables and new access roads that connect each turbine from east to west. The proposed area is has been disturbed by general farming activities such as grazing of domestic stock, the construction of the farm gravel roads, fences, and manufactured dams and associated infrastructure such as underground piping (Figs 7-8).

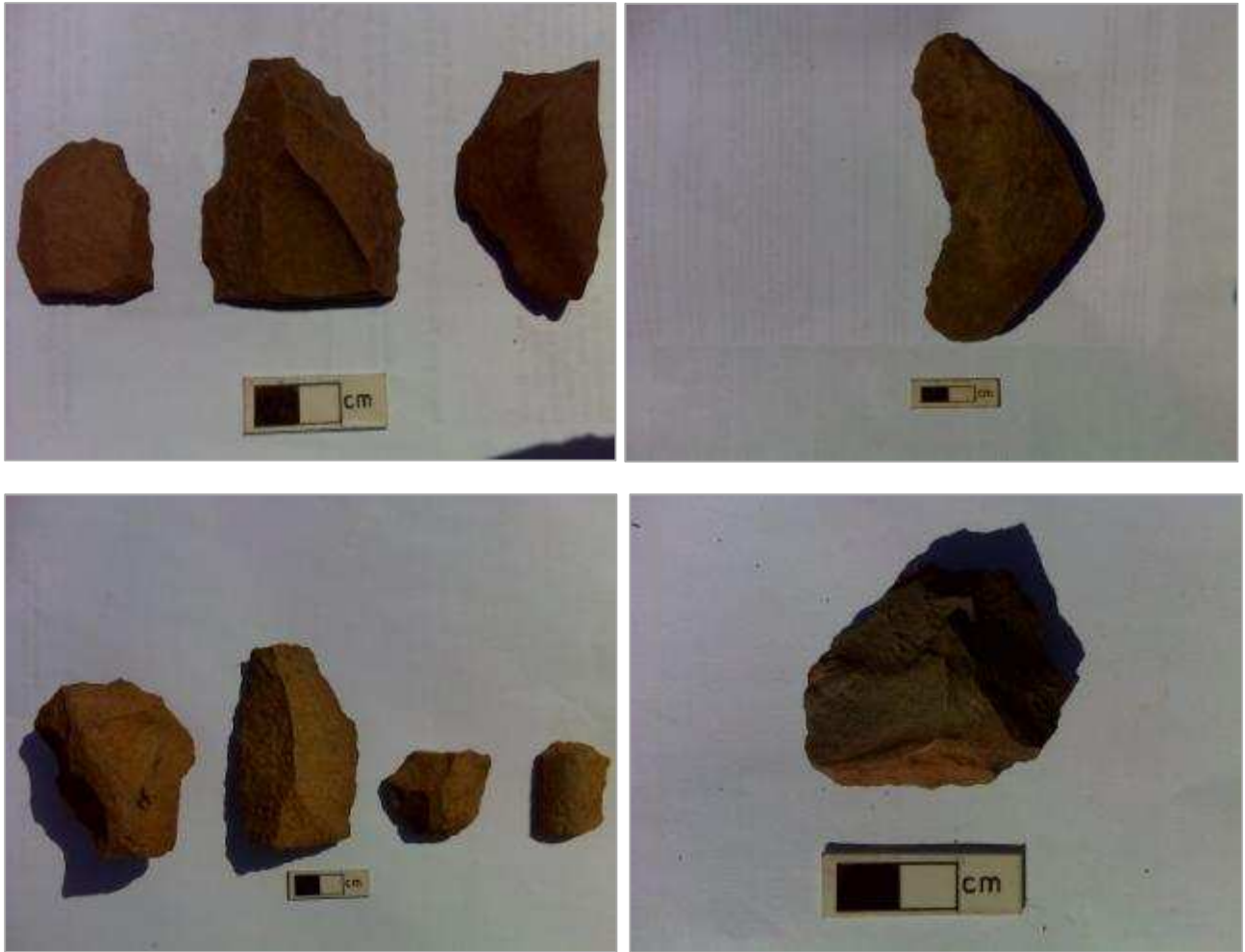


Figs 7-8. Views of the landscape, vegetation cover, and disturbances such as underground water pipes and fencing.

Seven isolated surface scatters of Middle Stone Age stone artefacts were encountered mainly in the eastern half of the proposed area for development (NSecSS1 – NSecSS7). NSecSS2 – NsecSS7 comprised mainly single surface scatters of weathered Middle Stone Age stone artefacts occurring in the exposed areas within the dense grass vegetation as well as on small rocky outcrops (Figs 9-14). NSecSS1 contained the most stone artefacts occurring within the farm gravel road and adjacent road cutting between the surface and 40cm below ground (Figs 15-17). Collectively the stone artefact scatters comprised flakes, some with the characteristic Middle Stone Age faceted platform prepared core technique, blades, and cores made predominantly on hornfels, medium-grained quartzite, and the local shale raw materials. Most of the stone artefacts showed evidence of retouch and edge-damage.



Figs 9-10. Views of the exposed areas with isolated Middle Stone Age stone artefact surface scatters.



Figs 11-14. Examples of Middle Stone Age stone artefacts documented at the areas NSec2-NSec7.



Figs 15-16. View of the Middle Stone Age stone artefacts eroding out of the road cutting and occurring adjacent to and within the farm road.



Fig 17. Sample of Middle Stone Age stone artefacts documented within the farm road and road cutting.

A possible packed stone feature was encountered (NSecPS1) at the bottom of one of the hill slopes, outside the area proposed for the individual turbines and route for the underground cables and new access roads (Fig 18). It is often difficult to determine exactly whether such packed stone features may be possible informal burials, however, similar stone features have been identified in the already authorised areas for the Cookhouse Wind Energy Facility (Webley *et al.* 2009).



Fig. 18. Possible packed stone feature.

The original road between Cookhouse and Grahamstown crosses over a portion of this area of the proposed development. The historical stone feature depicting the engraved distances in miles between Cookhouse and Grahamstown (NSecHist1) shows evidence of the original roadway remains. The old road passing the stone distance marker can still be slightly observed by the exposed area adjacent to the stone feature. The landmark stone feature is situated relatively close to the farm gravel road proposed to be used for access and transportation during the construction and operational activities and must be protected to avoid negative impact. These distance markers can still be observed along the R350 between Bedford and Grahamstown (Figs 19-20).



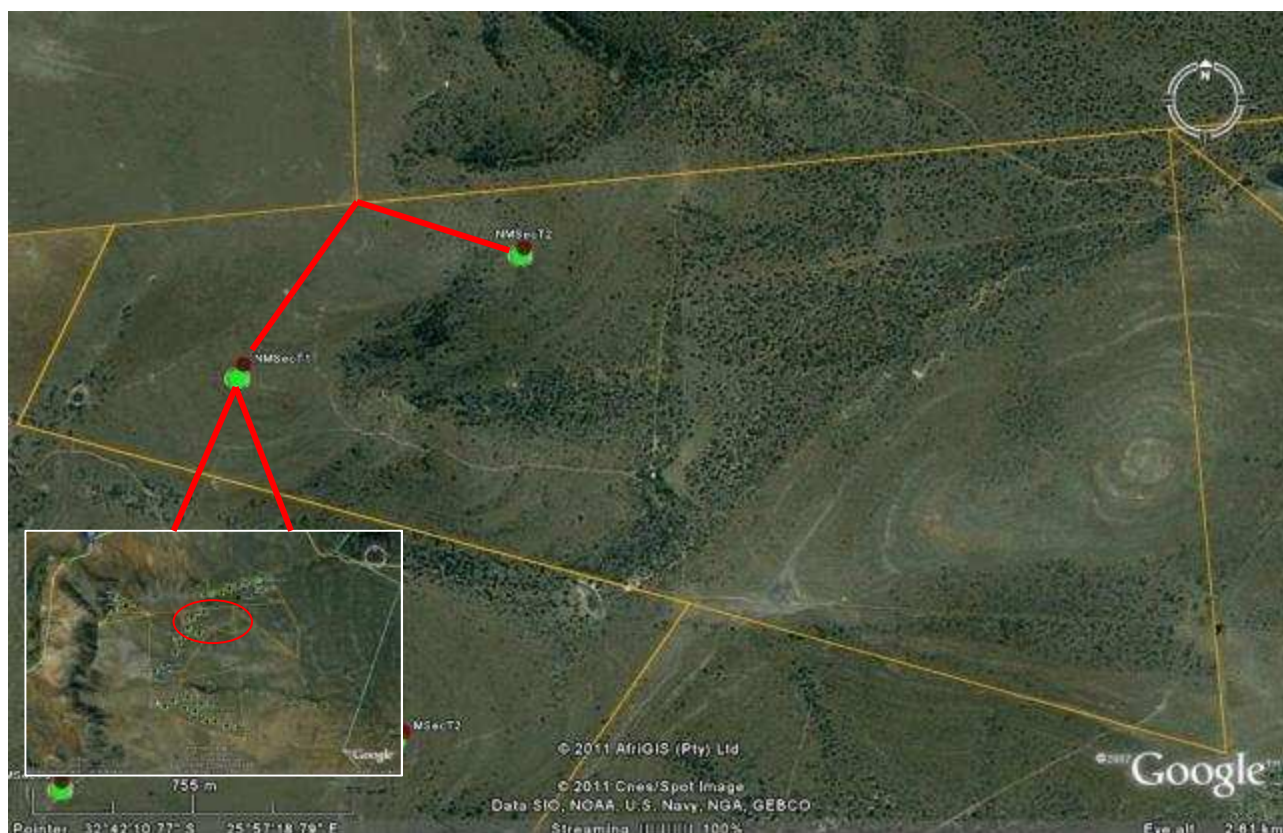
Figs 19-20. Stone feature distance marker of the original road between Cookhouse and Grahamstown. Old road still partly visible (black arrow).

The area proposed for the turbines and underground cables and new access roads on the Farms Request 71 (Portion 0 remaining extent, Portion 11, Portion 12) and Roberts Kraal 72 (Portion 0 remaining extent) is of a medium-high cultural significance owing to the seven Middle Stone Age stone artefact surface scatters over the eastern half of the proposed area for development, the possible packed stone feature, and the historical landmark stone feature distance marker.

Van Wyks Kraal 73 (Portions 0 – remaining extent 1 and 4) [North-Mid Section; Mid Section; and Southern Section]:

Van Wyks Kraal 73 (Portions 0 – remaining extent 1 and 4) has been divided into three hypothetical sections (North-Mid Section; Mid Section; and Southern Section], each will be described separately.

Van Wyks Kraal 73 (Portions 0 – remaining extent 1 and 4) [North-Mid Section]:



Map 6. Close-up aerial view of the North-Mid section of the Farm Van Wyks Kraal 73 (Portions 0 – remaining extent 1 and 4) showing the proposed positions of the individual turbines and routes for the underground cables and proposed new access routes (red lines, not to scale).

The North-Mid Section of the Farm Van Wyks Kraal 73 (Portions 0 – remaining extent 1 and 4) is situated between the Farms Gallants Kloof (Portion 3) and Farm 75 (Portion 2) to the west and the Farms Request 71 (Portion 0 remaining extent, Portion 11, Portion 12) and Roberts Kraal 72 (Portion 0 remaining extent) to the east. Two turbines are proposed to be constructed on this section of the proposed development with underground cables and new access roads connecting the individual turbines from the existing farm gravel road.

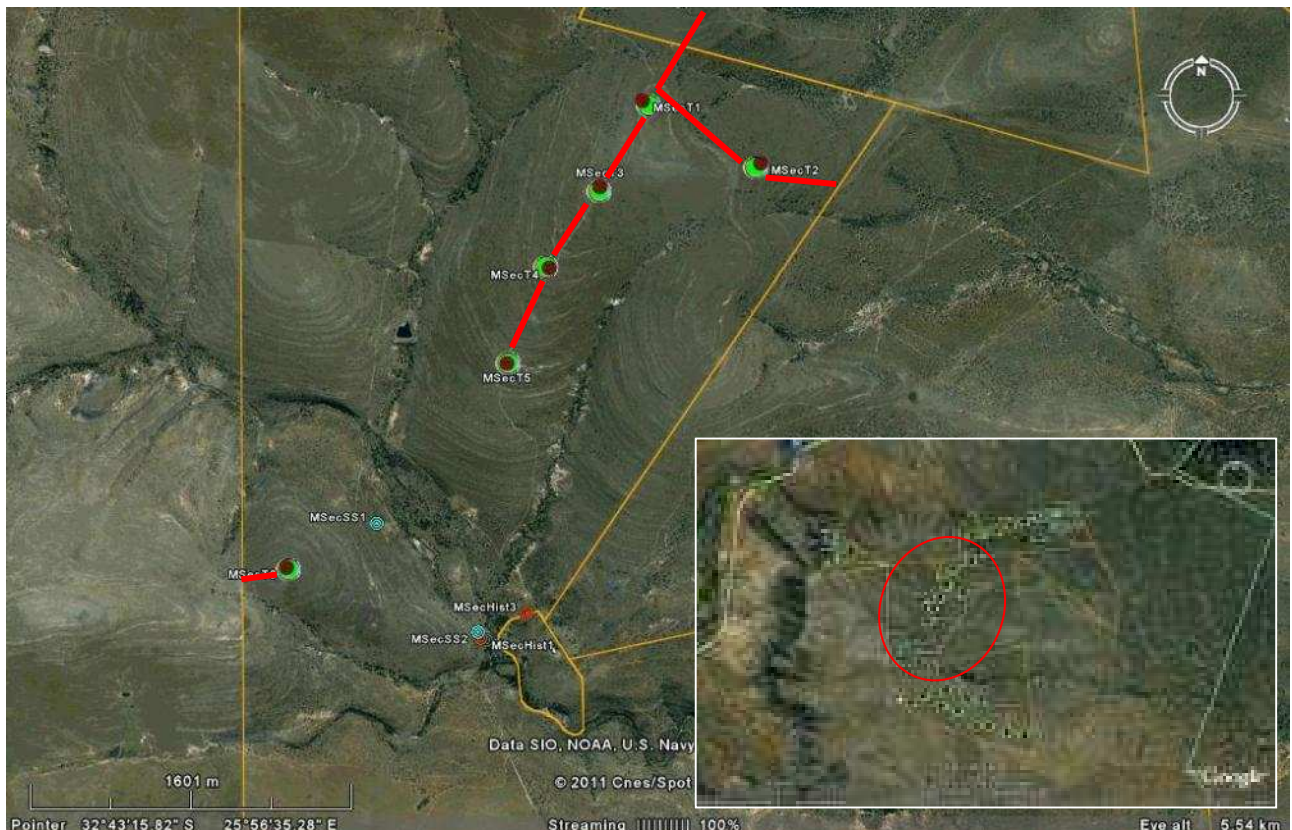
The proposed area is mostly covered in dense grass vegetation on the hilltops and bushclumps of *Acacia Karroo* trees at the flat areas below the slopes (Figs 21-22). The area was surveyed on foot by investigating the exposed and eroded areas within the grass vegetation by following the proposed line for the underground cables and new access road that connects each turbine. The proposed area is has been disturbed by general farming activities such as grazing of domestic stock, the construction of the farm gravel road, fences, and manufactured dams and associated infrastructure such as underground piping.

The area proposed for the turbines, underground cables and new access roads on the North-Mid Section of the Farm Van Wyks Kraal 73 (Portions 0 – remaining extent 1 and 4) is of a low cultural significance as no archaeological heritage material remains or historical features were observed within this section of the proposed area for development.



Figs 21-22. Views of the landscape and vegetation cover.

Van Wyks Kraal 73 (Portions 0 – remaining extent 1 and 4) [Mid Section]:



Map 7. Close-up aerial view of the Mid-section on the Farm Van Wyks Kraal 73 (Portions 0 – remaining extent 1 and 4) showing the proposed positions of the individual turbines (green and red dots), routes for the underground cables and proposed new access routes (red lines, not to scale), stone artefact scatters (blue dots) and historical remains (orange dots).

The Mid Section is situated in the middle of proposed area for the Cookhouse II Wind Energy Facility on the Farm Van Wyks Kraal 73 (Portions 0 – remaining extent 1 and 4). Six turbines are proposed to be constructed on this section of the proposed development with underground cables and new access roads connecting the individual turbines from the existing farm gravel road.

The proposed area is mostly covered in dense grass vegetation on the hilltops and bushclumps of *Acacia Karroo* trees on the flat areas below the slopes. The area was surveyed on foot by investigating the exposed and eroded areas within the grass vegetation by following the proposed line for the underground cables and new access roads that connect each turbine from north to south. The proposed area is has been disturbed by general farming activities such as grazing of domestic stock, the construction of the farm gravel road, fences, and manufactured dams and associated infrastructure such as underground piping (Figs 23-24).



Figs 23-24. Views of the landscape, vegetation cover, and disturbances.

An isolated surface scatter of one very weathered broken Middle Stone Age stone artefact with the characteristic faceted platform and retouch was documented on an exposed erosion area near the Van Wyks Kraal farmstead (MSecSS3) (Figs 25-26). A Later Stone Age stone artefact scatter was documented to the south of MSecSS3, closer to the farmstead and extending into the area housing small kraals behind the farm house. The Later Stone Age stone artefact scatter extends for approximately 100m adjacent to the farm gravel road and 50m up the slope. Several flakes and a possible stone artefact manufacture area comprising mainly of hornfels raw material, recognised by the amount of flakes and chips in close proximity, were observed within this area. Several pieces of quartz were also documented; this is not a local raw material and would have been quarried elsewhere and carried into the area. The general Later Stone Age stone artefact scatter included flakes manufactured on hornfels and the local shale raw material, endscrapers manufactured on hornfels and silcrete (also not a local raw material), as well a bladelet core shaped on a piece of hornfels raw material (Figs 27-30).



Figs 25-26. Exposed erosion area where the isolated Middle Stone Age stone artefact was documented (left) and the isolated occurrence of the Middle Stone Age stone artefact.



Figs 27-28. View of the areas where the Later Stone Age stone artefact were documented (MSecSS1 [left]; MSecSS2 [right]).



Figs 29-30. Examples of the Later Stone Age stone artefacts documented between MSecSS1 and MSecSS2 (left) and a close of the enscrapers, a bladelet core and the variety of fine-grained raw materials (silcrete and hornfels).

A few broken sherds of historical porcelain and ceramics (MSechist1) was observed within the area of the Later Stone Age stone artefact scatter closest to the small kraals near farmstead (MSechist1). A family graveyard enclosed with stone-walling was observed within the farmstead and is presumably excluded from the proposed development area (MSechist2).

The area proposed for the turbines, underground cables and new access roads on the Mid Section of the Farm Van Wyks Kraal 73 (Portions 0 – remaining extent 1 and 4) is of a medium-high cultural significance. Although only one isolated Middle Stone Age stone artefact scatter was encountered within the area, the Later Stone Age site is significant as no similar Later Stone Age sites or stone artefact scatters were documented during the previous heritage impact assessment for the already authorised Cookhouse Wind Energy Facility. The 100m x 50m area is situated adjacent to the farm gravel road. This area must be protected to avoid negative impact during construction and operational activities.

Van Wyks Kraal 73 (Portions 0 – remaining extent 1 and 4) [Southern Section]:



Map 8. Close-up aerial view of the proposed positions of the turbines (green and red dots) and the isolated stone artefact surface scatter (blue dot).

Van Wyks Kraal 73 (Portions 0 – remaining extent 1 and 4) [Southern Section]:

The Southern Section proposed area for the Cookhouse II wind energy facility and is situated on the Farm Van Wyks Kraal 73 (Portions 0 – remaining extent 1 and 4). Eleven turbines are proposed to be constructed on this area of the proposed development with underground cables and new access roads connecting the individual turbines from the existing farm gravel road. The proposed turbines will be constructed to the north and south of the road that connects Bedford and the N10 near Cookhouse. The Eskom Poseidon Substation is situated to the west of this area, north of the Bedford-N10 road.

The proposed area comprises mainly undulating hills and is mostly covered in dense grass vegetation on the hilltops and bushclumps of Acacia Karroo trees at the flat areas below the slopes, as well as few rocky outcrops. The area was surveyed on foot by investigating the exposed and eroded areas within the grass vegetation as well the small rocky outcrops by following the proposed line for the underground cables and new access roads that connect each turbine. The proposed area is has been disturbed by general farming activities such as grazing of domestic stock, the construction of the farm gravel road, fences, electricity pylons and manufactured dams and associated infrastructure such as underground piping (Figs 31-32).



Figs 31-32. Views of the landscape, vegetation cover, and disturbances.

One isolated surface scatter of Middle Stone Age stone artefacts was encountered in the area to the north of the Bedford-N10 road (SSecSS1). The surface scatter comprised three relatively weathered stone artefacts with retouch and edge-damage manufactured on local shale raw material and a medium-grained quartzite raw material (Fig 33). The stone artefacts are most probably in a secondary context.



Fig 33. Examples of the Middle Stone Age stone artefact scatter documented at SSecSS1.

The area proposed for the turbines, underground cables and new access roads on the Southern Section of the Farm Van Wyks Kraal 73 (Portions 0 – remaining extent 1 and 4) is of a low cultural significance as only one isolated Middle Stone Age stone artefact surface scatter containing three stone artefacts was encountered within the area proposed for development.

Survey/Description of sites

Eighteen archaeological and historical sites (Table 1) were documented within the area proposed for the Cookhouse II Wind Energy Facility. Fourteen of these sites were archaeological, comprising twelve stone artefact surface scatters of which ten belonged to the Middle Stone Age and two to the Later Stone Age stone. Two packed stone features that may possibly represent informal burials are included under the archaeological heritage remains. The Middle Stone Age stone artefact scatters are more than likely in a secondary context and not *in situ*, this may be due to several disturbances (natural, animal, human) removing them from their primary context. However, as observed within the gravel farm and adjacent road cutting at NSecSS1, *in situ* or further occurrences of Middle Stone Age stone artefacts may be encountered between the surface and 50cm below ground. The Later Stone Age stone artefact scatters and possible manufacture area (MSecSS1) is rather significant as no similar site was documented during the previous heritage impact assessment conducted for the already authorised Cookhouse Wind Energy Facility. The three remaining historical sites include the landmark stone feature distance marker of the original road between Cookhouse and Grahamstown (NSecHist1), the few broken sherds of historical porcelain and ceramics (MSecHist1), and the family graveyard with stone walling (MSecHist2) (not included in the proposed development area).

CULTURAL LANDSCAPE

The cultural landscape displays a multiplicity of layers first dominated by Middle Stone Age occupants who, by evidence of the retouched and edge-damaged stone artefact scatters, used the landscape and its resources (water and food such plants and animals) and settled on it long enough to leave behind such evidence. Secondly, *homo sapiens sapiens* / hunter-gathers occupied the landscape thousands of years later for the same purpose that their predecessors exploited its resources (water and food such as plants and animal), keeping in mind the possible changes and similarities of the climatic conditions. The hunter-gatherers left behind evidence settlement on the landscape and their unique cultural influences determined by the types of formal stone artefacts left behind and their evidence of use. Thirdly, the incoming European (Dutch, Scottish, British, and other European nationalities), created their own stamp on the landscape by the establishment of railways and roads, land ownership and ongoing generations of farming creating a new cultural landscape.

RECOMMENDATIONS

The area is of a medium cultural sensitivity and development may proceed as planned, although the following recommendations must be considered prior to the construction phase:

1. A professional archaeologist (with a valid collection permit, if necessary) must be appointed during vegetation clearing and excavations to monitor possible encounters of archaeological material remains, sites, or informal burials that may be uncovered within the dense grass vegetation and between the surface and 50-80cm below ground.
2. The landmark stone feature distance marker (NSecHist1) must be protected, and if necessary be visibly cordoned off, during the construction and operational phases, so as to not be negatively impacted by transportation of and access to the individual turbines.
3. The 100m x 50m Later Stone Age stone artefact surface scatter area (MSecSS1-MSecSS2), including the few historical porcelain and ceramics sherds (MSecHist1), must be protected and, if necessary, be visibly cordoned off so as to avoid any possible negative impact during the construction and operational phases.

4. If concentrations of archaeological heritage material and human remains are uncovered during construction, all work must cease immediately and be reported to the Albany Museum (046 622 2312) and/or the South African Heritage Resources Agency (SAHRA) (021 642 4502) so that systematic and professional investigation/ excavation can be undertaken.

5. Construction managers/foremen must be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites.

GENERAL REMARKS AND CONDITIONS

Note: This report is a phase 1 archaeological heritage impact assessment/ investigation only and does not include or exempt other required heritage impact assessments (see below).

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

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

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

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

1. Human Skeletal material

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

2. Freshwater mussel middens

Freshwater mussels are found in the muddy banks of rivers and streams and were collected by people in the past as a food resource. Freshwater mussel shell middens are accumulations of mussel shell and are usually found close to rivers and streams. These shell middens frequently contain stone tools, pottery, bone, and occasionally human remains. Shell middens may be of various sizes and depths, but an accumulation which exceeds 1 m² in extent, should be reported to an archaeologist.

3. Stone artefacts

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

4. Fossil bone

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

5. Large stone features

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

6. Historical artefacts or features

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

Table 1: GPS co-ordinates and sites.

Reference	Description	GPS Co-ordinates
Sites: Gallants Kloof 70 (Portion 3) and Farm 75 (Portion 2) [North-Western Corner]:		
NWC SS1	MSA stone artefact surface scatter on rocky ridge overlooking a deep kloof	32°41'39.70"S; 25°54'08.40"E
NWC PS1	Possible packed stone feature (informal burial?)	32°41'48.10"S; 25°54'28.10"E
Sites: Request 71 (Portion 0 remaining extent, Portion 11, Portion 12) and Roberts Kraal 72 (Portion 0 remaining extent) [Northern Section]:		
NSecSS1	MSA stone artefact scatter in farm road and adjacent road cutting	32°41'29.10"S; 25°59'07.00"E
NSecSS2	1 weathered hornfels MSA flake in exposed area	32°41'09.00"S; 25°59'06.50"E
NSecSS3	MSA flakes documented in exposed area	32°41'06.00"S; 25°59'09.00"E
NSecSS4	1 MSA shale scraper	32°40'57.60"S; 25°59'17.80"E
NSecSS5	1 weathered hornfels MSA flake	32°40'57.60"S; 25°59'13.90"E
NSecSS6	Scatter of MSA flakes, broken flakes, and a core predominantly manufactured of shale	32°41'01.40"S; 25°58'43.20"E
NSecSS7	MSA stone artefact scatter in exposed area	32°41'06.20"S; 25°58'43.20"E
NSecPS1	Possible packed stone feature (informal burial?)	33°19'29.22"S; 27°22'24.66"E
NSecHist1	Stone feature distance marker of original road between Cookhouse and Grahamstown	32°41'32.30"S; 25°59'09.80"E
Sites: Van Wyks Kraal 73 (Portions 0 – remaining extent 1 and 4) [Mid Section]:		
MSecSS1	1 shale MSA broken proximal flake with faceted platform	32°43'32.60"S; 25°55'43.40"E
MSecSS2	One extent of the scatter of LSA hornfels and shale flakes and possible stone artefact manufacture area including the bladelet core	32°43'50.00"S; 25°56'04.60"E
MSecSS3	One extent of the scatter of LSA stone artefacts near the small kraals near to the farmstead.	32°43'51.30"S; 25°56'03.50"E
MSecHist1	Broken pieces of historical porcelain mixed with the Later Stone Age stone artefact scatter at MSecSS3	32°43'51.00"S; 25°56'03.50"E
MSecHist2	Family graveyard (historical and modern)	32°43'46.90"S; 25°56'12.30"E

Sites: Van Wyks Kraal 73 (Portions 0 – remaining extent 1 and 4) [Southern Section]:

SSecSS1

MSA shale and medium-grained quartzite flakes with retouch and edge-damage

32°44'41.40"S; 25°57'30.40"E

Table 2: List of predicted impacts on the archaeological heritage as a result of the proposed Cookhouse II Wind Energy Facility

Construction Phase Direct Impacts										
Impact	Extent	Duration	Intensity	Probability	Significance without mitigation	Significance assuming mitigation	Status	Reversibility	Irreplaceable loss of resources	Can impacts be mitigated?
Impact: Loss of stone artefact scatters and possible sites										
Impact rating	Site specific	Permanent	High	High	Medium	Medium	Negative	None	Yes	Yes
Assigned Score	5	5	10	5	50	30				
Mitigation: <ul style="list-style-type: none"> • No phase 2 archaeological mitigation is required for the proposed development to proceed. • The grave and burial areas must be identified and cordoned off prior to the commencement of development so that no negative impact and vandalism occurs. • The possible Historical/Late Iron Age settlement and immediate surrounding area must be identified and cordoned off prior to development to avoid negative impact from the tracks to be used. • If concentrations of archaeological heritage material and human remains are uncovered during construction, all work must cease immediately and be reported to the Albany Museum (046 622 2312) and/or the South African Heritage Resources Agency (SAHRA) (021 642 4502) so that systematic and professional investigation/excavation can be undertaken. • Construction managers/foremen should be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites. 										

Table 3: Impact table summarising the significance of impacts (with and without mitigation):

<i>Nature: The impact of the proposed Riverbank Wind Energy development on the archaeological heritage</i>		
	<i>Without Mitigation</i>	<i>With Mitigation</i>
<i>Extent</i>	3	3
<i>Duration</i>	5	5
<i>Magnitude</i>	10	10
<i>Probability</i>	4	4
<i>Significance</i>	Medium-Low Cultural Sensitivity	Medium-Low Cultural Sensitivity
<i>Status (positive or negative)</i>	Negative	Negative
<i>Reversibility</i>	Low	Low
<i>Irreplaceable loss of resources?</i>	Yes	Yes
<i>Can impacts be mitigated?</i>	Yes	Yes
<p><i>Mitigation:</i></p> <ul style="list-style-type: none"> • No phase 2 archaeological mitigation is required for the proposed development to proceed. • The grave and burial areas must be identified and cordoned off prior to the commencement of development so that no negative impact and vandalism occurs. • The possible Historical/Late Iron Age settlement and immediate surrounding area must be identified and cordoned off prior to development to avoid negative impact from the tracks to be used. • If concentrations of archaeological heritage material and human remains are uncovered during construction, all work must cease immediately and be reported to the Albany Museum (046 622 2312) and/or the South African Heritage Resources Agency (SAHRA) (021 642 4502) so that systematic and professional investigation/excavation can be undertaken. • Construction managers/foremen should be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites. 		
<p><i>Cumulative impacts:</i> Archaeological heritage remains (artefacts and sites) will be disturbed.</p>		
<p><i>Residual impacts:</i> Archaeological sites will be irreversibly disturbed.</p>		