

A PHASE 1 ARCHAEOLOGICAL IMPACT ASSESSMENT (AIA) FOR A PROPOSED INYANDA-ROODEPLAAT WIND ENERGY FACILITY (WEF), SUNDAYS RIVER VALLEY LOCAL MUNICIPALITY, SARAH BAARTMAN DISTRICT MUNICIPALITY, EASTERN CAPE PROVINCE.

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CONTENTS

1. EXECUTIVE SUMMARY	4.
1.1. Purpose of the Study	4.
1.2. Brief Summary of Findings	4.
1.3. Recommendations	5.
2. BACKGROUND INFORMATION	6.
2.1. Applicant	8.
2.2. Consultant	8.
2.3. Terms of Reference	9.
3. HERITAGE LEGISLATIVE REQUIREMENTS	9.
4. BRIEF ARCHAEOLOGICAL BACKGROUND	12.
4.1. Early Stone Age (ESA) - 1.5 million to 250 000 years ago	12.
4.2. Middle Stone Age (MSA) – 250 000 – 30 000 years ago	13.
4.3. Later Stone Age (LSA) – 30 000 years ago – recent (100 years ago)	15.
4.4. Last 2 000 years – Khoekhoen Pastoralism	16.
4.5. Last 2 000 years – The Iron Age	17.
4.6. Human Remains	17.
4.7. Rock Art (Paintings and Engravings)	18.
4.8. Historical Background	19.
5. DESCRIPTION OF THE PROPERTY	20.
5.1. Location data	20.
5.2. Map	21.
6. ARCHAEOLOGICAL INVESTIGATION	27.
6.1. Methodology	27.
6.2. Results of the Archaeological Investigation	27.
6.2.1. AREA PROPOSED FOR THE WIND TURBINES AND SUBSTATION	27.
6.2.2. POWER LINE ALTERNATIVES	30.
6.2.3. UPGRADING AND CONSTRUCTION OF NEW INTERNAL ACCESS ROADS	35.
6.2.4. TURBINE SITE LAYDOWN AREA	37.
6.2.5. STAFF ACCOMMODATION, PLANT STORAGE AND CONCRETE BATCHING AREA AND THE CONTROL OFFICE AND CAMP SITE	42.
7. DESCRIPTION OF SITES	51.
7.1. Stone Artefact Scatters	51.
7.2. Built Environment	51.
7.3. Graves	52.
8. COORDINATES AND SITES FOR THE PROPOSED INYANDA-ROODEPLAAT WIND ENERGY FACILITY (WEF), SARAH BAARTMAN DISTRICT MUNICIPALITY, EASTERN CAPE PROVINCE.	52.
9. CULTURAL LANDSCAPE	53.
9.1. Concept of Cultural Landscape	53.
9.2. Archaeological Landscape	55.
9.3. Historical and Contemporary Landscape	56.
10. CONCLUSION	56.
11. RECOMMENDATIONS	57.
12. REFERENCES	58.
13. RELEVANT ARCHAEOLOGICAL AND HERITAGE IMPACT ASSESSMENTS	61.
14. GENERAL REMARKS AND CONDITIONS	67.

LIST OF APPENDICES

APPENDIX A: GRADING SYSTEM	68.
APPENDIX B: IDENTIFICATION OF ARCHAEOLOGICAL FEATURES AND MATERIAL FROM COASTAL AREAS: guidelines and procedures for developers	69.

LIST OF FIGURES

Figure 1. 1:250 000 topographic map 3324 PORT ELIZABETH showing the location of the proposed Inyanda – Roodeplaas Wind Energy Facility.	22.
Figure 2. 1:50 000 topographic maps 3324DB COCKSCOMB and 3325CA STRYDOMSBERG showing the location of the proposed Inyanda – Roodeplaas Wind Energy Facility.	23.
Figure 3. Aerial view showing the location of the proposed Inyanda – Roodeplaas Wind Energy Facility including the boundary area (orange outline) and power line (red, purple and pink outlines) alternatives.	24.
Figure 4. Aerial view of the proposed Inyanda – Roodeplaas Wind Energy Facility showing the surrounding areas mentioned in the report.	25.
Figure 5. GIS generated map showing the location of the proposed wind energy facility (SRK Final Scoping Report).	26.
Figure 6. View of the proposed wind turbine positions (red blocks) and substation (pink block) showing the connecting roads (white lines) within the Groot Winterhoek Mountain Range.	27.
Figure 7. View of the proposed area for the wind turbines from the bottom of the valley.	29.
Figure 8. View of the proposed area for the wind turbines from the bottom of the valley.	29.
Figure 9. View of the vegetation cover of the area for the proposed wind turbines within the Groot Winterhoek Mountains.	29.
Figure 10. View of the three power line alternatives proposed for the Inyanda-Roodeplaas Wind Energy Facility.	30.
Figure 11. View of the area proposed for power line Alternative Path 1 from the Skilpad Substation.	31.
Figure 12. View of the area proposed for power line Alternative Path 2 from the Skilpad Substation showing the existing power line running parallel to the R75.	32.
Figure 13. View of the area proposed for the preferred power line Alternative from the Skilpad Substation with a view of the Groot Winterhoek Mountains in the far distance.	32.
Figure 14. View of the valley along the MR 407 that two of the power line alternatives (Path 1 and the Preferred Route) will follow.	33.
Figure 15. View of a homestead along the MR 407 where the two power line alternatives (Path 1 and the Preferred Route) will follow.	33.
Figure 16. View of the NG Kerkzaal situated at Krompoort.	34.
Figure 17. View of the route that power line alternative 2 will run along the internal access road to the proposed wind turbine and substation site. The Groot Winterhoek Mountains are visible in the far distance.	34.
Figure 18. View of the lower lying area showing the extent of the possible occurrence of stone artefacts within the area where the access roads and portions of the alternative power lines will transverse.	35.
Figure 19. View of an area with stone artefact scatters situated adjacent to the internal access roads within the low lying valley areas.	36.
Figure 20. Examples of stone artefacts documented in the low lying areas in the valley adjacent to the internal gravel roads.	36.
Figure 21. View of the extent of the Turbine Site Laydown Area showing the occurrences of exposed stone artefacts (areas demarcated in blue) documented within the proposed development area.	37.
Figure 22. View of the general landscape of the area proposed for the Turbine Site Laydown Area facing south-west.	38.
Figure 23. View of the general landscape of the area proposed for the Turbine Site Laydown Area facing north.	38.
Figure 24. View of the general landscape of the area proposed for the Turbine Site Laydown Area facing east.	39.

Figure 25. View of the general landscape of the area proposed for the Turbine Site Laydown Area facing north-west.	39.
Figure 26. Exposed surface areas that made for good archaeological visibility over most of the proposed Turbine Site Laydown Area.	40.
Figure 27. View of the exposed surface areas where occurrences of stone artefacts were documented eroding out 20 cm - 30 cm below the surface within the proposed Turbine Site Laydown Area.	40.
Figures 28 – 32. Examples of Middle Stone Age stone artefacts documented within the area proposed for the Turbine Site Laydown Area.	41.
Figure 33. Close-up aerial view of the area proposed for the staff accommodation, plant storage and concrete batching area, and the control office and camp site showing the extent of stone artefact scatters (areas demarcated in blue) and ruins of dwellings (areas demarcated in orange) within the proposed development area.	42.
Figure 34. Older (2004) aerial view of the buildings within the proposed development area that are presently ruins.	42.
Figure 35. View of the general landscape of the area proposed for the staff accommodation facing north-west towards the Kariega River situated at the foot of the mountains in the distance.	44.
Figure 36. View of the general landscape of the area proposed for the staff accommodation facing north-east towards the Kariega River situated at the foot of the mountains in the distance.	44.
Figure 37. View of the general landscape of the area proposed for the plant storage and concrete batching area.	45.
Figure 38. View of the general landscape of the area proposed for the plant storage and concrete batching area.	45.
Figure 39. View of the general landscape of the area proposed for the control office and camp site.	46.
Figure 40. View of the general landscape of the area proposed for the control office and camp site.	46.
Figure 41. Example of a surface scatter of stone artefacts within the areas proposed for the infrastructure associated with the WEF project situated on the Farm Adolphs Kraal.	47.
Figure 42. Example of a surface scatter of stone artefacts within the areas proposed for the infrastructure associated with the WEF project situated on the Farm Adolphs Kraal.	47.
Figures 43 - 48. Examples of Middle Stone Age stone artefacts within the area proposed for the infrastructure associated with the WEF project situated on the Farm Adolphs Kraal.	48.
Figure 49. View of a dwellings' ruins situated within the area proposed for the development of infrastructure associated with the WEF on the Farm Adolphs Kraal.	49.
Figure 50. View of a dwellings' ruins situated within the area proposed for the development of infrastructure associated with the WEF on the Farm Adolphs Kraal.	49.
Figure 51. View of a dwellings' ruins situated within the area proposed for the development of infrastructure associated with the WEF on the Farm Adolphs Kraal.	50.
Figure 52. View of a dwellings' ruins situated within the area proposed for the development of infrastructure associated with the WEF on the Farm Adolphs Kraal.	50.

LIST OF TABLES

Table 1. Coordinates and sites for the Proposed Inyanda-Roodeplaat Wind Energy Facility (WEF), Sarah Baartman District Municipality, Eastern Cape Province.	52.
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A PHASE 1 ARCHAEOLOGICAL IMPACT ASSESSMENT (AIA) FOR A PROPOSED INYANDA-ROODEPLAAT WIND ENERGY FACILITY (WEF), SUNDAYS RIVER VALLEY LOCAL MUNICIPALITY, SARAH BAARTMAN DISTRICT MUNICIPALITY, EASTERN CAPE PROVINCE.

NOTE: The phase 1 archaeological impact assessment was conducted as a requirement of the National Heritage Resources Act 25 of 1999, Section 38 (1)(c)(i):

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, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300 m in length;
- (c) any development or other activity which will change the character of the site –
 - (i) exceeding 5000 m² in extent

This report follows the minimum standard guidelines required by the South African Heritage Resources Agency (SAHRA) and the Eastern Cape Provincial Heritage Resources Agency (ECPHRA) for compiling a Phase 1 Archaeological Impact Assessment (AIA).

1. EXECUTIVE SUMMARY

1.1. Purpose of the Study

The purpose of the study was to conduct a phase 1 archaeological impact assessment (AIA) for the proposed Inyanda – Roodeplaat Wind Energy Facility (WEF) situated in the Groot Winterhoek Mountain Range between Kirkwood and Patensie, Sarah Baartman District Municipality, Eastern Cape Province. The survey was conducted to establish the range and importance of the exposed and *in situ* archaeological heritage material remains, sites and features; to establish the potential impact of the development; and to make recommendations to minimize possible damage to the archaeological heritage.

1.2. Brief Summary of Findings

No archaeological heritage remains were observed within the area proposed for the wind turbines and substation which are to be constructed within the Groot Winterhoek Mountain Range. The area comprises steep hills and high summits with elevation ranges between 280 and 1400 meters above sea level.

The three proposed power line alternatives covered extensive distances and could not be thoroughly investigated during this study. The selected 132 kV overhead power line route will extend from the Skilpad substation situated about 28 km north-east of the WEF site along the R75 from proposed new substation to be constructed on the WEF site. All three power lines would have an impact on possible archaeological resources

encountered along the routes as well as structures and the built environment. It has been suggested that an archaeological walkthrough be conducted when the final power line route has been confirmed.

Stone artefacts were observed along the gravel access roads in the lower lying valley area at the northern foot of the Groot Winterhoek Mountains. The study of the upgrading of gravel roads and borrow pits is not within the scope of the environmental impact assessment report.

Mainly surface scatters of Middle Stone Age stone artefacts manufactured on fine-grained quartzite raw materials were observed within the areas proposed for the Turbine Site Laydown Area, Staff Accommodation, Plant Storage and Concrete Batching Area and, Control Office / Camp Site. The proposed development areas are situated north and south of the MR 407 road on the Farm Adolphi Kraal 246. Ruins of dwellings and associated farming structures and infrastructure were documented within the proposed development north of the MR 407. These structures are most likely less than 60 years old.

1.3. Recommendations

The overall area is considered as having a low archaeological significance, however, the following recommendations must be considered before development continues:

1. A destruction permit for the areas I-R TLA (Turbine Site Laydown Area) and I-R ABC (staff accommodation, plant storage and concrete batching area, and the control office and camp site) must be applied for before any development may continue within these areas.
2. As the possible upgrading, resurfacing, and/or rehabilitation of these gravel roads and associated borrow pits were not included within the scope of this study a phase 1 archaeological impact assessment must be conducted for the upgrade of the roads which falls under section 38 of the National Heritage Resources Act 25 of 1999.
3. Owing to the extensive distances of the areas for the proposed power line alternatives the areas could not be thoroughly investigated during this survey. An archaeological walk-through must be conducted for the final power line route chosen out of the three alternatives when the positions of the pylons are known.
4. If the current layout is changed, an archaeological walk-through survey of the changes must be conducted and further mitigatory recommendations may be made if necessary.
5. The ruins of dwellings, built environment structures and infrastructure are younger than 60 years and no further investigation or demolition permit is required.
6. If concentrations of historical and pre-colonial archaeological heritage material and/or human remains (including graves and burials) are uncovered during construction, all work must cease immediately and be reported to the Albany Museum and/or the Eastern Cape Provincial Heritage Resources Agency (ECPHRA) so that systematic and

professional investigation/excavation can be undertaken. Phase 2 mitigation in the form of test-pitting/sampling or systematic excavations and collections of the pre-colonial shell middens and associated artefacts will then be conducted to establish the contextual status of the sites and possibly remove the archaeological deposit before development activities continue.

7. A person must be trained as a site monitor to report any archaeological sites found during the development. Construction managers/foremen and/or the Environmental Control Officer (ECO) 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.

2. BACKGROUND INFORMATION (extract from the Final Scoping Report, SRK Consulting 2015)

Inyanda Energy Projects (Pty) Ltd proposes to construct a Wind Energy Facility (WEF) of up to 140 MW installed capacity on a number of properties, referred to collectively in this report as the farm Roodeplaat, situated in the Groot Winterhoek Mountains west of the town of Uitenhage in the Eastern Cape.

According to Inyanda Energy, available wind data in South Africa shows this area to have favourable wind conditions sufficient to support a wind farm. This has been confirmed by on site wind monitoring that has been ongoing since June 2012. The proposed project area consists of approximately 12 200 ha located on 22 adjacent property portions.

The proposed Inyanda - Roodeplaat WEF will consist of approximately 43 to 48 turbines (depending on selected turbine) each capable of generating approximately 3 to 3.3 MW. The turbine footprints and associated facility infrastructure (internal access roads, substation, construction compound, batching plant and operations building) will potentially cover an area of approximately 60 ha depending on final layout design should the project proceed. An investigation of the wind regime of the site will decide the model of turbines to be installed. The facility will have a maximum generating output of up to 140 MW.

According to the project proponent, the establishment of the proposed WEF will contribute to strengthening the existing electricity grid for the area and will aid the government in achieving its goal of a 30% share of all new power generation being derived from Independent Power Producers (IPPs). In addition to the above-mentioned potential benefits, the proposed project site was selected due to:

- Excellent wind resources suitable for the installation of a large wind energy facility;
- The proposed project site has localised wind potentially intensified by a funnelling effect caused by surrounding topographical features;

- The site is accessible from gravel roads off the R75 which will assist in the transportation of wind turbine components to the site;
- The surrounding area is not densely populated; and
- There is potential and a desire within the Sundays River Valley Local Municipality to engage with new technologies and industries.

The Inyanda - Roodeplaat WEF will provide additional electricity and greater grid stability. Upgrading of the local electricity supply infrastructure may be required depending on the actual maximum installed capacity of the WEF. The local Municipality is the provider of electricity within Sundays River Valley Municipality and has identified the supply of electricity as a priority issue in its Integrated Development Plan (IDP) based on the weaknesses specific to electricity supply below:

- Scattered households impede electrification;
- Some of the areas are inaccessible;
- Limited substations, many areas far from the grid;
- Load shedding by Eskom;
- Electricity increases will affect affordability; and
- Over-subsidising of consumers.

The ultimate size of the wind turbines will depend on further technical assessments but will typically consist of three blades each approximately 60 m in length therefore creating rotor diameters of up to 125 m mounted atop a 100 m high steel (or hybrid steel/concrete) tower, i.e. the height of the wind turbine generator would be approximately 165 m from ground level to the tip of the rotor. Other infrastructure components associated with the proposed wind energy facility are inter alia:

- Concrete or rock adaptor foundations to support the wind turbine towers;
- Internal access roads to each turbine - approximately 6 meters wide;
- Underground cables connecting the wind turbines to the on-site substation. It has been confirmed that all internal power lines will be underground, and located within the footprint of the internal roads, as depicted in a typical cross section;
- 132 kV electrical substation;
- Possible upgrading of existing roads for the transportation of the turbines to the wind energy facility;
- Buildings to house the control instrumentation, as well as a store room for the maintenance equipment; and
- Construction compound, on-site staff accommodation, and a concrete batching plant.

A permanent platform is required at each turbine foundation site to ensure safe and stable access by heavy machinery and equipment (bulldozers, trucks, cranes etc.) during the construction phase. Due to the topography of the site, the platform area for each turbine, excluding the working space and access road that will run adjacent to the platform, will be limited to 60 m x 30 m. The overall footprint of each platform would be

greater than the level 60 m x 30 m area, due to the cut and fill profiles. It is proposed to crush the excavated material on each platform for use as layer works backfill on that platform. A mobile crushing plant must therefore be accommodated on the platform, together with mechanical plant for excavation, backfilling and compaction.

During the construction phase this footprint is likely to be extended to accommodate topsoil stockpiles, and crushed material prior to backfilling. Temporary platforms for laydown areas may also be required. The use of the cut material on the platform site may reduce the footprint associated with excess fill (i.e. reduce the amount of spoil material). To limit the overall footprint, the electrical earth mat required for each WTG would be installed under the hardstand platform.

Turbine platforms will be connected by internal access roads that must meet the following requirements:

- Generally 6 m in width. Road side stormwater drainage will be limited to 1 m wide trapezoidal channels, approximately 300 mm deep, as per the typical road cross section drawing;
- After excavation (cut & fill) of bulk material, road pavement layerworks will be limited to 350 mm thickness;
- Generally slopes must be limited to 12.5% gradient. However in this instance several sections will have longitudinal gradients in excess of 25% (e.g. 1:4). In these instances circumstances, concrete strips will be constructed to limit rutting and erosion of road surface, especially at gradients where excessive natural loose gravel exist;
- Minimum horizontal turning radii for tyres and payloads (estimated to be 40 m and 50 m respectively).

The sub-station is located near the centre of the WEF for technical (electrical) reasons. The 132 kV substation will comprise a fenced area of about 80 m x 40 m. The platform will be split into various levels (terraces) for the transformers, substation building, etc. to limit the cut and fill outside of this platform to less than 10 m horizontal distance. As with the wind WTG platforms, the electrical earth mat will be installed within this footprint.

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2.3. Terms of reference

The purpose of the study was to conduct a phase 1 archaeological impact assessment (AIA) for the proposed Inyanda-Roodeplaat Wind Energy Facility (WEF), between Kirkwood and Patensie, Sarah Baartman District Municipality, Eastern Cape Province. The Terms of Reference (ToR) are as follows:

- Conduct a literature review of known archaeological resources within the area with a view to determining which of these resources are likely to occur within the development footprint;
- Determine the likelihood of heritage or archaeological remains of significance on the proposed site within the study area;
- Identify and map (where applicable) the location of any significant heritage or archaeological remains;
- Assess the sensitivity and significance of heritage and archaeological remains in the site; and
- Identify mitigatory measures to protect and maintain any valuable heritage and archaeological sites and remains that may exist within the proposed site.

3. HERITAGE LEGISLATIVE REQUIREMENTS

Parts of sections 3(1)(2)(3), 34(1), 35(4), 36(3) and 38(1)(8) of the National Heritage Resources Act 25 of 1999 apply:

S3. National estate

3. (1) For the purposes of this Act, those heritage resources of South Africa which are of cultural significance or other special value for the present community and for future generations must be considered part of the national estate and fall within the sphere of operations of heritage resources authorities.

3. (2) Without limiting the generality of subsection (1), the national estate may include –

- (a) places, buildings, structures and equipment of cultural significance;
- (b) places to which oral traditions are attached or which are associated with living heritage;
- (c) historical settlements and townscapes;
- (d) landscapes and natural features of cultural significance;
- (e) geological sites of scientific or cultural importance;
- (f) archaeological and palaeontological sites;
- (g) graves and burial grounds, including –

- (i) ancestral graves;
 - (ii) royal graves and graves of traditional leaders;
 - (iii) graves and victims of conflict;
 - (iv) graves of individuals designated by the Minister by notice in the Gazette;
 - (v) historical graves and cemeteries; and
 - (vi) other human remains which are not covered in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983);
- (h) sites of significance relating to the history of slavery in South Africa;
- (i) movable objects, including –
- (i) objects recovered from the soil or waters of South Africa, including archaeological and palaeontological specimens;
 - (ii) objects to which oral traditions are attached or which are associated with living heritage;
 - (iii) ethnographic art and objects;
 - (iv) military objects;
 - (v) objects of decorative or fine art;
 - (vi) objects of scientific or technological interest; and
 - (vii) books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1(xiv) of the National Archives of South Africa Act (Act No. 43 of 1996).
3. (3) Without limiting the generality of subsections (1) and (2), a place or object is to be considered part of the national estate if it has cultural significance or other special value because of –
- (a) its importance in the community, or pattern of South Africa's history;
 - (b) its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
 - (c) its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
 - (d) its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
 - (e) its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
 - (f) its importance in demonstrating a high degree of creative or technical achievement at a particular period;
 - (g) its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa; and
 - (i) sites of significance relating to the history of slavery in South Africa.

S34. Structures

34. (1) No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.

S35. 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.

S36. 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.

S38. 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, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300 m in length;
- (b) the construction of a bridge or similar structure exceeding 50 m in length;
- (c) any development or other activity which will change the character of the site –
 - (i) exceeding 5 000 m² 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 10 000 m² 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.

4. BRIEF ARCHAEOLOGICAL BACKGROUND

Little systematic archaeological research has been conducted within the immediate area of the proposed development. Most archaeological research has been conducted along the Tsitsikamma coastline and Cape St Francis and Jeffreys Bay. A few inland sites have been excavated near Addo, within the Greater Addo Elephant National Park, near Uitenhage and archaeological research has recently been conducted within the Sundays River Valley between Kirkwood and Addo. These research excavations have yielded evidence of occupation over the last 1 million years.

Several relevant archaeological and heritage impact assessments have been conducted within the wider region including the area between the proposed site and Jansenville, Kirkwood, Addo and the Greater Addo Elephant National Park (GAENP), Patensie, Hankey, Humansdorp, Port Elizabeth and the coastal areas. These impact assessments have identified several Early, Middle, and Later Stone Age artefact scatters and sites as well as evidence of Khoekhoen pastoralist occupation and/or interaction by the presence of broken earthenware pot sherds. Archaeological sites in the form of shell middens and scatters have been reported along the surrounding coastline and within the 5 km archaeologically sensitive coastal zone. Archaeological sites in this area predominantly date to the various Stone Ages as no evidence of early black farmer settlements, referred to as Iron Age communities, has been documented within wider area. Historical ruins, dwellings and homesteads established by colonial settlement are distributed across the wider regions under discussion. Nineteenth century ceramics, glass, and other artefacts are usually found in association with these historical settlements.

4.1. Early Stone Age (ESA) - 1.5 million to 250 000 years ago

The Early Stone Age from between 1.5 million and 250 000 years ago refers to the earliest that *Homo sapiens sapiens* predecessors began making stone tools. The earliest stone tool industry was referred to as the Olduvai Industry originating from stone artefacts recorded at Olduvai Gorge, Tanzania. The Acheulian Industry, the predominant southern African Early Stone Age Industry, 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. The end products were similar across the geographical and chronological distribution of the Acheulian techno-complex: large flakes that were suitable in size and morphology for the production of handaxes and cleavers perfectly suited to the available raw materials (Sharon 2009).

One of the most well-known Early Stone Age sites in southern Africa is Amanzi Springs (Deacon 1970), situated about 10 km north-east of Uitenhage and 45 km south east of the WEF site. The site is situated on a north-facing hill overlooking the Coega River. The earliest reference to the spring was made by an early traveller, Barrow (1801). FitzPatrick first reported stone artefacts in the area in 1924. Ray Inskeep (Inskeep 1965) conducted a small-scale excavation of the site in 1963. It was only in 1964 and 1965 that large scale excavations were conducted by Hilary Deacon. In a series of spring deposits a large number of stone tools were found *in situ* to a depth of 3-4 m. Wood and seed material preserved remarkably very well within the spring deposits, and possibly date to between 800 000 to 250 000 years old.

Other Early Stone Age sites that contained preserved bone and plant material include Wonderwerk Cave in the Northern Province, near Kimberly and Montagu Cave in the Western Cape, near the small town of Montagu (Mitchell 2007). Early Stone Age sites have also been reported in the foothills of the Sneeuberge Mountains (in Prins 2011).

Early Stone Age tools is the earliest evidence for human ancestors occupying the Sundays River Valley and surrounding area and occur throughout the region in river gravels that cap hilltops and slopes and on the palaeosols / calcrete floors in the dune systems like those at Geelhoutboom and Brandewynkop (Butzer 1978; Deacon & Geleijnse 1988). Large hand axes have been reported from Coega Kop and along the Coega and Sundays Rivers. Archaeological research has been recently been carried out near Kirkwood and Addo.

The Albany Museum Database holds records and archaeological collections of sites researched within the region.

4.2. Middle Stone Age (MSA) – 250 000 – 30 000 years ago

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. Various stone artefact industries occur during this time period, although less is known about the time prior to 120 000 years ago, extensive systemic archaeological research is being conducted on sites across southern Africa dating within the last 120 000 years (Thompson & Marean 2008). The large handaxes and cleavers were replaced by smaller stone artefacts called the Middle Stone Age flake and blade industries. 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 50-80 cm below ground. Fossil bone may in rare cases be associated with Middle Stone Age occurrences (Gess 1969). These stone artefacts, like the Earlier Stone Age handaxes are usually observed in secondary context with no other associated archaeological material.

The Middle Stone Age is distinguished from the Early Stone Age by the smaller-sized and distinctly different stone artefacts and *chaîne opératoire* (method) used in manufacture, the introduction of other types of artefacts and evidence of symbolic behaviour. The prepared core technique was used for the manufacture of the stone artefacts which display a characteristic faceted striking platform and includes mainly unifacial and bifacial flake blades and points. The Howiesons Poort Industry (80 000 - 55 000 years ago) is distinguished from the other Middle Stone Age stone artefacts: the size of tools are generally smaller, the range of raw materials include finer-grained rocks such as silcrete, chalcedony, quartz and hornfels, and include segments, backed blades and trapezoids in the stone toolkit which were sometimes hafted (set or glued) onto handles. In addition to stone artefacts, bone was worked into points, possibly hafted, and used as tools for hunting (Deacon & Deacon 1999).

Other types of artefacts that have been encountered in archaeological excavations include tick shell (*Nassarius kraussianus*) beads, the rim pieces of ostrich eggshell (OES) water flasks, ochre-stained pieces of ostrich eggshell and engraved and scratched ochre pieces, as well as the collection of materials for purely aesthetic reasons. Although Middle Stone Age artefacts occur throughout the Eastern Cape, the most well-known Middle Stone Age sites include the type-site for the Howiesons Poort stone tool industry, Howiesons Poort (HP) rock shelter, situated close to Grahamstown and Klasies River Mouth Cave (KRM), situated along the Tsitsikamma coast. Middle Stone Age sites are located both at the coast and in the interior across southern Africa.

The Klasies River Cave complex (caves 1-5), situated 55 km west of Jeffreys Bay, is the most significant archaeological site with evidence of occupation and human development over the last 120 000 years. Previous excavations at the Klasies River main site exposed anatomically modern human remains dating to about 110 000 years old (Singer & Wymer 1982; Rightmire & Deacon 1991; Deacon 1992, 1993, 1995, 2001; Deacon, H.J. & Shuurman, R. 1992; Henderson 1992; Deacon & Deacon 1999).

Archaeological sites excavated within the wider region have revealed evidence of occupation during the Middle Stone Age period. Scatters of Middle Stone Age stone artefacts are also known to occur within the surrounding area where these have been recorded in archaeological and heritage impact assessments within the region.

The Albany Museum Data Recording Centre holds records of sites and artefacts in its collections.

4.3. Later Stone Age (LSA) – 30 000 years ago – recent (100 years ago)

The Later Stone Age (LSA) spans the period from about 20 000 years ago until the colonial era, although some communities continue making stone tools today. The period between 30 000 and 20 000 years ago is referred to as the transition from the Middle Stone Age to Later Stone Age; although there is a lack of crucial sites and evidence that represent this change. By the time of the Later Stone Age the genus *Homo*, in southern Africa, had developed into *Homo sapiens sapiens*, and in Europe, had already replaced *Homo neanderthalensis*.

The Later Stone Age is marked by a series of technological innovations, new tools and artefacts, the development of economic, political and social systems, and core symbolic beliefs and rituals. The stone toolkits changed over time according to time-specific needs and raw material availability, from smaller microlithic Robberg (20/18 000-14 000 ya), Wilton (8 000-the last 500 years) Industries and in between, the larger Albany/Oakhurst (14 000-8 000ya) and the Kabeljous (4 500-the last 500 years) Industries. Bored stones were used as part of digging sticks, grooved stones for sharpening and grinding and stone tools fixed to handles with mastic also become more common. Fishing equipment such as hooks, gorges and sinkers also appear within archaeological excavations. Polished bone tools such as eyed needles, awls, linkshafts and arrowheads also become a more common occurrence. Most importantly bows and arrows revolutionized the hunting economy. It was only within the last 2 000 years that earthenware pottery was introduced, before then tortoiseshell bowls were used for cooking and ostrich eggshell (OES) flasks were used for storing water. Decorative items like ostrich eggshell and marine/fresh water shell beads and pendants were made.

Hunting and gathering made up the economic way of life of these communities; therefore, they are normally referred to as hunter-gatherers. Hunter-gatherers hunted both small and large game and gathered edible plantfoods from the veld. For those that lived at or close to the coast, marine shellfish and seals and other edible marine resources were available for gathering. The political system was mainly egalitarian, and socially, hunter-gatherers lived in bands of up to twenty people during the scarce resource availability dispersal seasons and aggregated according to kinship relations during the abundant resource availability seasons. Symbolic beliefs and rituals are evidenced by the deliberate burial of the dead and in the rock art paintings and engravings scattered across the southern African landscape.

The majority of archaeological sites found in the area would 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. These latter sites are difficult to find because they are in the open veld and often covered by vegetation and sand. Sometimes these sites are only represented by a few stone tools and fragments of bone. The preservation of these sites is poor and it is not always possible to date them (Deacon and Deacon

1999). Caves and rock shelters, however, in most cases, provide a more substantial preservation record of pre-colonial human occupation.

Later Stone Age sites occur both at the coast (caves, rock shelters, open sites and shell middens) and in the interior (caves, rock shelters and open sites) across southern Africa. There are more than a few significant Later Stone Age sites in the Eastern Cape. The most popular are the type sites for the above-mentioned stone artefact industries, namely Wilton (for the Wilton Industry), Melkhoutboom (for the Albany Industry), both rock shelters situated to the west of Grahamstown, and Kabeljous Rock Shelter (for the Kabeljous Industry) situated just north of Jeffreys Bay. There are many San hunter-gatherers sites in the interior mountainous region north of the study site. Here, caves and rock shelters were occupied by the San during the Later Stone Age and contain numerous paintings along the walls.

The majority of hunter-gatherer groups had been pushed out of the Zuurberg by the 1820's and were forced to move further inland to escape European settlements within the area. The last San/KhoiSan group was killed by Commandos in the Groendal area in the 1880s.

Extensive Later Stone Age research has been conducted along the coastline south of the proposed development site and it is thought that these past communities may have moved between the mountainous areas and the coast according to excavated remains. Later Stone Age stone artefact scatters and sites are known to occur within region, along the coastal areas, Uitenhage and Port Elizabeth, as well as within the Greater Addo Elephant National Park and towards Jansenville where these have been recorded in archaeological and heritage impact assessments.

The Albany Museum Data Recording Centre holds records of sites and artefacts in its collections.

4.4. Last 2 000 years – Khoekhoen Pastoralism

Until 2 000 years ago, hunter-gatherer communities traded, exchanged goods, encountered and interacted with other hunter-gatherer communities. From about 2 000 years ago the social dynamics of the southern African landscape started changing with the immigration of two 'other' groups of people, different in physique, political, economic and social systems, beliefs and rituals. Relevant to the study area, one of these groups, the Khoekhoen pastoralists or herders entered southern Africa with domestic animals, namely fat-tailed sheep and goats, travelling through the south towards the coast. Khoi pastoralist sites are often found close to the banks of large streams and rivers. They also introduced thin-walled pottery common in the interior and along the coastal regions of southern Africa. Their economic systems were directed by the accumulation of wealth in domestic stock numbers and their political make-up was more hierarchical than that of the hunter-gatherers.

The most significant Khoekhoen pastoralist sites in the Eastern Cape include Scott's Cave near Patensie (Deacon 1967), Goedgeloof shell midden along the St. Francis coast (Binneman 2007) and Oakleigh rock shelter near Queenstown (Derricourt 1977). Often, these archaeological sites are found close to the banks of large streams and rivers. Many sites were found along the Cape St Francis coast during archaeological and heritage impact assessments, with the oldest dating to 1 500 years old (Binneman 1996, 2001, 2005).

Khoi groups who lived in the area during the seventeenth and eighteenth centuries include the Iqua around the Aberdeen area, the Damaqua between the Gamtoos and Swartkops Rivers and the Gonaqua extending from the Sundays River to the Fish River by the middle of the eighteenth century. Many of these communities were eventually absorbed into the eighteenth century colonial lifestyle and several became farmworkers for the Dutch and British or clients of the amaXhosa engages in elephant hunting. A few groups settled at Mission Stations such as Enon, Bethelsdorp and Theopolis.

The Albany Museum Database holds records of sites and artefacts in its collections.

4.5. Last 2 000 Years - The Iron Age

Archaeological sites in this area predominantly date to the various Stone Ages as no evidence of early black farmer settlements, referred to as Iron Age communities, has been documented within wider area. Early Iron Sites in the Eastern Cape date back to around the eighth century AD (700s). Early Iron Age sites that have been systematically researched include Kulubele situated in the Kei River Valley and Canasta Place near East London. Excavations at Kulubele have identified evidence of ironworking, ceramic sculptures, grain pits and sheep bones, and highly decorated potsherds have been found at Canasta Place.

Evidence of Later Iron Age settlement in area are the remains of kraals belonging to two different AmaXhosa chiefs who settled within the footprint of the now Greater Elephant National Park during the eighteenth century. It is believed that these areas are known to at Congoskraal nearby Bailey's Kop and another near the Zuurberg Pass. These sites have not been archaeologically researched.

The Albany Museum Database holds records of sites and collections of a few Iron Age Sites that have been documented and excavated.

4.6. Human Remains

It is difficult to detect the presence of archaeological human remains on the landscape as these burials, in most cases, are not marked at the surface. Human remains are usually observed when they are exposed through erosion or construction activities for

development. Several human remains have been rescued eroding out of the dunes along this coastline. In some instances packed stones or rocks may indicate the presence of informal pre-colonial burials.

Graves with rich grave goods were uncovered during excavations at the sites of Melkhoutboom and Vygeboom in the Greater Addo Elephant National Park. Stapleton and Hewitt apparently recovered a number of human remains from under circles of cairns on a farm near Kirkwood in 1928. The cairns were located near to the Sundays River.

The Albany Museum Database holds records of human remains that have been exposed and collected for conservation and curation within the wider region from the coastal areas to the south and east as well as inland around to Graaff Reinet and within the Greater Addo Elephant National Park. Cultural Resource Management practitioners whilst conducting archaeological heritage impact assessments have also recorded formal historical cemeteries and informal burials.

4.7. Rock Art (Paintings and Engravings)

Rock art is generally associated with the Later Stone Age period mostly dating from the last 5 000 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. At some sites both paintings and engravings occur in close proximity to one another especially in the Karoo and Northern Cape. The greatest concentrations of engravings occur on the andesite basement rocks and the intrusive Karoo dolerites, but sites are also found on about nine other rock types including dolomite, granite, gneiss, and in a few cases on sandstone (Morris 1988). Substantial research has also been conducted in the Western Cape Karoo area around Beaufort West (Parkington 2008). Rock paintings are prolific in the inland mountainous regions situated north of the site.

There are several San hunter-gatherers sites in the Elandsberg and Groot Winterhoekberg Mountains, as well as within the Groendal area to the east and the Zuurberg Mountains to the north. Here caves and rock shelters were occupied by the San during the Later Stone Age and contain paintings along the walls.

The Albany Museum Database holds records of sites and collections of rock painting sites of the wider regions and there are several that remain undocumented.

4.7. Historical Background

The wider region emulates a dynamic landscape of historical cultural interaction between the Khoekhoen and AmaXhosa groups, early travellers, the Dutch and later the British Settlers as well as conflict between these groups. According to written documents Khoekhoen groups were established within the region during the eighteenth century. Early eighteenth century travellers who passed through the region included Beutler (1752), Thunberg (1773), and Sparrman (1775) Swellengrebel (1776) Van Plettenberg (1778), Paterson (1779) Sir John Barrow (1797). These travellers mention the areas of "Kragga Kamma" which included the whole area between the Van Staden's River and Baakens River near Port Elizabeth. The influx of European settlement had not yet affected this area of South Africa during the eighteenth century. The Coega / Koega River was first mentioned by in 1752 (Theal 1896) several of these travellers also mention also mentioned early landmarks such as the Sundays River, the Addo Drift Inn / Zondags Drift Inn). Van Reenen, who set out to find the survivors of the Grosvenor mentions places like Wolwefontein and the Zondags River in his diary records.

By the late eighteenth century Dutch farmers from the Western Cape had started moving to the region. Missionaries moved into the area as early 1818. By this time the Dutch farmers were well established within the area. The Moravians established a Mission Station at Enon in 1818 along the Witterivier on the farm of Jacobus Scheepers, which was also a military post. These German missionaries pioneered the citrus industry within the region. In 1889 the Trappist Monks at Dunbrody. British settlers started moving into the region after their arrival from 1820 onwards.

The Zuurberg Pass was completed in 1840 using convict labour for its construction. This pass would later become a very important route. Sir Harry Smith travelled this route in 1857 transporting troops to the Frontier for the 8th Frontier War. Later the Smuts Commando travelled with route in 1901 during the Anglo-Boer War.

The region area is also known for numerous skirmishes that took place between the Xhosa inhabitants, European settlers, British military and Khoi pastoralists during the 18th and 19th centuries and some historical remains related to these events may still be preserved. In the 1800's the Boers clashed with AmaXhosa groups who had settled in the Sundays River Valley which is referred to as the Slagboom / Tollbar ambush. The exact location is not known but Thomas Pringle described it as apparently have taken place along a narrow path. In 1811 Uitenhage became the focus for military operations against the amaXhosa in the frontier war of 1811-12, and in 1815 its garrison played a leading role in the suppression of the Slachter's Nek rebellion. The 'farms' in the district were subject to invasions and Van Reenen in his journal gives a list of 470 farms from the Langkloof and Gamtoos River to the Swartkops River that were "burnt, destroyed and deserted". A band of Xhosa reputedly invaded the Kragga Kamma area during The War of the Axe in 1846. During the Anglo-Boer War (1899-1902), the Smuts Commando travelled to the village Bayville established during the

1870's (later became Kirkwood named after James Somers Kirkwood) after surviving several clashes with the British at Bedrogsfontein, Brakkefontein and Deer Cottage.

Very little historical archaeological research has been conducted with the area and most information is known from documentary evidence of events.

5. DESCRIPTION OF THE PROPERTY

5.1. Location data

The proposed area for the Inyanda-Roodeplaat Wind Energy Facility is situated between the towns of Kirkwood to the north and Patensie to the south, within the Sundays River Valley Municipality, Eastern Cape Province. The site is lodged between the Groendal Nature Reserve to the east and west of the area proposed for the turbines and substation. The Zunga Berge and Elandsberge as well as the Kwa-Zunga and Elands Rivers lie between the site and Patensie. Port Elizabeth is situated south-east of the site and the town of Uitenhage is about 45 km south-east. The site is situated between 45 km (Van Stadens coastline) and 65 km (the Coega coastline) from the nearest coastlines. The area can be accessed along a number of provincial minor gravel roads that lead off the R75 using three alternative entrances, the Cockscomb Station turn-off (MR 407) about 10 km north of Uitenhage and the Glen Connor and Krompoort turn-offs situated north of the site.

The wind energy facility which will be spread over 17 property portions in the project area comprising 22 adjacent properties. The area proposed for the wind turbines and substation is situated on the Groot Winterhoek Mountain Range and some of the associated infrastructure (turbine site laydown area, staff accommodation, plant storage and concrete batching area and control and camp site) is situated on properties located adjacent to the public road MR 407.

The site for the wind turbines and substation is an area of steep hills arranged on an east-west axis, with slopes facing north and south. The elevation ranges between 280 and 1400 meters above sea level with steep hills and high summits. The wider area is transacted by three rivers which flow in an easterly direction across the site. Furthest south is the Elands River. In approximately the centre of the site is the KwaZunga River. Furthest north is the Kariega River. The rivers are fed by numerous streams draining off the surrounding slopes.

The majority of study area is currently used as a private lodge and game farm by the landowner. The owner has removed livestock from his property. Consequently, the vegetation is in fairly good condition and as a result antelope species have begun to recolonize the area.

5.2. Maps

1:250 000 Map: 3324 PORT ELIZABETH

1:50 000 Maps: 3324DB COCKSCOMB and 3325CA STRYDOMSBERG

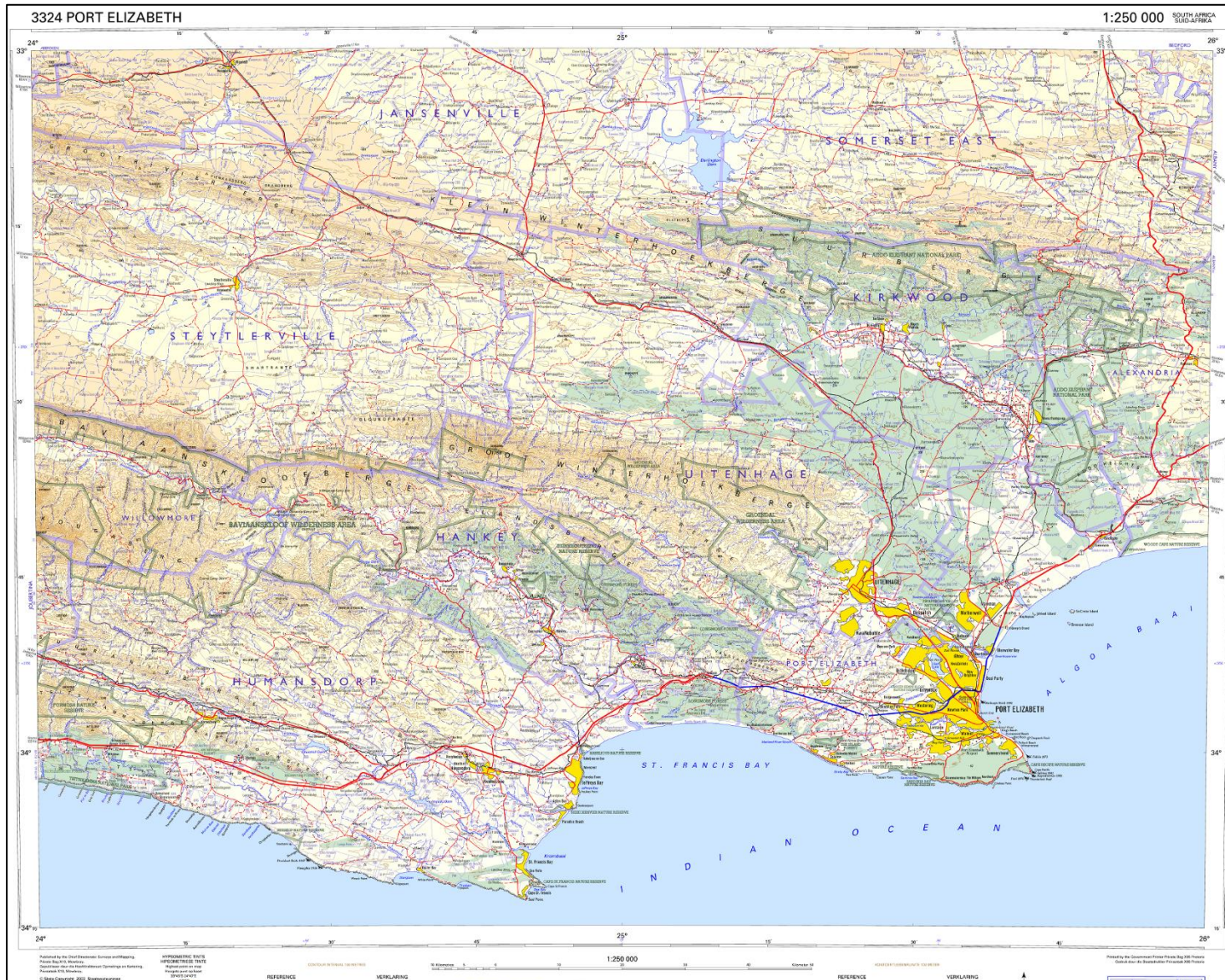


Figure 1. 1:250 000 topographic map 3324 PORT ELIZABETH showing the location of the proposed Inyanda – Roodeplaat Wind Energy Facility.

3324DB COCKSCOMB

1:50 000 SOUTH AFRICA
SLID AFRIKA 3325CA STRYDOMSBERG

1:50 000 SOUTH AFRICA
SLID AFRIKA

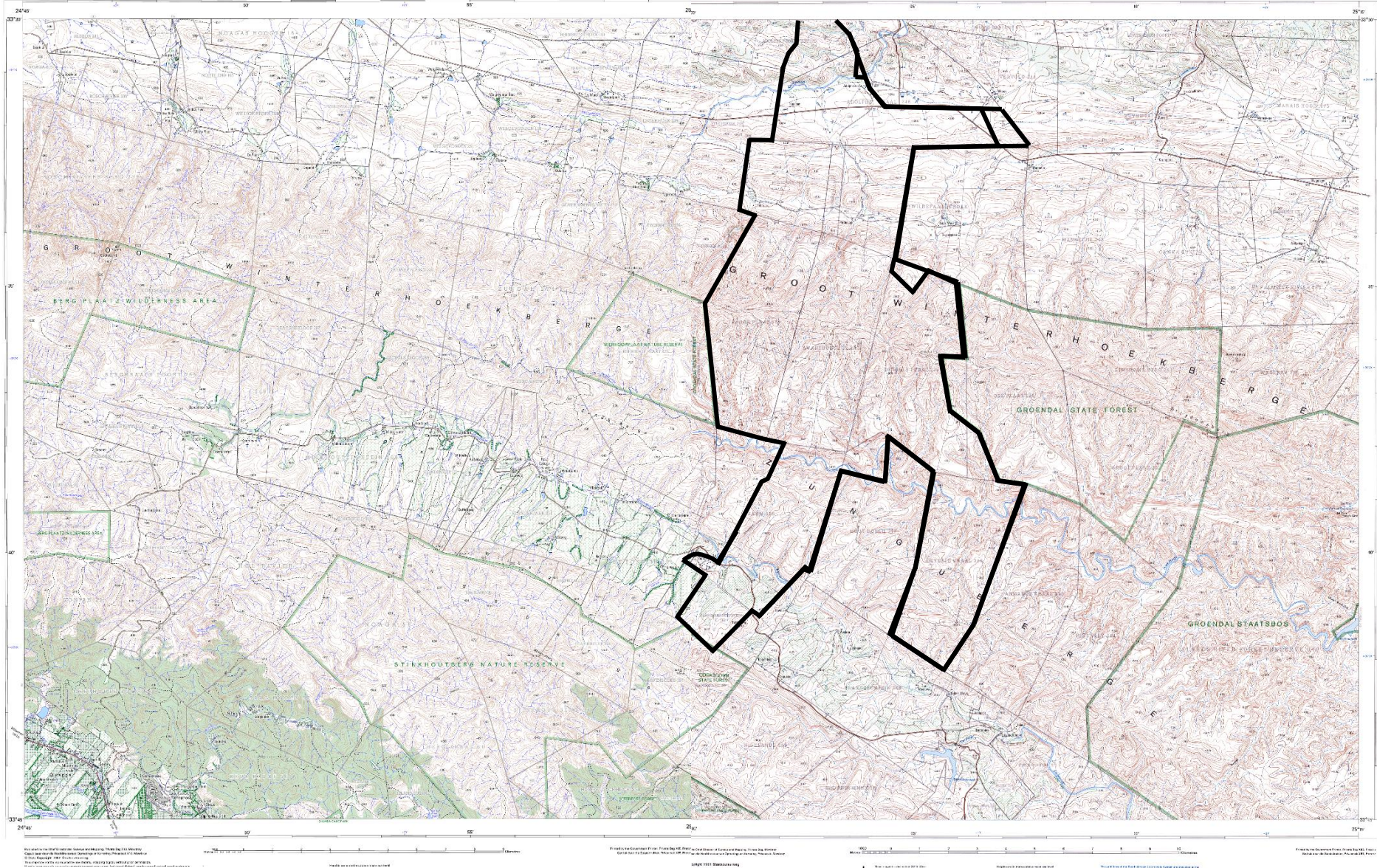


Figure 2. 1:50 000 topographic maps 3324DB COCKSCOMB and 3325CA STRYDOMSBERG showing the location of the proposed Inyanda – Roodeplaat Wind Energy Facility.

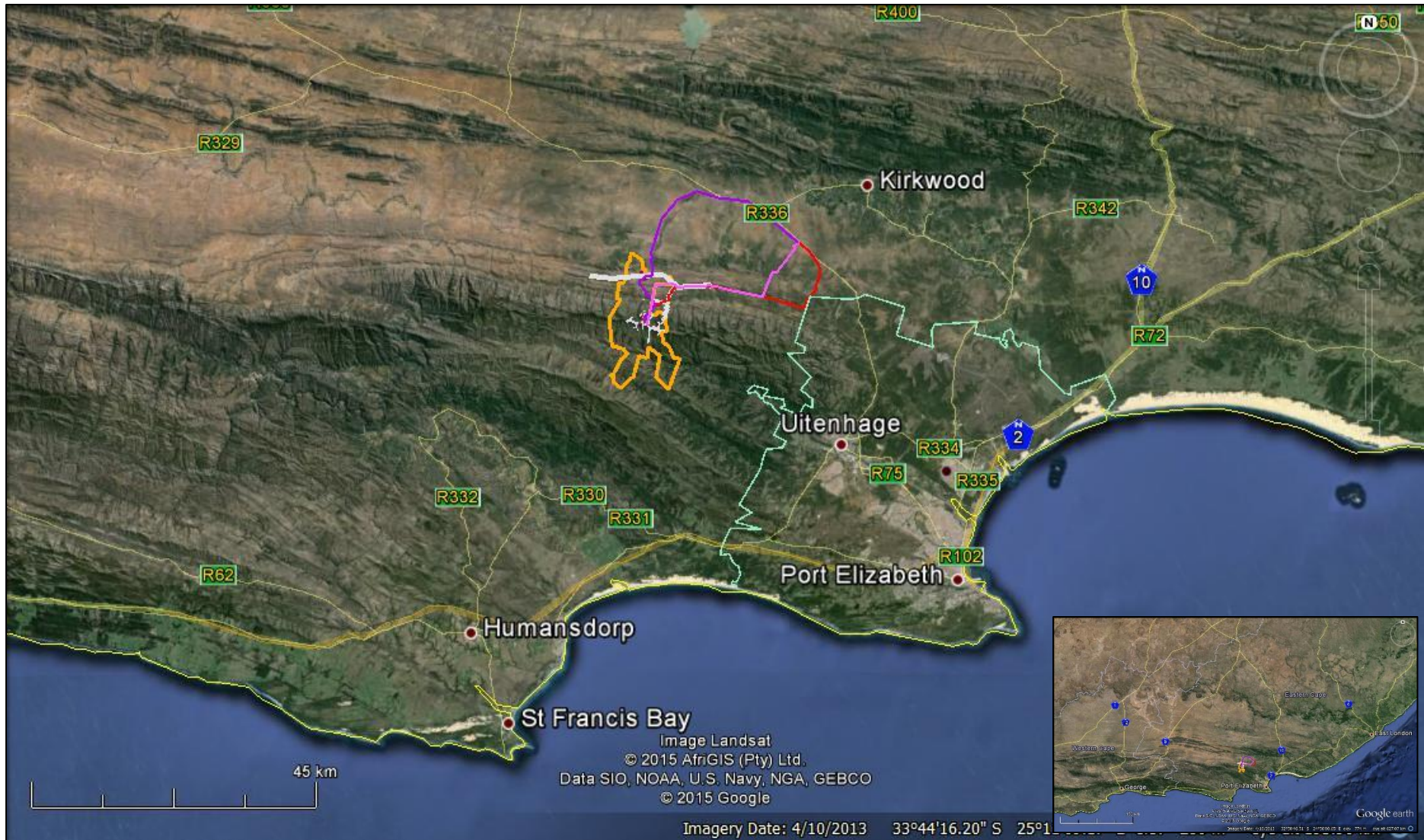


Figure 3. Aerial view showing the location of the proposed Inyanda – Roodeplaats Wind Energy Facility including the boundary area (orange outline) and power line (red, purple and pink outlines) alternatives.



Figure 4. Aerial view of the proposed Inyanda – Roodeplaat Wind Energy Facility showing the surrounding areas mentioned in the report.

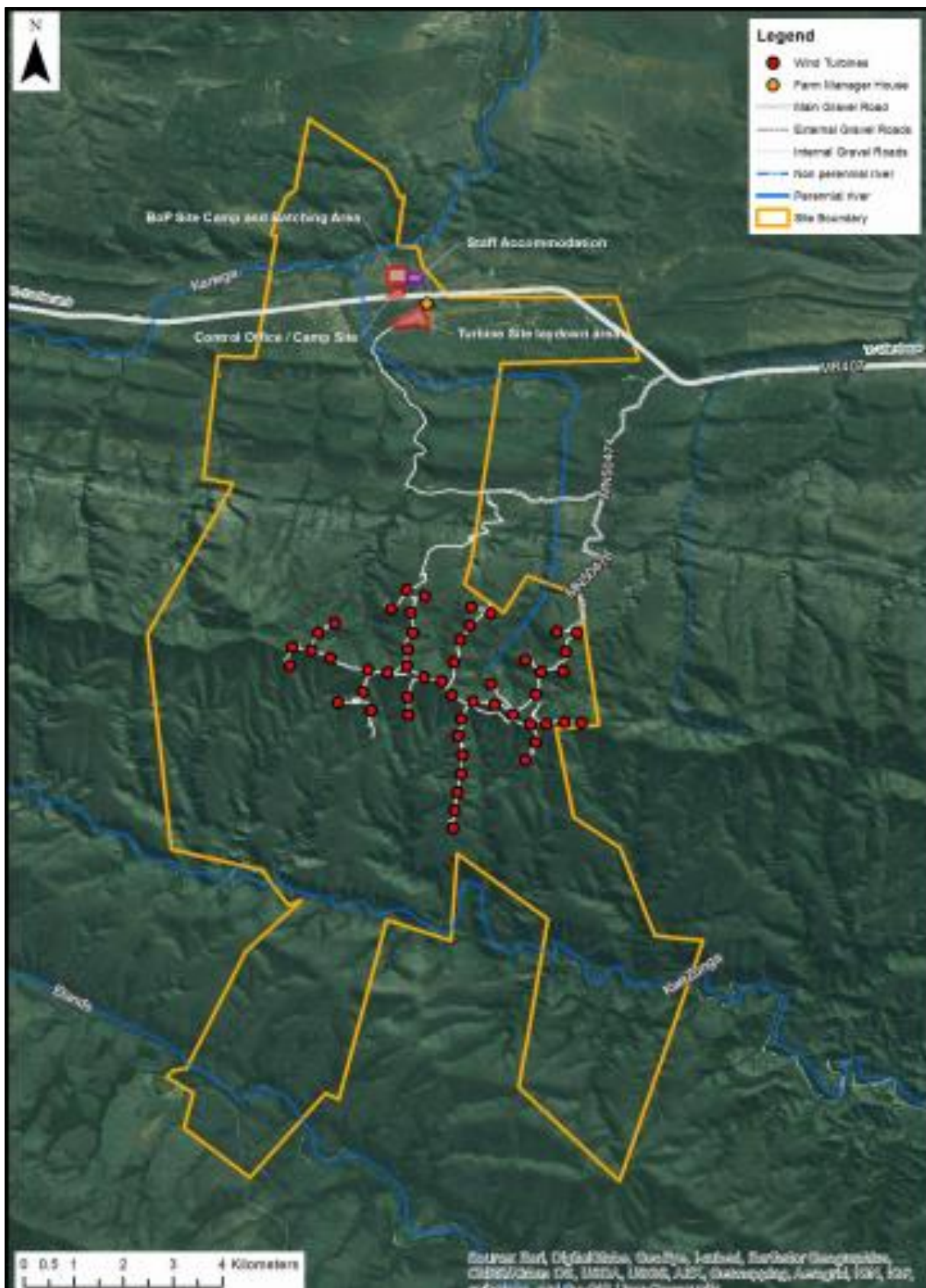


Figure 5. GIS generated map showing the location of the proposed wind energy facility (SRK Final Scoping Report).

6. ARCHAEOLOGICAL INVESTIGATION

6.1. Methodology

An archaeological desktop study was conducted and has been included within this report. Very little systematic archaeological research has been conducted within the immediate area of the proposed wind energy facility therefore the literature research was extended to include Kirkwood, Addo, Port Elizabeth, Humansdorp, Jansenville, and the coastal areas. Several archaeological and heritage impact assessment have been conducted within these areas and were included as part of the literature review.

The proposed area for the wind energy facility spans over 22 adjacent properties and covers a total area of 22 000 ha. The archaeological investigation was limited to the areas proposed for the wind turbines, the three power line alternatives, the access roads, and the areas proposed for the turbine site laydown area, staff accommodation, plant storage and concrete batching area, and the control office and camp site. More detailed descriptions of the methodology, archaeological investigation and results of the survey of the various area will be discussed separately.

GPS co-ordinates and photographs were taken with a Garmin Oregon 550.

6.2. Results of the Archaeological Investigation

6.2.1. AREA PROPOSED FOR THE WIND TURBINES AND SUBSTATION:

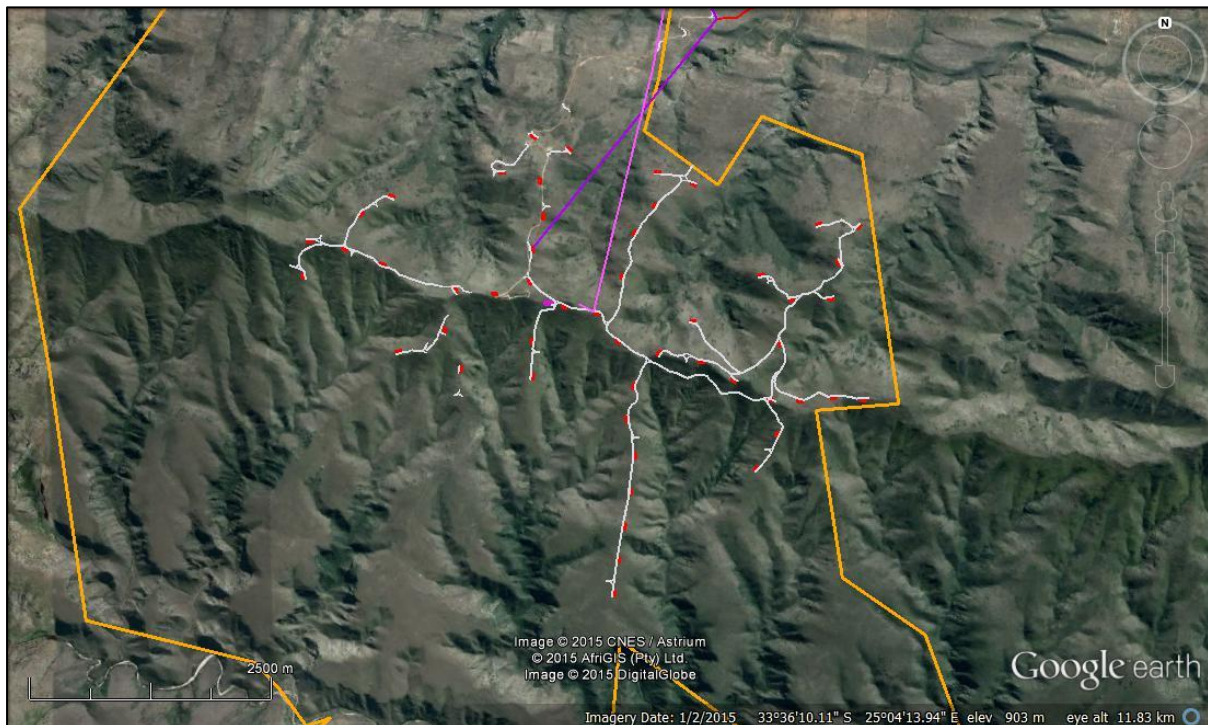


Figure 6. View of the proposed wind turbine positions (red blocks) and substation (pink block) showing the connecting roads (white lines) within the Groot Winterhoek Mountain Range.

The proposed site for the wind turbines and substation is situated within the Groot Winterhoek Mountains, an area of steep hills arranged on an east-west axis, with slopes facing north and south. The elevation ranges between 280 and 1400 meters above sea level with steep hills and high summits (Figures 7-8). The wider area is transected by three rivers which flow in an easterly direction across the site. Furthest south is the Elands River. In approximately the centre of the site is the KwaZunga River. Furthest north is the Kariega River. The rivers are fed by numerous streams draining off the surrounding slopes.

The area was surveyed by conducting spot checks along the existing roads where exposed surface areas allowed for investigation, these were very few over most of the area, and investigating the proposed turbine areas and substation. Archaeological visibility was obscured by the dense grass vegetation and only exposed areas including the existing gravel roads and the upgraded internal gravel road leading to the wind masts situated west of the development could be investigated for possible archaeological heritage remains (Figure 9). No archaeological heritage remains were observed within the proposed wind turbine and substation areas.

It is unlikely that pre-colonial communities would have considered the top of the mountain range an attractive occupation area owing to the elevation range of the site and steep hills to access the top of the mountain range as well as a lack of easily accessible water and food resources. Therefore, it is unlikely that archaeological heritage remains and sites would be uncovered during the proposed development and construction of the internal access roads, wind turbines and associated infrastructure, the substation and underground cabling connecting the wind turbines to the substation.

As mentioned previously several rock art painting sites are known to occur in the Zunga Berge and Elands Berge, although no sites have been reported within the proposed wind turbine area. Generally cave sites that may have the potential for occupation are limited to the areas along rivers and at the foot of the mountains although some painting sites are known to occur in isolated areas. It is unlikely that rock painting sites would be impacted during the development and construction of the proposed area for the wind turbines and substation.

The area proposed for the wind turbines and substation is considered as having a low cultural significance. Development may proceed as planned within this area bearing in mind the recommendations that if any assemblage of artefacts or human remains are uncovered that the correct procedure is followed to have these removed before development continues.



Figure 7. View of the proposed area for the wind turbines from the bottom of the valley.



Figure 8. View of the proposed area for the wind turbines from the bottom of the valley.



Figure 9. View of the vegetation cover of the area for the proposed wind turbines within the Groot Winterhoek Mountains.

6.2.2. POWER LINE ALTERNATIVES:

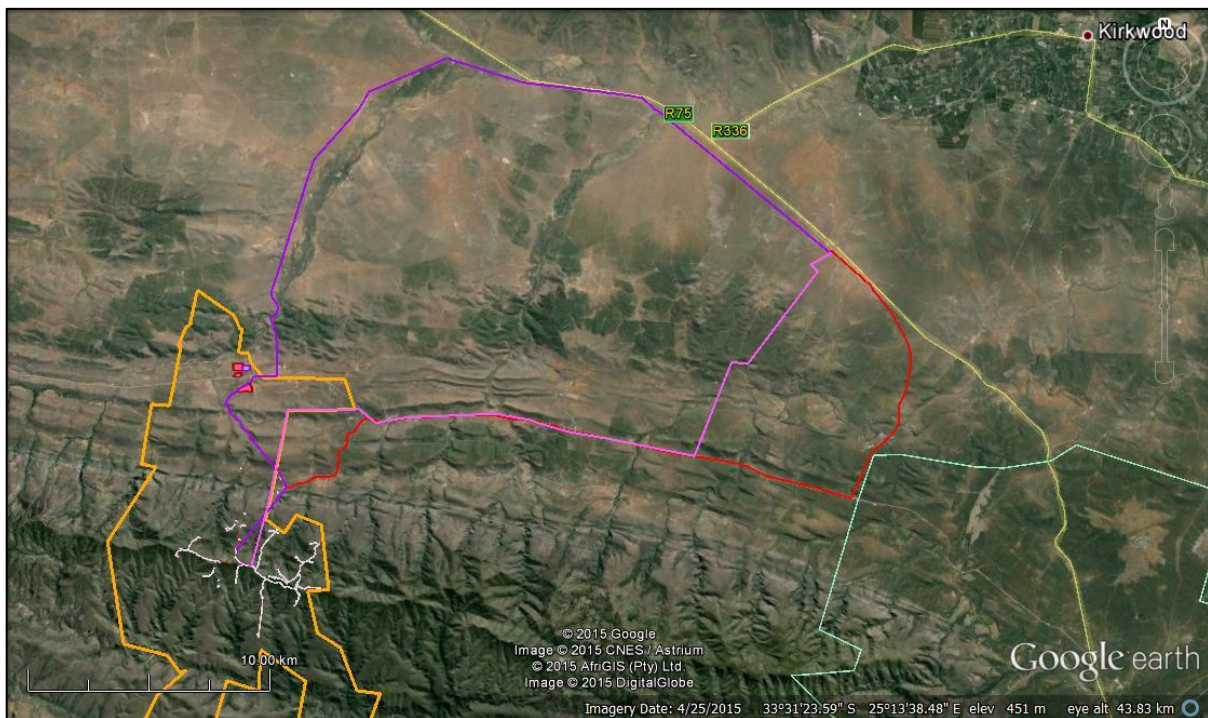


Figure 10. View of the three power line alternatives (red, purple and pink lines) proposed for the Inyanda -Roodeplaat Wind Energy Facility.

Three alternative power line route alignments have been proposed. All three routes will connect the WEF from the new substation to be constructed on-site to the Skilpad substation located 28 km north-west of the WEF site along the R75. Both the 132 kV power line and substation will be constructed by Inyanda Energy and handed over to Eskom for operation.

Alternative power line route Path 1 (shown in red on Figure 10) (Figure 11) is proposed to run from the existing Skilpad substation next to R75 secondary road in a south-easterly and southerly direction towards the MR 407 gravel road, an alternative gravel road route between Uitenhage and Steytlerville running parallel to and north of the Groot Winterhoek Mountain Range. The Path 1 power line then turns west to follow adjacent to the MR 407 to the proposed substation at the WEF site along the MN 50474 access road on the farm Adolphi Kraal 246.

Alternative power line route Path 2 (shown in purple on Figure 10) (Figure 12) is proposed to extend in a north westerly direction from the existing Skilpad substation following the route of the existing power lines situated about 200 m – 300 m south of R75 for most of the route. The line is then proposed to turn south at the Glen Connor turn-off the R75 to the proposed site for the WEF.

The preferred alternative power line route (shown in pink on Figure 10) (Figure 13) is the favoured route owing to it being the shortest in length, approximately 35 km,

compared to Path 1 and Path 2 that range between 38 km – 45 km in length. The proposed route extends from the existing Skilpad substation south-west and seems to follow the farms' fence lines and internal gravel roads towards the MR 407. The route then turns west to follow parallel to the MR 407, similarly to Path 1, but not exactly along the same proposed route. The route then turns south between the two access roads off the MR 407 to the WEF substation site crossing over farms mainly following the fence lines and internal gravel roads.

The assessment of the three alternative power line routes is part of the current study for the construction of a new 132 kV overhead power line. However, owing to the extensive distances that the three power line routes cover and time constraints, a comprehensive survey and archaeological investigation of the power line routes could not be conducted also owing to time constraints. There is no doubt that each alternative would impact upon archaeological and other heritage remains including the built environment and the cultural landscape, whether it be through the impact of the construction or visually (see Figures 14 - .

It is suggested that when the preferred route has been chosen and finalised so that pylon coordinates can be supplied that an archaeological walkthrough of the power line be conducted.



Figure 11. View of the area proposed for power line Alternative Path 1 from the Skilpad Substation.



Figure 12. View of the area proposed for power line Alternative Path 2 from the Skilpad Substation showing the existing power line running parallel to the R75.



Figure 13. View of the area proposed for the Preferred power line alternative from the Skilpad Substation with a view of the Groot Winterhoek Mountains in the far distance.



Figure 14. View of the valley along the MR 407 that two of the power line alternatives (Path 1 and the Preferred Route) will follow.



Figure 15. View of a homestead along the MR 407 where the two power line alternatives (Path 1 and the Preferred Route) will follow.

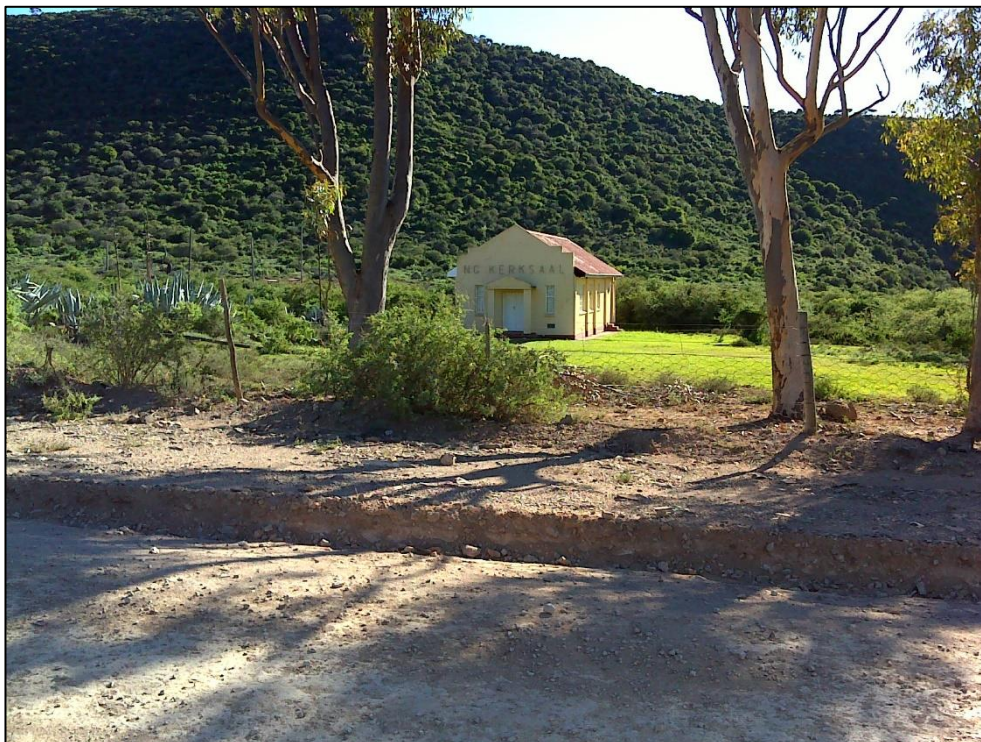


Figure 16. View of the NG Kerksaal situated at Krompoort.



Figure 17. View of the route that power line alternative 2 will run along the internal access road to the proposed wind turbine and substation site. The Groot Winterhoek Mountains are visible in the far distance.

6.2.3. UPGRADING AND CONSTRUCTION OF NEW INTERNAL ACCESS ROADS:

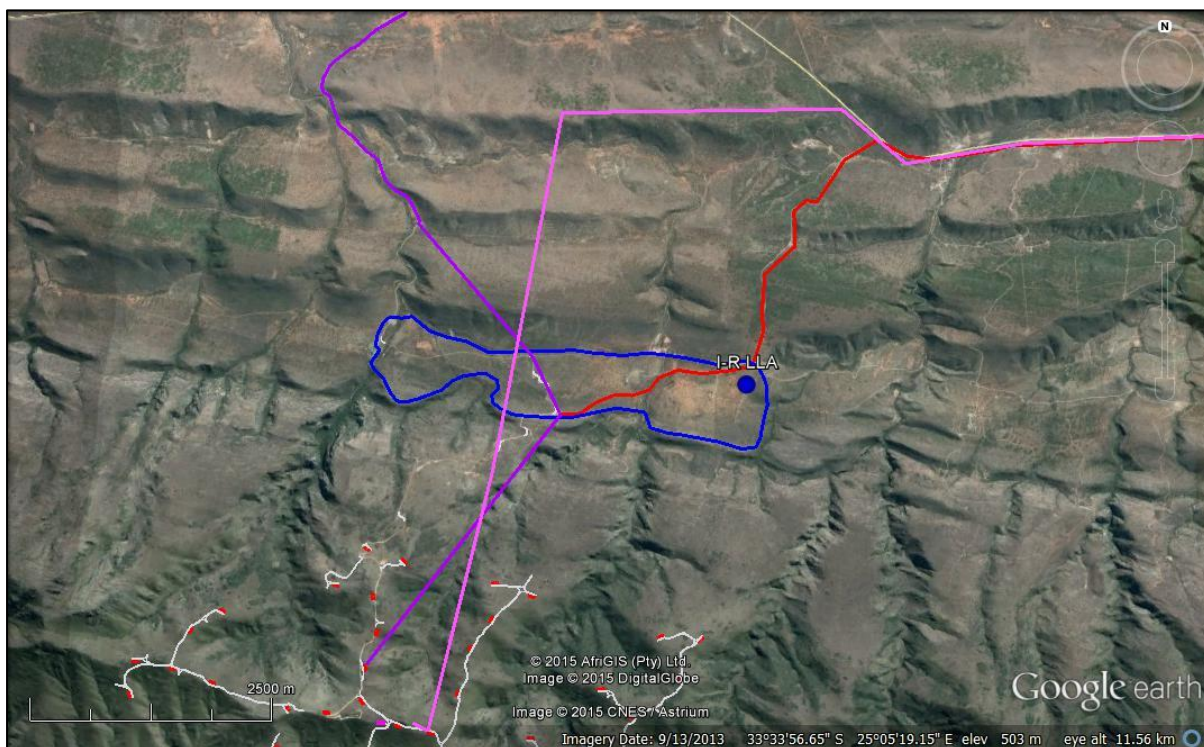


Figure 18. View of the lower lying area showing the extent of the possible occurrence of stone artefacts (area demarcated in blue) within the area where the access roads and portions of the alternative power lines will transverse.

The possible upgrading, resurfacing, and/or rehabilitation of these gravel roads and associated borrow pits is outside the scope of the current study and Environmental Impact Assessment process. However, during the initial survey several stone artefact occurrences were observed along the internal access roads mostly in the lower lying areas within the valley. The stone artefacts encountered were mainly of Middle Stone Age origins manufactured on locally occurring finer-grained quartzite raw material. It is unlikely that artefacts encountered occur *in situ*.

Gravel roads may need widening and resurfacing prior to the start of the project and in some cases minor culverts / bridges may require upgrading. Based on the width of the existing road, the preferred route for abnormal loads is from the Cockscomb station turnoff although at least for some traffic, other routes might be followed.

It is recommended that a Phase 1 Archaeological and Heritage Impact Assessment be conducted for the upgrading of the roads and associated borrow pits to establish the significance and make recommendation in the conservation and preservation site possible site that may be encountered.



Figure 19. View of an area with stone artefact scatters situated adjacent to the internal access roads within the low lying valley areas.



Figure 20. Examples of stone artefacts documented in the low lying areas in the valley adjacent to the internal gravel roads.

6.2.4. TURBINE SITE LAYDOWN AREA:

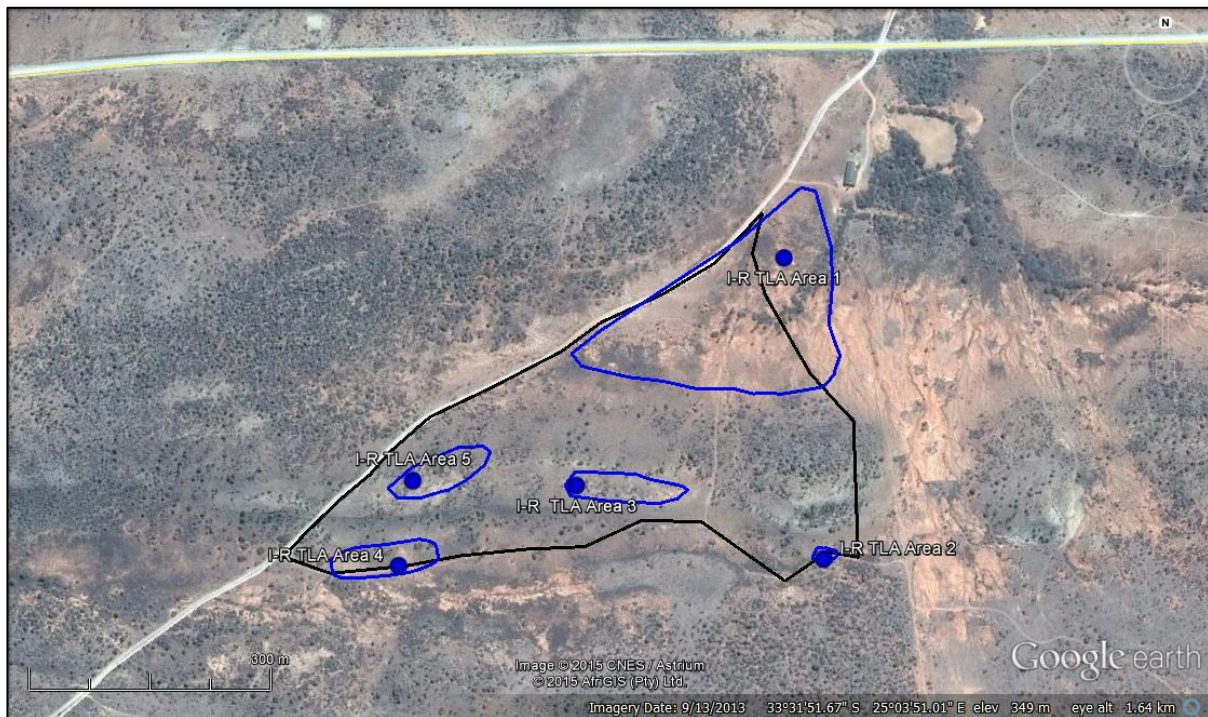


Figure 21. View of the extent of the Turbine Site Laydown Area showing the occurrences of exposed stone artefacts (areas demarcated in blue) documented within the proposed development area.

The Turbine Site Laydown Area is situated just south of the MR 407 along the entrance road to the Farm Adolphi Kraal 246. Archaeological visibility was good over most of the area and several exposed surface areas (Figures 22 – 26).

Surface scatters of Middle Stone Age stone artefacts occurred over the whole area for development therefore it was difficult to plot each artefact encountered during the survey. Areas where the scatters were consistent were recorded and plotted (Figure 21). The artefacts occurred at the surface and eroding at about 20 cm - 30 cm below the surface, therefore, it is possible that artefacts may occur further below the surface when excavations for construction begins (Figure 27). The stone artefacts have been manufactured on fine-grained quartzite raw materials that occur locally in the region and included flakes, blades and cores (Figure 28-32). Several stone artefacts showed evidence of retouch and utilization. No other organic or cultural archaeological remains occurred in association with the stone artefact scatters. The stone artefact scatters are considered as having a low archaeological significance.

It is unlikely that the stone artefacts occur *in situ* and are regarded as being in a secondary and out of context position as they have been washed into the exposed areas and have been disturbed by domestic animal and human activities. It is also possible that stone artefacts may occur below the vegetation cover between the surface and 50 – 80 cm below the ground.



Figure 22. View of the general landscape of the area proposed for the Turbine Site Laydown Area facing south-west.



Figure 23. View of the general landscape of the area proposed for the Turbine Site Laydown Area facing north.



Figure 24. View of the general landscape of the area proposed for the Turbine Site Laydown Area facing east.



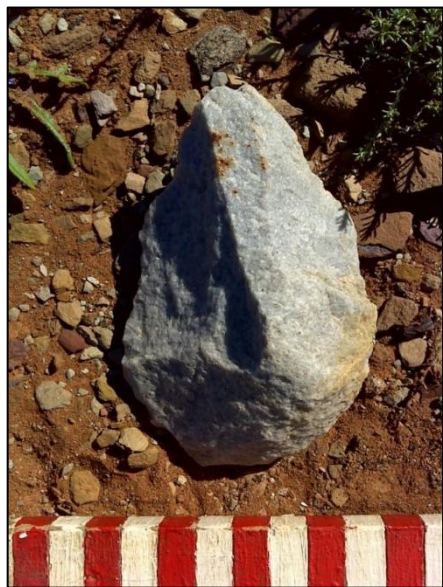
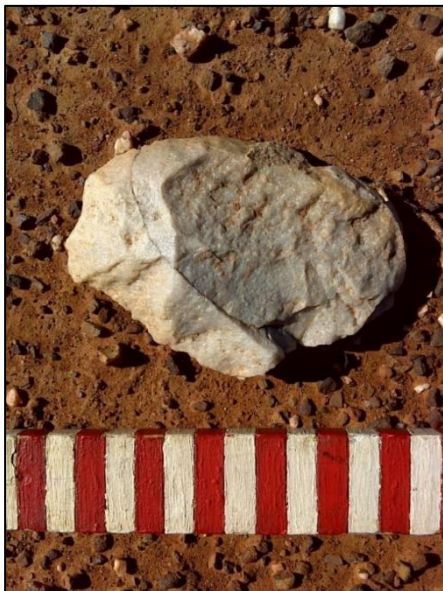
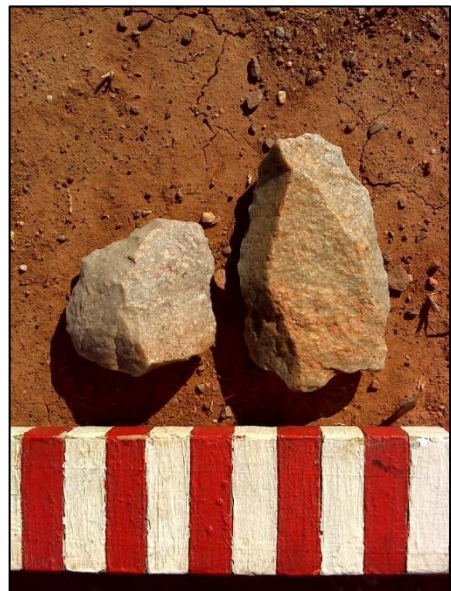
Figure 25. View of the general landscape of the area proposed for the Turbine Site Laydown Area facing north-west.



Figure 26. Exposed surface areas that made for good archaeological visibility over most of the proposed Turbine Site Laydown Area.



Figure 27. View of the exposed surface areas where occurrences of stone artefacts were documented eroding out 20 cm - 30 cm below the surface within the proposed Turbine Site Laydown Area.



Figures 28 – 32. Examples of Middle Stone Age stone artefacts documented within the area proposed for the Turbine Site Laydown Area.

6.2.5. STAFF ACCOMMODATION, PLANT STORAGE AND CONCRETE BATCHING AREA AND THE CONTROL OFFICE AND CAMP SITE:

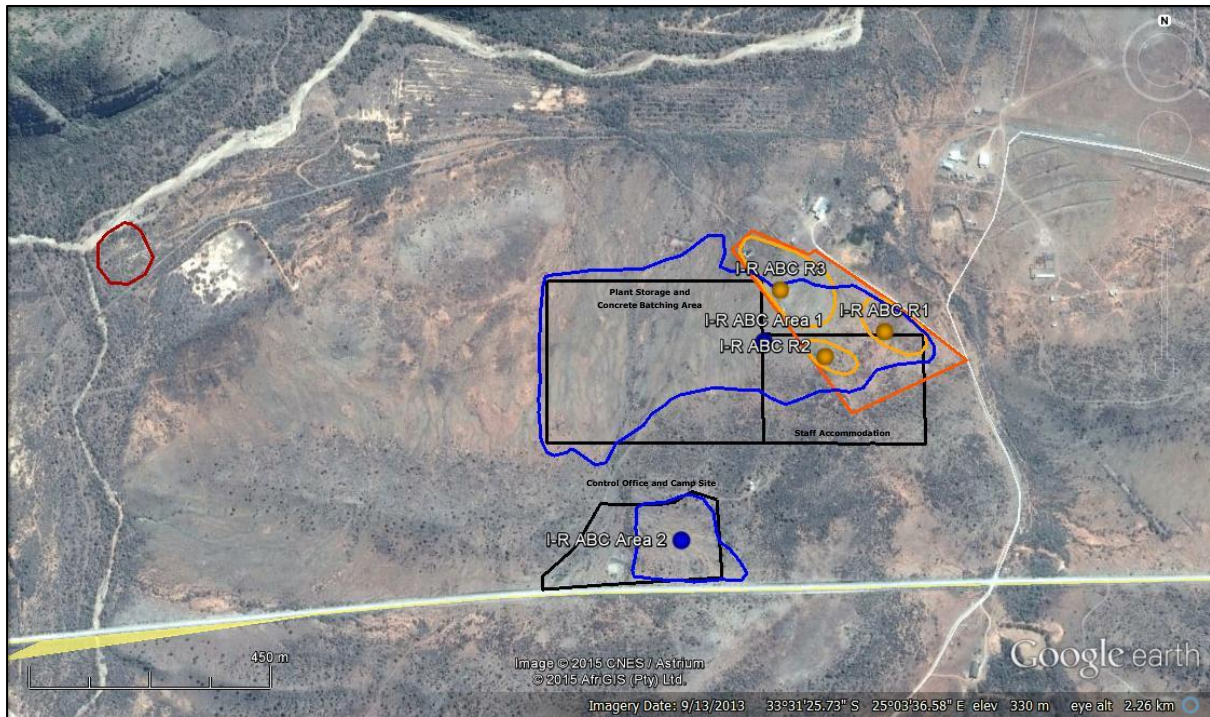


Figure 33. Close-up aerial view of the area proposed for the staff accommodation, plant storage and concrete batching area, and the control office and camp site showing the extent of stone artefact scatters (areas demarcated in blue) and ruins of dwellings (areas demarcated in orange) within the proposed development area.

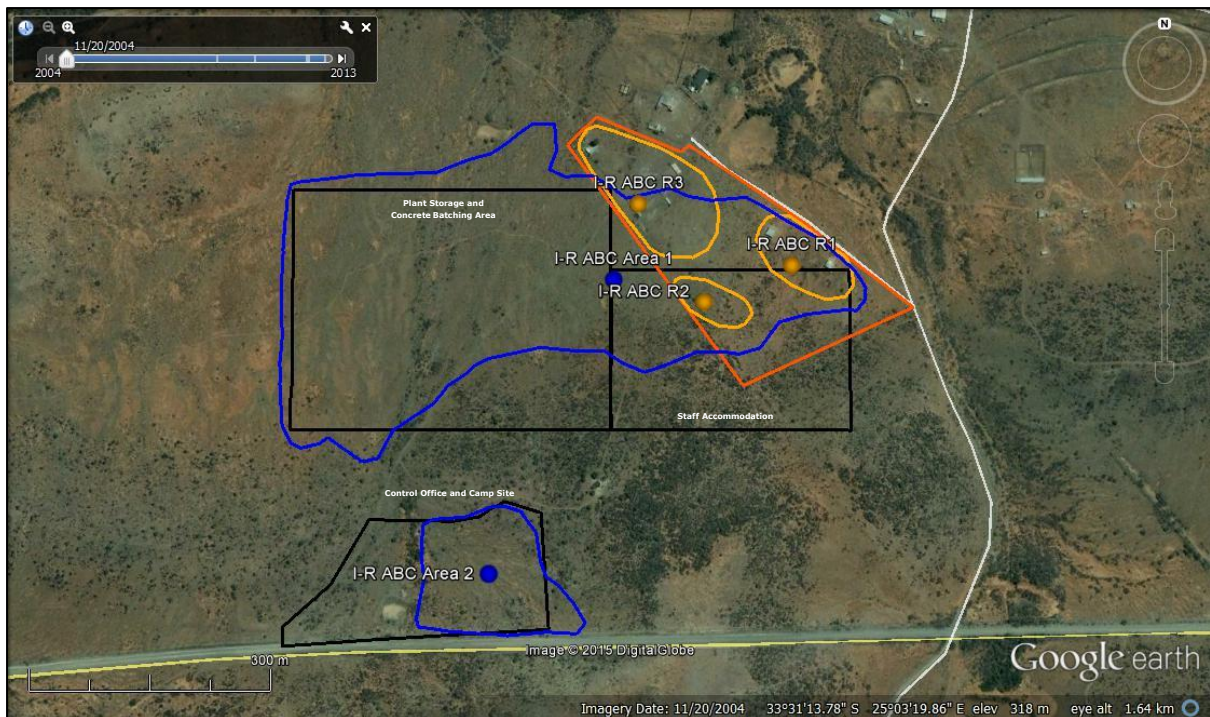


Figure 34. Older (2004) aerial view of the buildings within the proposed development area that are presently ruins.

The area proposed for the staff accommodation, plant storage and concrete batching area, and the control office and camp site is situated just north of the MR 407 along the entrance road to the Farm Adolphi Kraal 246 . Archaeological visibility was good over most of the area (Figures 35 – 40). Areas where the scatters were consistent were recorded and plotted, which over most of the development footprint (Figures 33 and 34). The artefacts occurred at the surface and eroding at about 20 cm - 30 cm below the surface, therefore, it possible that artefacts may occur further below the surface when excavations for construction begins. The stone artefacts have been manufactured on fine-grained quartzite raw materials that occur locally in the region and included flakes, blades and cores (Figure 41-48). Several stone artefacts showed evidence of retouch and utilization. No other organic or cultural archaeological remains occurred in association with the stone artefact scatters. The stone artefacts scatters are considered as having a low archaeological significance.

It is unlikely that the stone artefacts occur *in situ* and are regarded as being in a secondary and out of context position as they have been washed into the exposed areas and have been disturbed by domestic animal and human activities. It is also possible that stone artefact may occur below the vegetation cover between the surface and 50 – 80 cm below the ground.

Several ruins of dwellings and structures associated with farming infrastructure were documented within the northern boundary of the area proposed for the staff accommodation and beyond (Figures 49 – 52). the buildings can be seen intact on a 2004 Google Earth generated map. However, the buildings are not recorded on the 1:50 000 topographic map 3325CA STRYDOMSBERG, 1972 Edition, therefore it is highly likely that the built environment is younger than 60 years. Built environment over 60 years is protected by the National Heritage Resources Act 25 of 1999.

A grave located east of the proposed development area on the banks of the Kariega River is recorded on the 1:50 000 topographic map 3325CA STRYDOMSBERG, 1972 Edition (Figure 33, red circle). The area was not investigated as it is situated a distance outside the footprint of the development area.



Figure 35. View of the general landscape of the area proposed for the staff accommodation facing north-west towards the Kariega River situated at the foot of the mountains in the distance.



Figure 36. View of the general landscape of the area proposed for the staff accommodation facing north-east towards the Kariega River situated at the foot of the mountains in the distance.



Figure 37. View of the general landscape of the area proposed for the plant storage and concrete batching area.



Figure 38. View of the general landscape of the area proposed for the plant storage and concrete batching area.



Figure 39. View of the general landscape of the area proposed for the control office and camp site.



Figure 40. View of the general landscape of the area proposed for the control office and camp site.



Figure 41. Example of a surface scatter of stone artefacts within the areas proposed for the infrastructure associated with the WEF project situated on the Farm Adolphs Kraal.

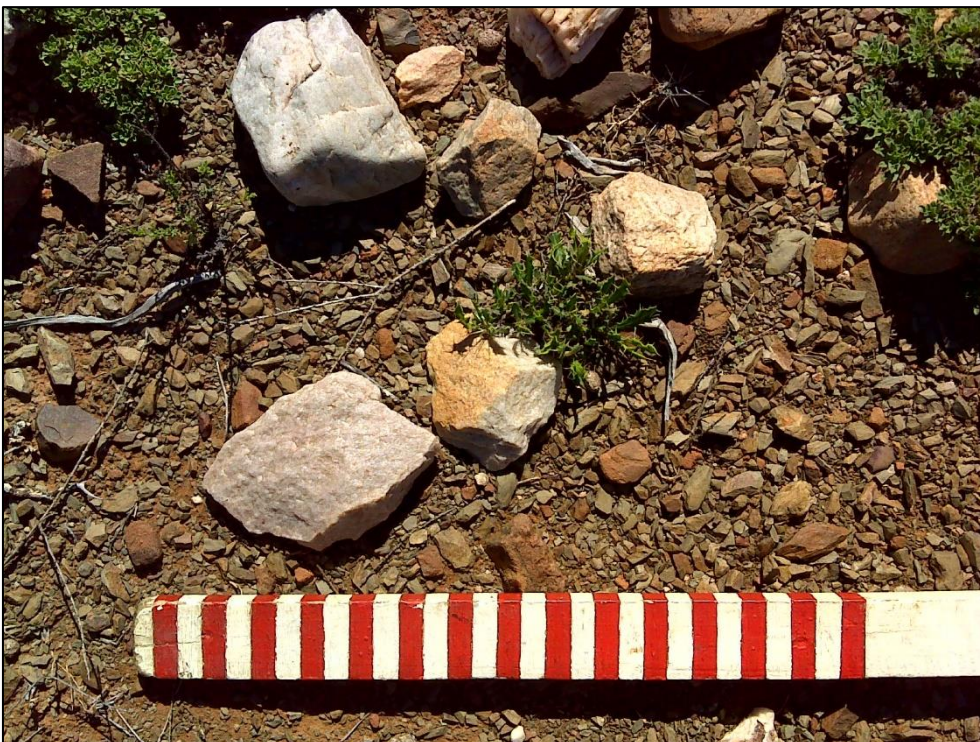
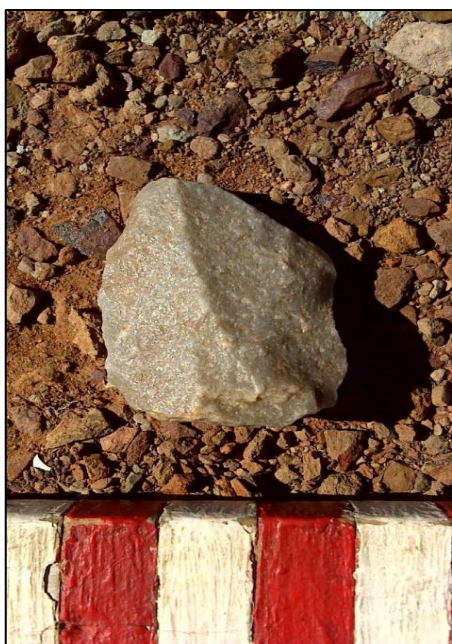
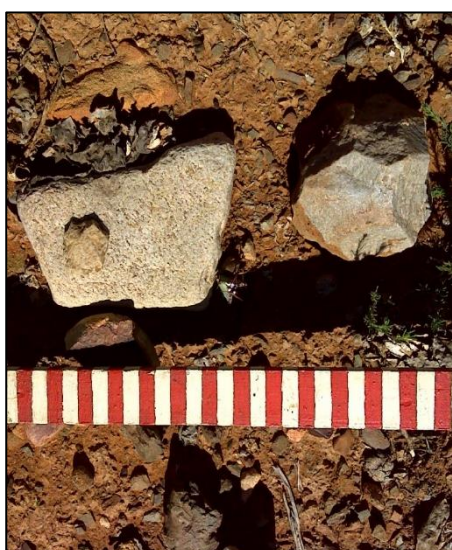


Figure 42. Example of a surface scatter of stone artefacts within the areas proposed for the infrastructure associated with the WEF project situated on the Farm Adolphs Kraal.



Figures 43 - 48. Examples of Middle Stone Age stone artefacts within the area proposed for the infrastructure associated with the WEF project situated on the Farm Adolphi Kraal.



Figure 49. View of a dwellings' ruins situated within the area proposed for the development of infrastructure associated with the WEF project on the Farm Adolphs Kraal.



Figure 50. View of a dwellings' ruins situated within the area proposed for the development of infrastructure associated with the WEF on the Farm Adolphs Kraal.



Figure 51. View of a dwellings' ruins situated within the area proposed for the development of infrastructure associated with the WEF on the Farm Adolphs Kraal.



Figure 52. View of a dwellings' ruins situated within the area proposed for the development of infrastructure associated with the WEF on the Farm Adolphs Kraal.

7. DESCRIPTION OF SITES

7.1. Stone Artefact Scatters:

Surface scatters of Middle Stone Age stone artefact commonly occur across the lower lying valley areas. Stone artefacts were recorded along the internal gravel access roads to the Wind Energy Facility situated within the Groot Winterhoek Mountains (I-R LLA, Figure 18) and within the areas proposed for the associated infrastructure on the Farm Adolphi Kraal 246 north and south of the MR 407 road (I-R Area 1 – I-R Area 2, Figure 21 and I-R ABC Area 1 – I-R ABC Area 2, Figure 33).

The artefacts occurred at the surface and eroding at about 20 cm - 30 cm below the surface, therefore, it possible that artefacts may occur further below the surface when excavations for construction begins. The stone artefacts have been manufactured on fine-grained quartzite raw materials that occur locally in the region and included flakes, blades and cores (Figure 41-48). Several stone artefacts showed evidence of retouch and utilization. No other organic or cultural archaeological remains occurred in association with the stone artefact scatters. The stone artefacts scatters are considered as having a low archaeological significance.

It is unlikely that the stone artefacts occur *in situ* and are regarded as being in a secondary and out of context position as they have been washed into the exposed areas and have been disturbed by domestic animal and human activities. It is also possible that stone artefact may occur below the vegetation cover between the surface and 50 – 80 cm below the ground.

The stone artefact scatters are considered as having a low cultural significance and have been allocated a heritage grading of:

'General' Protection C (Field Rating IV A): These sites have been sufficiently recorded (in the Phase 1). It requires no further recording before destruction (usually Low significance).

7.2. Built Environment:

Several ruins of dwellings and structures associated with farming infrastructure were documented within the northern boundary of the area proposed for the staff accommodation and beyond (Figures 49 – 52). the buildings can be seen intact on a 2004 Google Earth generated map. However, the buildings are not recorded on the 1:50 000 topographic map 3325CA STRYDOMSBERG, 1972 Edition, therefore it is highly likely that the built environment is younger than 60 years. Built environment over 60 years is protected by the National Heritage Resources Act 25 of 1999.

7.3. Graves:

A grave located east of the proposed development area on the banks of the Kariega River is recorded on the 1:50 000 topographic map 3325CA STRYDOMSBERG, 1972 Edition (Figure 33, red circle). The area was not investigated as it is situated a distance

outside the footprint of the development area and should not be affected during construction and operation activities.

The grave, however, is considered as having a high cultural significance and has been allocated a heritage grading of:

Grade IIIA significance. This site should be retained as a heritage register site (High significance) and so mitigation as part of the development process is not advised.

8. COORDINATES AND SITES FOR THE PROPOSED INYANDA-ROODEPLAAT WIND ENERGY FACILITY (WEF), SARAH BAARTMAN DISTRICT MUNICIPALITY, EASTERN CAPE PROVINCE.

Table 1. Coordinates and sites for the Proposed Inyanda-Roodeplaas Wind Energy Facility (WEF), Sarah Baartman District Municipality, Eastern Cape Province.

REFERENCE	DESCRIPTION	CO-ORDINATE	HERITAGE GRADING
I-R LLA	Extent of stone artefacts scatters along the roads in the lower lying areas in the valley.	33°33'57.60"S; 25°06'14.90"E	General Protection C (Field Rating IV C)
I-R TLA Area 1	Stone artefact scatter within the Turbine Laydown Site Area	33°31'47.40"S; 25°03'59.40"E	General Protection C (Field Rating IV C)
I-R TLA Area 2	Stone artefact scatter within the Turbine Laydown Site Area	33°31'59.40"S; 25°04'01.20"E	General Protection C (Field Rating IV C)
I-R TLA Area 3	Stone artefact scatter within the Turbine Laydown Site Area	33°31'56.50"S; 25°03'49.40"E	General Protection C (Field Rating IV C)
I-R TLA Area 4	Stone artefact scatter within the Turbine Laydown Site Area	33°31'59.70"S; 25°03'40.90"E	General Protection C (Field Rating IV C)
I-R TLA Area 5	Stone artefact scatter within the Turbine Laydown Site Area	33°31'56.30"S; 25°03'41.60"E	General Protection C (Field Rating IV C)
I-R ABC Area 1	Stone artefact scatter within the staff accommodation, plant storage and concrete batching area, and the control office and camp site	33°31'24.50"S; 25°03'47.70"E	General Protection C (Field Rating IV C)
I-R ABC Area 2	Stone artefact scatter within the staff accommodation, plant storage and concrete batching area, and the control office and camp site	33°31'36.30"S; 25°03'41.70"E	General Protection C (Field Rating IV C)
I-R ABC R1	Dwelling ruins within the staff accommodation, plant storage and concrete batching area, and the control office and camp site	33°31'23.90"S; 25°03'56.40"E	General Protection C (Field Rating IV C)
I-R ABC R2	Dwelling ruins within the staff accommodation, plant storage and concrete batching area, and the control office and camp site	33°31'25.40"S; 25°03'52.10"E	General Protection C (Field Rating IV C)
I-R ABC R3	Dwelling ruins within the staff accommodation, plant storage and concrete batching area, and the control office and camp site	33°31'21.40"S; 25°03'48.90"E	General Protection C (Field Rating IV C)

9. CULTURAL LANDSCAPE

Cultural landscapes are increasingly becoming a significant considering factor when conducting various archaeological and heritage impact assessments for proposed developments. The areas investigated for the proposed Inyanda – Roodeplaat Wind Energy Facility (WEF) situated in the Groot Winterhoek Mountain Range between Kirkwood and Patensie, Sarah Baartman District Municipality, Eastern Cape Province, considered as having a low cultural heritage significance despite the extent of the archaeological stone artefacts scatters.

This section gives a brief introduction to the concept of cultural landscape and its relation to various aspects of the dynamic interaction of humans as cultural agents and the landscape as a medium. A description of the interwoven relationships of humans with the landscape over time will be given including the archaeological, historical, and contemporary connections. Lastly, the living heritage makes up a small part of the study undertaken, its significance will be highlighted in relation to the communities who still identify with the area and retain a sense of identity to the landscape.

9.1. Concept of Cultural Landscape

Cultural landscapes can be interpreted as complex and rich extended historical records conceptualised as organisations of space, time, meaning, and communication moulded through cultural process. The connections between landscape and identity and, hence, memory are fundamental to the understanding of landscape and human sense of place. Cultural landscapes are the interface of culture and nature, tangible and intangible heritage, and biological and cultural diversity. They represent a closely woven net of relationships, the essence of culture and people's identity. They are symbol of the growing recognition of the fundamental links between local communities and their heritage, human kind, and its natural environment. In contemporary society, particular landscapes can be understood by taking into consideration the way in which they have been settled and modified including overall spatial organisation, settlement patterns, land uses, circulation networks, field layout, fencing, buildings, topography, vegetation, and structures. The dynamics and complex nature of cultural landscapes can be regarded as text, written and read by individuals and groups for very different purposes and with very many interpretations. The messages embedded in the landscape can be read as signs about values, beliefs, and practices from various perspectives. Most cultural landscapes are living landscapes where changes over time result in a montage effect or series of layers, each layer able to tell the human story and relationships between people and the natural processes.

The impact of human action of the landscape occurs over time so that a cultural landscape is the result of a complex history and creates the significance of place in shaping historical identities by examining a community's presence or sense of place. The deeply social nature of relationships to place has always mediated people's

understanding of their environment and their movements within it, and is a process which continues to inform the construction of people's social identity today. Social and spatial relationships are dialectically interactive and interdependent. Cultural landscape reflects social relations and institutions and they shape subsequent social relations.

Cultural landscapes tell the story of people, events, and places through time, offering a sense of continuity, a sense of the stream of time. Landscapes reflect human activity and are imbued with cultural values. They combine elements of space and time, and represent political as well as social and cultural constructs. Culture shapes the landscape through day-to-day routine and these practices become traditions incorporated with a collective memory the ultimate embodiments of memorial consciousness', examples such as monuments, annual events and, archives. As they have evolved over time, and as human activity has changed, they have acquired many layers of meaning that can be analysed through archaeological, historical, geographical, and sociological study.

Indigenous people, European explorers, missionaries, pastoralists, international and domestic travellers all looked or look at similar landscapes and experience different versions of reality. Regardless of the power of different cultural groups, however, all groups create cultural landscape and interpret them from their own perspectives. This gives rise to tensions and contradictions between groups, invariably expressed in landscape forms as well.

The dynamics and complex nature of cultural landscapes can be regarded as text, written and read by individuals and groups for very different purposes and with very many interpretations. The messages embedded in the landscape can be read as signs about values, beliefs, and practices from various perspectives.

Most cultural landscapes are living landscapes where changes over time result in a montage effect or series of layers, each layer able to tell the human story and relationships between people and the natural processes. A common theme underpinning the concept of ideology of landscape itself is the setting for everything we do is that of the landscape as a repository of intangible values and human meaning that nurture our very existence. Intangible elements are the foundation of the existence of cultural landscapes, and that are still occupied by contemporary communities, Landscape, culture and collective memory of a social group are intertwined and that this binds the individuals to their community. Culture shapes their everyday life, the values bind gradually, change slowly, and transfer from generation to generation – culture is a form of memory. We see landscapes as a result of our shared system of beliefs and ideologies. In this way landscape is a cultural construct, a mirror of our memories and myths encoded with meanings which can be read and interpreted. Pivotal to the significance of cultural landscapes and the ideas of the ordinarily sacred is the realisation that it is the places, traditions, and activities of ordinary people that create a rich cultural tapestry of life, particularly through our recognition of the values people attach to their everyday places and concomitant sense of place and identity.

Living heritage means cultural expressions and practices that form a body of knowledge and provide for continuity, dynamism, and meaning of social life to generations of people as individuals, social groups, and communities. It also allows for identity and sense of belonging for people as well as an accumulation of intellectual capital current and future generation in the context of mutual respect for human, social and cultural rights.

Protection of these cultural landscapes involves some management issues such as successful conservation is based on the continuing vital link between people and their landscapes. This link can be disrupted or affected by for instance economic reasons. Other threats can also be attributed to urban expansion and development, tourism, war and looting and something beyond our human intervention: natural disasters and climate change. Cultural landscape management and conservation processes bring people together in caring for their collective identity and heritage, and provide a shared local vision within a global context. Local communities need, therefore, to be involved in every aspect of identification, planning and management of the areas as they are the most effective guardians of landscape heritage.

Most elements of living heritage are under threat of extinction due to neglect, modernisation, urbanisation, globalisation, and environmental degradation. Living heritage is at the centre of people's culture and identity, it is important to provide space for its continued existence. Living heritage must not be seen as merely safeguarding the past, but it must be seen as safeguarding the logic of continuity of what all communities or social groups regard as their valuable heritage, shared or exclusive.

In some instances, villages may capitalise on local landscape assets in order to promote tourism. Travel and tourism activities are built around the quest for experience, and the experience of place and landscape is a core element of that quest. It is a constant desire for new experiences that drives tourism, rather than a quest for authenticity. It is, therefore, important to engage actively with the tourism industry so that aspects of life and landscape important to cultural identity, including connection with place are maintained.

9.2. Archaeological Landscape

The area was once part of an ancient landscape inhabited by various families of the genus *Homo*. Various studies recording archaeological sites and occurrences within the wider region stretching from Jansenville, Kirkwood, and Addo to Patensie and Humansdorp to the coastal areas to the east and south of the proposed development area have reported on the evidence of the presence of *Homo erectus* (Early Stone Age), *Homo sapiens* (Middle Stone Age), and *Homo sapiens* (Later Stone Age). The only remains dating to the Early and Middle Stone Ages are stone artefacts as the organic evidence and sites have not been preserved. The influence of climatic conditions and the

rising and falling of the sea levels may also attribute to much archaeological site information being lost.

Pre-colonial human remains are mostly unmarked and invisible on the landscape, however, in some instances, they may be marked by organised piles of stones.

9.3. Historical and Contemporary Landscape

The archaeological interpretation of the cultural landscape relies solely on the presence and surface visibility of artefacts left behind on the landscape by the populations who occupied and migrated through the proposed development area. A more comprehensive historical layer is able to be fitted onto the cultural landscape owing to the availability of written documents and the continuing existence of the traces left behind by European Settlers and the moulding of these traces used to shape the contemporary communities that occupies and regards itself attached to its present cultural landscape.

The contemporary cultural landscape is the product of centuries of human interaction, more so when the European Settlers entered the area. Remnants of these cultural interactions remain on the landscape, such as the built environment, features, artefacts, and marked and unmarked graves / burials with only oral histories and stories handed down from one generation to the next to remain in the collective memory of the community/ies living on the landscape.

10. CONCLUSION

The survey was conducted by following the positions and routes for the turbines, underground cabling and areas outline for the associated infrastructure such as the turbine site laydown area, the staff accommodation as well as the staff accommodation, plant storage and concrete batching area, and the control office and camp site. Three alternative 132 kV power lines were identified, these areas could not be thoroughly investigated owing to time constraints and the vast distances they cover (between 35 and 42 km).

No archaeological heritage remains were observed within the areas proposed for the turbines and substation, this could be due to the dense vegetation that obscured archaeological visibility, but is likely due to the inaccessibility of area being located at the top of the Groot Winterhoek Mountains that comprise of steep hills and high elevations ranging up 1 400 m above sea level.

Surface scatters of Middle Stone Age and Later Stone Age stone artefacts were recorded in some low lying areas within exposed surface and disturbed donga areas. It is unlikely that the stone artefact surface scatters that occur on the exposed surface areas are positioned *in situ*; however, stone artefacts may occur between 50 – 80 cm below the surface.

The ruins of dwellings and farming infrastructure were documented on the Farm Adolphi Kraal 246, these are probably less than 60 years and are not protected by the National Heritage Resources Act 25 of 1999.

The proposed development would have negative implications on the archaeological heritage remains documented within the proposed area during all phases of the development. The negative implications include the destruction of the surface scatters of stone artefacts and further occurrences that are not immediately visible. The recommendations must be considered as appropriate mitigation measures to protect and conserve the archaeological heritage remains observed within the proposed development area and further archaeological remains that may occur and are not immediately visible on the surface.

Numerous changes in the layout as a result of environmental information generated during the course of the scoping study have been incorporated in the site development plan. It is expected that further incremental changes to the site layout will take place during the EIA phase of the process.

It is anticipated that the developer will consider the following criteria in determining the final layout:

(1) recommendations from the various specialists, (2) guidelines from relevant bioregional plans, (3) comments from IAPs and other stakeholders, (4) site visits, (5) scientific publications, and (6) wind data recorded on site.

An assessment of the final layout, and a detailed description of the layout itself, will be presented in the Draft EIR

11. RECOMMENDATIONS

The overall area is considered as having a low archaeological significance, however, the following recommendations must be considered before development continues:

1. A destruction permit for the areas I-R TLA (Turbine Site Laydown Area) and I-R ABC (staff accommodation, plant storage and concrete batching area, and the control office and camp site) must be applied for before any development may continue within these areas.
2. As the possible upgrading, resurfacing, and/or rehabilitation of these gravel roads and associated borrow pits were not included within the scope of this study a phase 1 archaeological impact assessment must be conducted for the upgrade of the roads which falls under section 38 of the National Heritage Resources Act 25 of 1999.

3. Owing to the extensive distances of the areas for the proposed power line alternatives the areas could not be thoroughly investigated during this survey. An archaeological walk-through must be conducted for the final power line route chosen out of the three alternatives when the positions of the pylons are known.
4. If the current layout is changed, an archaeological walk-through survey of the changes must be conducted and further mitigatory recommendations may be made if necessary.
5. The ruins of dwellings, built environment structures and infrastructure are younger than 60 years and no further investigation or demolition permit is required.
6. If concentrations of historical and pre-colonial archaeological heritage material and/or human remains (including graves and burials) are uncovered during construction, all work must cease immediately and be reported to the Albany Museum and/or the Eastern Cape Provincial Heritage Resources Agency (ECPHRA) so that systematic and professional investigation/excavation can be undertaken. Phase 2 mitigation in the form of test-pitting/sampling or systematic excavations and collections of the pre-colonial shell middens and associated artefacts will then be conducted to establish the contextual status of the sites and possibly remove the archaeological deposit before development activities continue.
7. A person must be trained as a site monitor to report any archaeological sites found during the development. Construction managers/foremen and/or the Environmental Control Officer (ECO) 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.

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14. GENERAL REMARKS AND CONDITIONS

NOTE: This report is a phase 1 archaeological impact assessment (AIA) only and does not include or exempt other required specialist assessments as part of the heritage impact assessments (HIAs).

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 including 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 phase 1 archaeological impact assessment (AIA) are based on the visibility of archaeological remains, features and, sites and may not reflect the true state of affairs. Many archaeological remains, features and, sites may be covered by soil and vegetation and will only be located once this has been removed. In the event of such archaeological heritage being uncovered (such as during any phase of construction activities), archaeologists or the relevant heritage authority must be informed immediately so that they can investigate the importance of the sites and excavate or collect material before it is destroyed. The onus is on the developer to ensure that this agreement is honoured in accordance with the National Heritage Resources Act No. 25 of 1999 (NHRA 25 of 1999).

Archaeological Specialist Reports (desktops and AIA's) will be assessed by the relevant heritage resources authority. The final comment/decision rests with the heritage resources authority that may confirm the recommendations in the archaeological specialist report and grant a permit or a formal letter of permission for the destruction of any cultural sites.

APPENDIX A: GRADING SYSTEM

The National Heritage Resources Act 25 of 1999 stipulates the assessment criteria and grading of archaeological sites. The following categories are distinguished in Section 7 of the Act and the South African Heritage Resources Agency:

- National: This site is suggested to be considered of Grade 1 significance and should be nominated as such. Heritage resources with qualities so exceptional that they are of special national significance.
- Provincial: This site is suggested to be considered of Grade II significance and should be nominated as such. Heritage resources which, although forming part of the national estate, can be considered to have special qualities which make them significant within the context of a province or a region
- Local: This site is suggested to be Grade IIIA significance. This site should be retained as a heritage register site (High significance) and so mitigation as part of the development process is not advised.
- Local: This site is suggested to be Grade IIIB significance. It could be mitigated and (part) retained as a heritage register site (High significance).
- 'General' Protection A (Field Rating IV A): This site should be mitigated before destruction (usually High/Medium significance).
- 'General' Protection B (Field Rating IV B): This site should be recorded before destruction (usually Medium significance).
- 'General' Protection C (Field Rating IV C): This site has been sufficiently recorded (in the Phase 1). It requires no further recording before destruction (usually Low significance).

APPENDIX B: 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.