

**A PHASE 1 ARCHAEOLOGICAL IMPACT ASSESSMENT FOR THE PROPOSED  
CONSTRUCTION OF THE NEW WOLF – SKILPAD – GRASSRIDGE 132 KV  
TRANSMISSION LINE, KARIEGA / KIRKWOOD, EASTERN CAPE PROVINCE**



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## **A PHASE 1 ARCHAEOLOGICAL IMPACT ASSESSMENT FOR THE PROPOSED CONSTRUCTION OF THE NEW WOLF – SKILPAD – GRASSRIDGE 132 KV TRANSMISSION LINE, KARIEGA / KIRKWOOD, EASTERN CAPE PROVINCE**

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

### **EXECUTIVE SUMMARY**

Zutari on behalf of Wolf Wind Farm (RF) (Pty) Ltd appointed Eastern Cape Heritage Consultants cc to conduct a Phase 1 Archaeological Impact Assessment (AIA) for the proposed construction of a new 132kV transmission line adjacent to the existing Eskom line connecting the Wolf substation to the Skilpad and the Grassridge substations. The old line will be decommissioned in the future. The total length of the new transmission line will be approximately 90 kilometres and it will be located within a new 31 metre wide servitude except where the existing servitude could be re-used. Three (3) laydown areas of approximately 1000m<sup>2</sup> at each of the substations will also be required.

Access to the study area was easy, but dense vegetation and grass in certain areas made it difficult to find *in situ* archaeological sites/materials. Nonetheless, occasional Middle Stone Age (MSA) stone tools and MSA scatters were observed in open areas within the proposed servitude. These stone tools were in secondary context and not associated with any other archaeological material and no further action is needed.

There are several farmsteads, buildings and other structures located within or in close proximity to the proposed servitude as well as two (2) fenced off informal cemeteries. Some of the buildings and other structures may be older than 60 years and as a result it may be protected by the National Heritage Resources Act, No. 25 of 1999. If any direct impact or disturbance is anticipated as a result of the proposed activities, a historian / heritage practitioner must be appointed to assess these structures. The graves that are located within the servitude are not older than 60 years and therefore falls under the Human Tissues Act, No. 65 of 1983, as well as any local and regional laws and by-laws. Due to the cultural and spiritual significance of graves and burial sites to communities, any disturbance of these sites should be avoided.

The proposed transmission line will cross several rivers including the Sundays River, in an area where one would expect to find freshwater mussel middens. It is recommended that if such features or any other concentrations of archaeological material are exposed, it must be reported to the archaeologist at the Albany Museum in Makhanda (Grahamstown) or to the Eastern Cape Provincial Heritage Resources Authority (ECPHRA) so that a systematic and professional investigation can be undertaken.

All clearing activities must be monitored and managers/foremen should be informed before clearing/construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites. The ECO can be trained to monitor the clearing of the vegetation and to report finds. It is further recommended that an archaeologist/heritage practitioner should conduct a walkthrough of a section of the proposed new servitude for the transmission line after vegetation clearing from: the Remaining Extent of the Farm Brakhill No. 139 (GPS reading: 33.31.328 ; S 25.23.426 E) to the Grassridge substation. In general, the proposed area for the development appears to be of **low archaeological sensitivity** and the development may proceed as planned.

## PROJECT INFORMATION

### Type of development

An existing 132kV transmission line runs between the Wolf-, Skilpad- and Grassridge substations and is located north of Kariega and West of Kirkwood. The line runs from the Grassridge substation in a general north-westerly direction to the Skilpad- and Wolf substation and is approximately 90km in length. Eskom requires that Wolf Wind Farm (RF) (Pty) Ltd, a preferred bidder in the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) Bid Window 5, construct a new Wolf-Skilpad-Grassridge 132kV transmission line adjacent to the existing line and that the old line be decommissioned in the future. The new transmission line forms part of the works required for connecting the Wolf Wind Farm to the national grid and will prevent potential future capacity issues and failure of the infrastructure. The new line will be accessed via existing access/farm roads and/or a jeep track for construction and operation (new or existing in some cases) will run underneath the line.

The technical specifications for the project are as follow:

<b>Component</b>	<b>Description</b>
<b>Overhead Powerline</b>	132kV single-circuit Wolf substation to Skilpad substation - ± 46km Skilpad substation to Grassridge substation - ± 44km Total length ± 90km The transmission line will be located within a new 31m wide servitude.
<b>Access</b>	The line is accessed via existing access/farm roads and the Eskom service track running underneath the existing 132kV line. A new 3.5m access track will be developed inside the new line's servitude and will run for the full length of the line. The new access track will be a brush-cut track (jeep track). Total service track footprint: ±35.1ha
<b>Pylon structures</b>	A combination of monopoles and lattice structures are proposed to be used as the pylon structures. Monopole structures will be up to 40m high. Self-supporting monopole structures will be used where required. Special structures with horizontal configuration will be used for line crossings. Number of monopoles cannot yet be confirmed but is expected to around 500. The final detail will depend on Eskom's approval of the design. Maximum disturbance footprint of 20m radius per pylon.
<b>Conductor type</b>	Tern
<b>Transmission Line footprint</b>	Approximately 0.5ha total footprint (permanent). Eskom requires the whole servitude area as footprint of disturbance
<b>Laydown area and contractors' yard</b>	3 laydown areas will be required for the contractor: one at Wolf substation, one at Grassridge substation and another in the middle at Skilpad substation. The required area will be approximately 1000m <sup>2</sup> each

## **Proponent**

Wolf Wind Farm (RF) (Pty) Ltd

## **Consultant**

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## **Purpose of the study**

The purpose of the study was to conduct a Phase 1 Archaeological Impact Assessment (AIA) for the for the proposed construction of a new 132kV transmission line adjacent to the existing Eskom line connecting the Wolf substation to the Skilpad and the Grassridge substations within the Sundays River Valley Municipality and the Nelson Mandela Bay Municipality, Eastern Cape Province. The survey was conducted to establish:

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

This report does not provide an assessment of historical buildings and structures, graves and other types of heritage resources but information about these features is included in the report for further investigation by the relevant specialist (if necessary).

## **Site and Location**

The study area for the proposed development is located within the 1:50 000 topographic reference maps 3324BD Wolwefontein (Map 1), 3325AC Glenconnor (Map 2), 3325AD Kirkwood (Map 3), 3325CB Uitenhage North (Map 4) and 3325DA Addo (Map 5). The proposed area for the development starts at the Wolf substation approximately 8 kilometres southeast (SE) from the town of Wolwefontein and then continues in a general south-easterly direction to where it connects to the Skilpad substation approximately 14 kilometres southwest (SW) from Kirkwood. Up to this point the proposed route for the transmission line runs roughly parallel to the south of the R75 road. From the Skilpad substation the transmission line continues in the same direction for a short distance until it crosses the R75 road and then continues in a south-easterly direction until crosses the R335 road before it connects to the Grassridge substation approximately 9 km north - northeast (NNE) from the Coega Industrial Development Zone (IDZ) near Gqeberha (Map 6).

The area between Wolf substation and the Skilpad substation is located on a relatively flat area with moderate gradients in places covered with Koedoeskloof Karroid Thicket as well as short grass and other types of vegetation and trees (Figures 1 & 2). For a short distance after the Skilpad substation the vegetation and terrain is very similar to the previous section of the proposed route but the scenery and vegetation changes after the transmission line crosses the R75. Low mountains and foothills with some steep gradients occur over a long distance in this area with dense and impenetrable Sundays Valley Thicket on both sides of the current

transmission line (Figure 3). A short distance from where the proposed transmission line will cross the R335 road, near the Grassridge substation, Coega Bontveld occur on outcrops of limestone and crests as well as dense grass, low shrubs and some trees in places (Figure 4).

The proposed development will affect the following farms:

<b>PORPERTY DESCRIPTION</b>	<b>SG 21-Digit Code</b>
Farm 612	C07600000000061200000
Geluksdal 590	C07600000000059000000
Grassridge 228	C07600000000022800000
RE Grassridge 227	C07600000000022700000
RE Grassridge 190	C07600000000019000000
Ptn 1 Grassridge 190	C07600000000019000001
Farm 715	C07600000000071500000
Ptn 7 Centlivres 231	C07600000000023100007
Gringley 188	C07600000000018800000
Ptn2 Prentice Kraal 233	C07600000000023300002
Ptn3 Prentice Kraal 233	C07600000000023300003
Ptn16 Prentice Kraal 233	C07600000000023300016
Ptn15 Prentice Kraal 233	C07600000000023300015
Ptn14 Prentice Kraal 233	C07600000000023300014
Ptn4 Prentice Kraal 233	C07600000000023300004
Farm 187	C07600000000018700000
Ptn2 Welbedacht 135	C07600000000013500002
Stateland	C07600000000000000001
Farm 136	C07600000000013600000
Ptn1 Brakhill 139	C07600000000013900001
RE Sledmere A 137	C07600000000013700000
RE Brakhill 139	C07600000000013900000
Ptn 1 Farm 140	C07600000000014000001
RE Schilpad Laagte 141	C07600000000014100000
Ptn6 Steenbok Vlakte 142	C07600000000014200006
Ptn7 Steenbok Vlakte 142	C07600000000014200007
Farm 692	C07600000000069200000

<b>PORPERTY DESCRIPTION</b>	<b>SG 21-Digit Code</b>
Farm 144	C07600000000014400000
RE Kariega 147	C07600000000014700000
Ptn1 Kariega 147	C07600000000014700001
RE Felsenheim 81	C07600000000008100000
Ptn1 Felsenheim 81	C07600000000008100001
RE Roodewal Outspan 79	C07600000000007900000
RE Schuilpatdop 148	C07600000000014800000
Ptn2 Moordenaarskraal 151	C07600000000015100002
Ptn 1 Moordenaarskraal 151	C07600000000015100001
RE Wal Kraal 156	C07600000000015600000
Ptn4 Wal Kraal 156	C07600000000015600004
Ptn6 Wal Kraal 156	C07600000000015600006
Ptn1 Wal Kraal 156	C07600000000015600001
Ptn5 Wal Kraal 156	C07600000000015600005
Farm 157	C07600000000015700000
Ptn3 Roode Krantz 72	C07600000000007200003
RE Roode Krantz 72	C07600000000007200000
Ptn3 Good Hope 71	C07600000000007100003
RE Good Hope 71	C07600000000007100000
Ptn1 Good Will 70	C07600000000007000001
RE Good Will 70	C07600000000007000000
Ptn21 Matjesgoed Fontein 61	C076000000000061000021
Ptn6 Good Will 70	C07600000000007000006
Ptn1 Blaauwbosch Kuil 62	C07600000000006200001
RE Kleinpoort East 10	C07600000000001000000
RE Blaauwbosch Kuil 669	C07600000000066900000
Ptn1 Blaauwbosch Kuil 669	C07600000000066900001

Some areas on these farms have been disturbed by previous agricultural and other activities. There are no graves older than 60 years in the two (2) informal cemeteries that are located within the proposed servitude but there are buildings and other structures that can possibly be older than 60 years that may require further investigation (Figure 6). Some of the major rivers and watercourses that will be crossed by the proposed transmission line are the Wolwefonteinspoortspruit, the Sondags

River, the Kariega River, the Holbak River and the Bezuidenhouts River. General GPS readings were taken at 33.21.371S; 24.52.410E and 33.27.285S; 25.17.300E (between Wolf and Skilpad substations), and 33.31.685S; 25.24.403E, and 33.39.457S; 25.31.788 (between Skilpad and Grassridge substations).



## **Selected relevant impact assessments from the adjacent region, databases and collections**

- Binneman, J. and Reichert, K. 2021a. A phase 1 archaeological impact assessment for the proposed development of approximately 250 hectares of citrus on Portion 15 of the Farm Oliphants Kop No. 194 (Gates Farm), near Addo within the Nelson Mandela Bay Municipality, Eastern Cape Province. Prepared for I.W. Terblanche & Associates. Humansdorp. Eastern Cape Heritage Consultants cc. Jeffreys Bay.
- Binneman, J. and Reichert, K. 2021b. Phase 1 Archaeological Impact Assessment (AIA) for the proposed development of approximately 250 hectares of citrus orchards and associated infrastructure on Portion 4 of the Farm Klein Rooipoort No. 632 and the development of a storage dam on Portion 2 of Farm 658 near Sunlands within the Sundays River Valley Municipality, Eastern Cape Province. Prepared for I.W. Terblanche & Associates. Eastern Cape Heritage Consultants cc. Jeffreys Bay.
- Binneman, J. and Reichert, K. 2020a. An archaeological assessment of the proposed amendment application for the authorised Instomi citrus farm, that includes the installation of irrigation pipelines, near Addo within the Sundays River Valley Local Municipality, Eastern Cape Province. Prepared for Public Process Consultants. Greenacres. Eastern Cape Heritage Consultants cc. Jeffreys Bay.
- Binneman, J. and Reichert, K. 2020b. An archaeological assessment of the proposed amendment application for the establishment of a goat breeding facility on the authorised Instomi citrus farm near Addo within the Sundays River Valley Local Municipality, Eastern Cape Province. Prepared for Public Process Consultants Greenacres. Eastern Cape Heritage Consultants cc. Jeffreys Bay.
- Binneman, J. and Reichert, K. 2020c. A phase 1 archaeological assessment for the proposed cultivation of 67 ha of citrus and associated infrastructure on Portion 11 of Farm 100 (Tango) near Addo in the Sundays River Valley Local Municipality of the Eastern Cape Province. Prepared for Public Process Consultants Greenacres. Eastern Cape Heritage Consultants cc.
- Binneman J. and Reichert, K. 2019a. A phase archaeological impact assessment for the construction of 24 broiler house facilities and associated infrastructure on portions of Farm 191 (Coega Kammass Kloof) in the Nelson Mandela Bay Municipality, and the installation of an irrigation pipeline from the Middledrift dam in the Sundays River Valley Municipality of the Eastern Cape Province. Prepared for Public Process Consultants Greenacres. Eastern Cape Heritage Consultants cc. Jeffreys Bay.
- Binneman, J. and Reichert, K. 2019b. A phase 1 archaeological impact assessment for the proposed establishment of a big 5 game reserve with lodge accommodation and a water pipeline to various dams near Addo in the Sunday's River Valley Municipality of the Eastern Cape Province. Prepared for Habitat Link Consulting. Greenacres. Eastern Cape Heritage Consultants cc. Jeffreys Bay.
- Binneman, J. and Reichert, K. 2018. A phase 1 archaeological impact assessments for the proposed agricultural activities on Portion 525 of the farm Strathsomers Estate No. 42 and associated irrigation infra-structure on Portion 523 of the farm Strathsomers Estate No. 42 in the Sundays River Valley Municipality of the Eastern Cape Province. Prepared for Public Process Consultants Greenacres. Eastern Cape Heritage Consultants cc.
- Binneman, J. and Reichert, K. 2016a. A phase 1 archaeological impact assessment for the proposed clearing of natural vegetation to establish citrus orchards and grazing for game on the Remainder of Portion 1 of farm 119 (Wolverton) in the Sundays River Valley Municipality of the Eastern Cape Province. Prepared for Public Process Consultants. Greenacres. Eastern Cape Heritage Consultants cc. Jeffreys Bay.
- Binneman, J. and Reichert, K. 2016b. A phase 1 archaeological impact assessments for the proposed clearing of vegetation in three areas to establish citrus orchards on the farm Boschkraal near Kirkwood, Sunday's River Valley Local Municipality Eastern Cape Province. Prepared for Prime Resources (Pty) Ltd. Parklands. Eastern Cape Heritage Consultants cc. Jeffreys Bay.

- Binneman, J. and Reichert, K. 2016c. A phase 1 archaeological impact assessment for the proposed clearing of natural vegetation to expand the existing agricultural activities on portion 274, Strathsomers Estate No. 42 in the Sundays River Valley Municipality of the Eastern Cape Province. Prepared for Public Process Consultants Greenacres. Eastern Cape Heritage Consultants cc. Jeffreys Bay.
- Binneman, J. and Reichert, K. 2016d. A phase 1 archaeological impact assessment for the proposed clearing of natural vegetation to establish citrus orchards on the Remainder of Portion 14 of the farm Geelhoutboom No. 89 in the Sundays River Valley Municipality of the Eastern Cape Province. Prepared for Public Process Consultants. Greenacres. Eastern Cape Heritage Consultants cc. Jeffreys Bay.
- Binneman, J. and Reichert, K. 2015. A letter of recommendation (with conditions) for the exemption of a full phase 1 archaeological impact assessment for the proposed clearing of 20 ha of natural vegetation to establish citrus orchards on the farm Hitgeheim, Sunland, Sundays River Valley Municipality, Eastern Cape Province. Prepared for Engineering Advice & Services (Pty) Ltd. Humewood. Eastern Cape Heritage Consultants cc. Jeffreys Bay.
- Binneman, J. 2014a. A phase 1 archaeological impact assessment for the proposed expansion of agricultural activities on Portion 7 of the Farm Scheepers Vlakte No. 98, Sunland near Kirkwood, Sundays River Valley Municipality, Eastern Cape Province. Prepared for I.W. Terblanche & Associates. Stellenbosch. Eastern Cape Heritage Consultants cc. Jeffreys Bay.
- Binneman, J. 2014b. A phase 1 archaeological impact assessment for the proposed expansion of agricultural activities on Farm 632, Sunland near Kirkwood, Sundays River Valley Municipality, Eastern Cape Province. Prepared for I.W. Terblanche & Associates. Stellenbosch. Eastern Cape Heritage Consultants cc. Jeffreys Bay.
- Binneman, J. 2014c. A phase 1 archaeological impact assessment for the proposed expansion of agricultural activities on the remaining extent of Farm 714, Sunland near Kirkwood, Sundays River Valley Local Municipality, Eastern Cape Province. Prepared for I.W. Terblanche & Associates. Stellenbosch. Eastern Cape Heritage Consultants cc. Jeffreys Bay.
- Binneman, J. 2014d. Phase 1 archaeological impact assessment for the proposed expansion of agricultural activities on Luthando farm, Portion 320 of Strathsomers Estate No. 42, Kirkwood, Sundays River Valley Municipality, Eastern Cape Province. Prepared for Public Process Consultants. Greenacres. Eastern Cape Heritage Consultants cc. Jeffreys Bay.
- Binneman, J. 2013. A phase 1 archaeological impact assessment for the proposed expansion of agricultural activities on portion 5 of the Farm Nooitgedacht No. 118, Sunland, Sundays River Valley Municipality, Eastern Cape Province. Prepared for Public Process Consultants Greenacres. Eastern Cape Heritage Consultants cc. Jeffreys Bay.
- Binneman, J. 2010. A phase 1 archaeological impact assessment of the Coega Industrial Development Zone (IDZ), near Port Elizabeth, Nelson Mandela Bay Municipality, Eastern Cape Province. Prepared for Coega Industrial Corporation (Pty) Ltd. Port Elizabeth. Eastern Cape Heritage Consultants cc. Jeffreys Bay.
- Binneman, J. 2008. A phase 1 archaeological impact assessment for the Amanzi Country Estate, Uitenhage, Nelson Mandela Bay Metropolitan Municipality, Eastern Cape Province. Prepared for Public Process Consultants. Greenacres. Albany Museum. Grahamstown.
- Booth, C. 2017. A phase 1 Archaeological Impact Assessment for the proposed Scarlet Ibis Wind Energy Facility (WEF) on the Farms Grassridge 226 and Welbedachtsfontein 300, near Port Elizabeth, Nelson Mandela Bay Metropolitan Municipality (NMMM), Eastern Cape Province. Prepared for EOH - Coastal and Environmental Services. Grahamstown. Booth Heritage Consulting. Grahamstown.
- Booth, C and Sanker, S. 2012. A phase 1 Archaeological Impact Assessment for the proposed wind energy facility on Portions 1, 2 and 3 of Grassridge 227 as well as Portion 1 of Oliphantskop 201, Coega, Nelson Mandela Bay Municipality, Eastern Cape Province. Albany Museum.

- Gaigher, S. 2013. Heritage Impact Assessment for the Stormwater infrastructure in Valencia, Addo, Sundays River Valley Municipality, Eastern Cape Province.
- Hart, T. 2014. Heritage Impact Assessment for the proposed Wolf Wind Energy Facility and associated infrastructure near Wolwefontein within the Ikwezi Local Municipality in the Eastern Cape. Prepared for Aurecon South Africa (Pty) Ltd. George. ACO Associates cc. Diep River.
- Kruger, N. 2020 a. Archaeological Impact Assessment (AIA) on a portion of the Farm Grassridge 187 for the proposed Dassiesridge BESS development project, Cacadu District Municipality, Eastern Cape Province. Prepared for CES. Grahamstown. Exigo Sustainability. Arcadia
- Kruger, N. 2020 b. Archaeological Impact Assessment (AIA) on a portion of the Farm Blaauw Baadjies Vley 189 for the proposed Dassiesridge CTMF development project, Cacadu District Municipality, Eastern Cape Province. Prepared for CES. Grahamstown. Exigo Sustainability. Arcadia
- Rossouw, L. (Paleo Field Service). 2013. Phase 1 Heritage Impact Assessment of Disco Chicks Farm 2 (Farm 713), Sundays River Valley Municipality.
- Rossouw, L. 2015. Phase 1 Archaeological Impact Assessment of Intsomi Game Farm, Sundays River Valley Municipality, Eastern Cape Province. Prepared for Public Process Consultants Greenacres. National Museum. Bloemfontein.
- Van Ryneveld, K. 2018. Phase 1 archaeological and cultural heritage impact assessment. Bayview Wind Farm near Port Elizabeth, Nelson Mandela Bay Municipality. Prepared for EOH - Coastal and Environmental Services. Archaeomaps. Beacon Bay.
- Van Ryneveld, K. 2014. Phase 1 archaeological and cultural heritage impact assessment. The Dassiesridge Wind Energy Facility, between Kirkwood and Uitenhage, Cacadu District, Eastern Cape Province, South Africa. Prepared for CES. Archaeomaps. Beacon Bay.
- Webley, L. 2008. Heritage Impact Assessment for the Farm 294 Amanzi Estate, Portion 4 of the Farm 296 Amanzi Mooi Water, Erf 296 Portion 3 of Rietheuvel and Erf 296 Rietheuvel, in the Nelson Mandela Bay Municipality, Eastern Cape. Prepared for Public Process Consultants. Greenacres. Archaeology Contracts Office (ACO). Cape Town.

The Albany Museum in Makhanda (Grahamstown) houses collections and information from the wider region.

## BRIEF ARCHAEOLOGICAL BACKGROUND

### Literature review

The oldest evidence of the early inhabitants in the Sundays River region are large stone tools, called hand axes and cleavers, which can be found amongst river gravels and in old spring deposits in the region. These large stone tools are from a time period called the Earlier Stone Age (ESA) and may date between 1,5 million and 250 000 years old. In a series of spring deposits at Amanzi Spring near Addo, a large number of stone tools were found *in situ* to a depth of 3-4 metres. Remarkably, wood and seed material preserved in the spring deposits, possibly dating to between 250 000 to 800 000 years old (Inskeep 1965; Deacon 1970).

Evidence of MSA sites occur throughout the region and date between 250 000 and 30 000 years old. These stone artefacts, like the Earlier Stone Age tools are also found in the gravels along the banks of the Sundays River and like hand axes are mainly in secondary context. Fossil bone may in rare cases be associated with MSA occurrences.

The majority of archaeological sites found in the area date from the past 10 000 years (called the Later Stone Age) and are associated with the campsites of San hunter-gatherers and Khoi pastoralists. These 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 (Deacon & Deacon 1999). The preservation of these sites is poor, and it is not always possible to date them.

There are many San hunter-gatherer sites in the nearby Suurberg and adjacent mountains. Here caves and rock shelters were occupied by the San during the Later Stone Age with well-preserved living deposits and paintings along the walls (Deacon 1976).

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

### References

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- Inskeep, R.R. 1965. Earlier Stone Age occupation at Amanzi: preliminary investigations. *South African Journal of Science*. 61:229-242.

## ARCHAEOLOGICAL INVESTIGATION

### Methodology

The farm owners were contacted by Zutari prior to the investigation to inform them about the site visit and to gain access to the properties. They were also consulted by an independent

negotiator about the possible locations of archaeological remains, graves and historical buildings and features. All previous relevant survey information for the immediate and adjacent areas was reviewed before the survey started and a Google Earth aerial image study was conducted of the area prior to the investigation. The investigation was conducted on foot by an archaeologist and by doing spot checks from a vehicle. To cover as much of the proposed development area as possible, vehicle tracks directly under and in close proximity to the current transmission line on the various farms were followed. GPS readings were taken with a Garmin and all the important features were digitally recorded.

The impact assessment methodology and impact significance scale supplied by Zutari was used for assessment of the impacts. The methodology is outlined in Appendix C.

### **Limitations and assumptions**

It was not possible to do a complete survey of the study area due to the short grass and dense vegetation in places, which made it difficult to locate *in-situ* archaeological sites/materials. Some areas on the various farms have been cleared of vegetation in the past for agricultural and other related activities and there are number of vehicle tracks where the archaeological visibility was relatively good. The experiences and knowledge gained from several other investigations in the wider surrounding region provided background information to make assumption and predictions on the incidences and the significance of possible pre-colonial archaeological sites/material which may be located in the area, or which may be covered by soil and vegetation.

### **Finds and results**

#### Archaeology

Although it was difficult to locate archaeological sites/materials, occasional Middle Stone Age (older than 30 000 years) stone tools were observed in areas where the surface soil was disturbed by other activities or natural erosion in the proposed servitude between the Wolf and Skilpad substations, as well as Middle Stone Age (MSA) stone tool scatters in the servitude before Skilpad substation - GPS reading 33.27.275S; 25.17.313E and 33.27.179S; 25.17.140E (Map 9, Figure.5). More MSA stone tool scatters are located between Skilpad substation and the Grassridge substation - GPS reading: 33.29.702S; 25.20.741E and 33.29.881S; 25.21.406E (Map 9, Figure 5). These Middle Stone Age (MSA) stone tools were manufactured from quartzite river cobbles/pebbles and the flakes displayed typical faceted striking platforms. The stone tools were found randomly without any recognised distribution patterns. They were in secondary context and not associated with any other archaeological remains. Few points and blades were observed and most of the tools were thick, small 'informal' flakes. No further action is needed. Apart from the occasional stone tools no other archaeological sites/materials were found. Although no Earlier Stone Age (ESA) or Late Stone Age (LSA) artefacts were observed during the survey it is known that these stone tools and sites do occur in the region (Binneman 2008). The possibility can therefore not be excluded that ESA and LSA sites / material will also be found during the course of the development and especially after vegetation clearing has been done and during the construction phase. In general, it would appear that the area is of **low archaeological sensitivity** and it is unlikely that any sensitive *in situ* archaeological remains will be exposed during the development.

#### Built environment

There are several farmsteads, buildings and other structures located within or in close proximity to the proposed servitude between the Wolf and Skilpad substations. Some of the buildings and other structures may be older than 60 years and as a result it may fall under the protection of

Section 34 of the National Heritage Resources Act, No. 25 of 1999 (See appendix A). If any direct impact or disturbance is anticipated as a result of the proposed activities, a historian / heritage practitioner must be appointed to assess these structures and to determine if a permit will be required from the Eastern Cape Heritage Resources Authority (ECPHRA) before the structure can be altered or destroyed.

On Portion 1 of the Farm Blaauwbosch Kuil No. 62 buildings that form part of the farmstead falls within close proximity to the proposed servitude (GPS reading: 33.22.120S; 24.55.980 E - Map 7, Figure 6). These buildings do not appear to be older than 60 years but will have to be investigated further if the development will have a direct impact on these structures. A short distance to the south of the farmstead there is a dilapidated labourer house (GPS reading: 33.22.183S; 24.55.961E - Map 7, Figure 6) within the proposed servitude and at least part of this structure appears to be older than 60 years. There are also other buildings / structures further east from this building but they will not be impacted by the development.

On Farm 157 the remains of a possible cattle kraal can be observed within the proposed servitude and it will need to be investigated further if the construction of the transmission line will have any direct impact on this structure (GPS reading: 33.23.348S; 25.2.737E – Map 7 , Figure 6).

This is also applicable to two (2) buildings on the Remaining Extent of the Farm Schuilpatdop No. 148 that are located within the proposed servitude (GPS readings: 33.25.038S; 25.11.307E and 33.25.046S; 25.11.414E) as well as one (1) building on the same farm that is located within close proximity to the servitude (GPS reading: 33.25.112S; 25.11.264E - Map 8).

### Graves

Graves and informal cemeteries are often located near farmsteads and other types of settlements and the proposed study area is no exception. A fenced off informal cemetery is located between the Wolf and Skilpad substations directly under the current transmission line on Farm 157 (GPS reading 33.23.285; 25.1.968 - Map 7 , Figure 7 ). Some of the graves are marked with headstones and others with stone cairns. There are also graves with no markers that have sunken in. According to Mr. Dwight Rudman, the owner of the farm, the graves are not older than 60 years and he confirmed that there are more than 10 graves in the cemetery. The cemetery is still being used for burials and it is visited and maintained by farm labourers and their families. Several of the marked graves belong to members of the Vusani family who passed away between 1970 and 2022.

Another fenced off informal cemetery containing only one grave is located approximately 800 metres to the north of the proposed servitude for the new transmission line between Skilpad substation and the Grassridge substation on the Remaining Extent of the Farm Schilpad Laagte No. 141 (GPS reading: 33.30.820S; 25.23.297E - Map 9 , Figure 7 ). The grave belongs to Edwin Alfred Richard Daniell who passed away in 1973. The cemetery is located close to the exiting transmission line and any direct impact should be avoided when the line is decommissioned.

The graves that are located within the servitude are not older than 60 years and therefore falls under the Human Tissues Act, No. 65 of 1983, as well as any local and regional laws and by-laws. Due to the cultural and spiritual significance of graves and burial sites to communities, any disturbance of these sites should be avoided.

## **ASSESSMENT OF THE IMPACTS**

### **Direct impacts**

**Table 1. The potential physical disturbance and destruction of surface and buried pre-colonial archaeology sites/remains during all developments (rating based on the surface visibility of archaeological remains).**

Project phase	Construction			
Impact	Possible loss of non-renewable heritage resources			
Description of impact	The main impact on archaeological sites / remains (if any) will be the physical disturbance of the material or its context. The clearing of the vegetation may expose, disturb and displace archaeological sites/material. However, from the investigation it would appear that the proposed areas earmarked for development are of low archaeological sensitivity.			
Mitigatability	Medium	Mitigation exists and will notably reduce significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> <li>An archaeologist/ heritage practitioner should conduct a walkthrough of a section of the proposed new servitude for the transmission line after vegetation clearing from: the Remaining Extent of the Farm Brakhill No. 139 (GPS reading: 33.31.328 ; S 25.23.426 E) to the Grassridge substation.</li> <li>All construction activities must be monitored or alternatively a person must be specially trained, for example the ECO, to conduct the monitoring. This must include the clearing of vegetation, leveling, excavations for other underground/ buried infrastructure and all above ground construction activities.</li> <li>Construction managers/foremen should also 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.</li> </ul> <p>If any human remains (or any other concentrations of archaeological heritage material) are exposed during construction, all work must cease in the immediate area of the finds and must be reported immediately to the archaeologist at the Albany Museum in Makhanda (Tel.: 046 622 2312) or to the Eastern Cape Provincial Heritage Resources Authority (Tel.: 043 7450 888). Sufficient time should be allowed to investigate and to remove/collect such material. Recommendations will follow from the investigation and may include:</p> <ul style="list-style-type: none"> <li>Consultation with the local communities regarding the conditions for the possible removal, storage and reburial (in the case of human remains) of heritage material.</li> <li>If the local communities agree to the removal of human remains and heritage, an archaeologist must apply for permits from the Eastern Cape Province Heritage Resources Authority to collect and/or excavate sites/materials from archaeological sites impacted by the development.</li> <li>Consultation with the Albany Museum (repository for archaeological material in the Eastern Cape) regarding permit(s) to remove the heritage material, the storing, curating and costs involved.</li> <li>A Phase 2 Mitigation process to systematically excavate and to remove the archaeological deposits before construction of the development continues.</li> </ul>			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Positive	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Immediate	Impact will self-remedy immediately
Extent	Very limited	Limited to specific isolated parts of the site	Very limited	Limited to specific isolated parts of the site
Intensity	Very high	Natural and/ or social functions and/ or processes are majorly altered	Moderate	Natural and/ or social functions and/ or processes are moderately altered
Probability	Probable	The impact has occurred here or elsewhere and could therefore occur	Unlikely	Has not happened yet but could happen once in the lifetime of the project, therefore there is a possibility that the impact will occur

<b>Confidence</b>	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
<b>Reversibility</b>	Low	The affected environment will not be able to recover from the impact - permanently modified	Medium	The affected environment will only recover from the impact with significant intervention
<b>Resource irreplaceability</b>	Medium	The resource is damaged irreparably but is represented elsewhere	Medium	The resource is damaged irreparably but is represented elsewhere
<b>Significance</b>	<b>Minor - negative</b>		<b>Negligible - positive</b>	
<b>Comment on significance</b>	The Middle Stone Age (MSA) tools that have been observed are of low archaeological significance but important sites / material may be covered by soil and vegetation			
<b>Cumulative impacts</b>	The cumulative impacts on above and below ground heritage will increase when further developments take place in adjoining areas such as the Dassiesridge Wind Energy Facility and the associated BESS and CTFM projects (Kruger 2020). There are also other Wind Energy Facilities that are either completed or being planned within a 30 km radius of the Grassridge substation. There are also several agricultural projects planned to the north of PPC a short distance from the proposed transmission line. It is anticipated that archaeological material uncovered or found during these developments will be of low cultural significance similar to those observed during the survey. The cumulative impact of the developments therefore does not change the overall impact rating			

<b>Project phase</b>	<b>Operation</b>			
<b>Impact</b>	<b>The main impact on archaeological sites / remains (if any) will be the physical disturbance of the material or its context</b>			
<b>Description of impact</b>	<b>The main impact on archaeological sites / remains (if any) will be the physical disturbance of the material or its context</b>			
<b>Mitigatability</b>	Medium	Mitigation exists and will notably reduce significance of impacts		
<b>Potential mitigation</b>	<b>The ECO and foreman can monitor activities during this phase</b>			
<b>Assessment</b>	<b>Without mitigation</b>		<b>With mitigation</b>	
<b>Nature</b>	Negative		Positive	
<b>Duration</b>	Permanent	Impact may be permanent, or in excess of 20 years	Immediate	Impact will self-remedy immediately
<b>Extent</b>	Limited	Limited to the site and its immediate surroundings	Local	Extending across the site and to nearby settlements
<b>Intensity</b>	Very high	Natural and/ or social functions and/ or processes are majorly altered	Moderate	Natural and/ or social functions and/ or processes are moderately altered
<b>Probability</b>	Probable	The impact has occurred here or elsewhere and could therefore occur	Unlikely	Has not happened yet but could happen once in the lifetime of the project, therefore there is a possibility that the impact will occur
<b>Confidence</b>	Low	Judgement is based on intuition	High	Substantive supportive data exists to verify the assessment



<b>Reversibility</b>	Low	The affected environment will not be able to recover from the impact - permanently modified	Medium	The affected environment will only recover from the impact with significant intervention
<b>Resource irreplaceability</b>	Medium	The resource is damaged irreparably but is represented elsewhere	Medium	The resource is damaged irreparably but is represented elsewhere
<b>Significance</b>	<b>Minor - negative</b>		<b>Negligible - positive</b>	
<b>Comment on significance</b>	The Middle Stone Age (MSA) tools that have been observed are of low archaeological significance but important sites / material may be covered by soil and vegetation			
<b>Cumulative impacts</b>	The cumulative impacts on above and below ground heritage will increase when further developments take place in adjoining areas such as the Dassiesridge Wind Energy Facility and the associated BESS and CTFM projects (Kruger 2020). There are also other Wind Energy Facilities that are either completed or being planned within a 30 km radius of the Grassridge substation. There are also several agricultural projects planned to the north of PPC a short distance from the proposed transmission line. It is anticipated that archaeological material uncovered or found during these developments will be of low cultural significance similar to those observed during the survey. The cumulative impact of the developments therefore does not change the overall impact rating			

### No-Go

Should the proposed project not go ahead there would be no impacts on heritage resources and the status quo would continue. No assessment of the no-go would therefore be required as there would be no new impacts.

## **ENVIRONMENTAL MANAGEMENT PROGRAMME FOR THE PRE-COLONIAL ARCHAEOLOGY.**

**Table 2.**

<b>Objective:</b> To conserve the pre-colonial archaeological sites/remains for the proposed construction of a new 132kV transmission line adjacent to the existing Eskom line connecting the Wolf substation to the Skilpad and the Grassridge substations.		
<b>Project component/s</b>	The old line will be decommissioned in the future. The total length of the new transmission line will be approximately 90 kilometres and it will be located within a new 31 metre wide servitude except where the existing servitude could be re-used. Three (3) laydown areas of approximately 1000m <sup>2</sup> at each of the substations will also be required.	
<b>Potential impact</b>	The physical disturbance and/or destruction of pre-colonial archaeology sites/remains.	
<b>Activity/risk source</b>	Clearing of vegetation and construction of transmission line	
<b>Mitigation: Target/Objective</b>	The ECO must be trained to monitor the clearing of the vegetation which constrained the visibility of heritage resources during the initial archaeological investigation. If concentrations of archaeological materials/sites and/or human remains are exposed then all work must stop for an archaeologist to investigate.	
<b>Mitigation: Action/control</b>	<b>Responsibility</b>	<b>Timeframe</b>
The ECO must monitor the clearing of the vegetation and construction of	Consultant, applicant, ECO	During the clearing of the vegetation

transmission lines		
Manager/foreman or ECO should be informed before clearing of the vegetation and construction of transmission lines start on the possible types of sites and material they may encounter and the procedures to follow when they find sites.	Consultant, applicant manager/ECO and the archaeologist/heritage practitioner.	Before the development starts.
An archaeologist must conduct a walkthrough after vegetation clearing from a specific point on the Remaining Extent of the Remaining Extent of the Farm Brakhill No. 139 (GPS reading: 33.31.328 ; S 25.23.426 E) to the Grassridge substation.	Consultant, applicant, archaeologist/heritage practitioner.	After vegetation clearing
If any human remains (or any other concentrations of heritage material) are exposed during construction, all work must cease in the immediate area and it must be reported immediately to the archaeologist at the Albany Museum (Tel.: 046 6222 312) or to the Eastern Cape Provincial Heritage Resources Authority (Tel.: 043 7450 888), so that a systematic and professional investigation can be undertaken. Sufficient time must be allowed to investigate and to collect such material.	Consultant, applicant and the archaeologist/heritage practitioner.	Duration of the project
Apply for permits from the Eastern Cape Province Heritage Resources Authority (ECPHRA) to collect and/or excavate sites/ materials from archaeological sites identified to be impacted by the development (if necessary).	Archaeologist/heritage practitioner.	Before the development continues and for the duration of the project
<b>Performance indicator</b>	All heritage sites/materials must be managed within the legislative guidelines. The success of the monitoring will be determined by the degree of damage/disturbance that can be avoided to heritage sites.	
<b>Monitoring</b>	All development activities must be monitored by the ECO. A report and if required a list of recommendations, should be compiled and submitted to the Eastern Cape Provincial Heritage Resources Authority after the walkthrough has been conducted by the archaeologist / heritage practitioner for comment. A record must be kept of all accidental disturbances of heritage sites/material. All heritage sites/materials observed during any construction activity must be reported and recorded.	



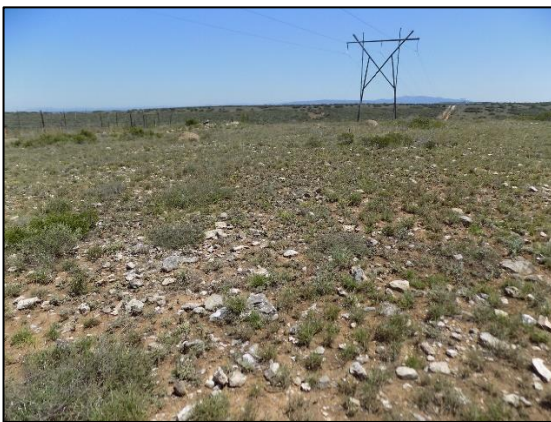
**Figure 1. General views of the area between the Wolf substation and the Skilpad substation that forms part of the proposed route for the development of a new 132 kV transmission line from the Wolf substation near Wolwefontein to the Skilpad substation near Kirkwood to the Grassridge substation near Gqeberha.**



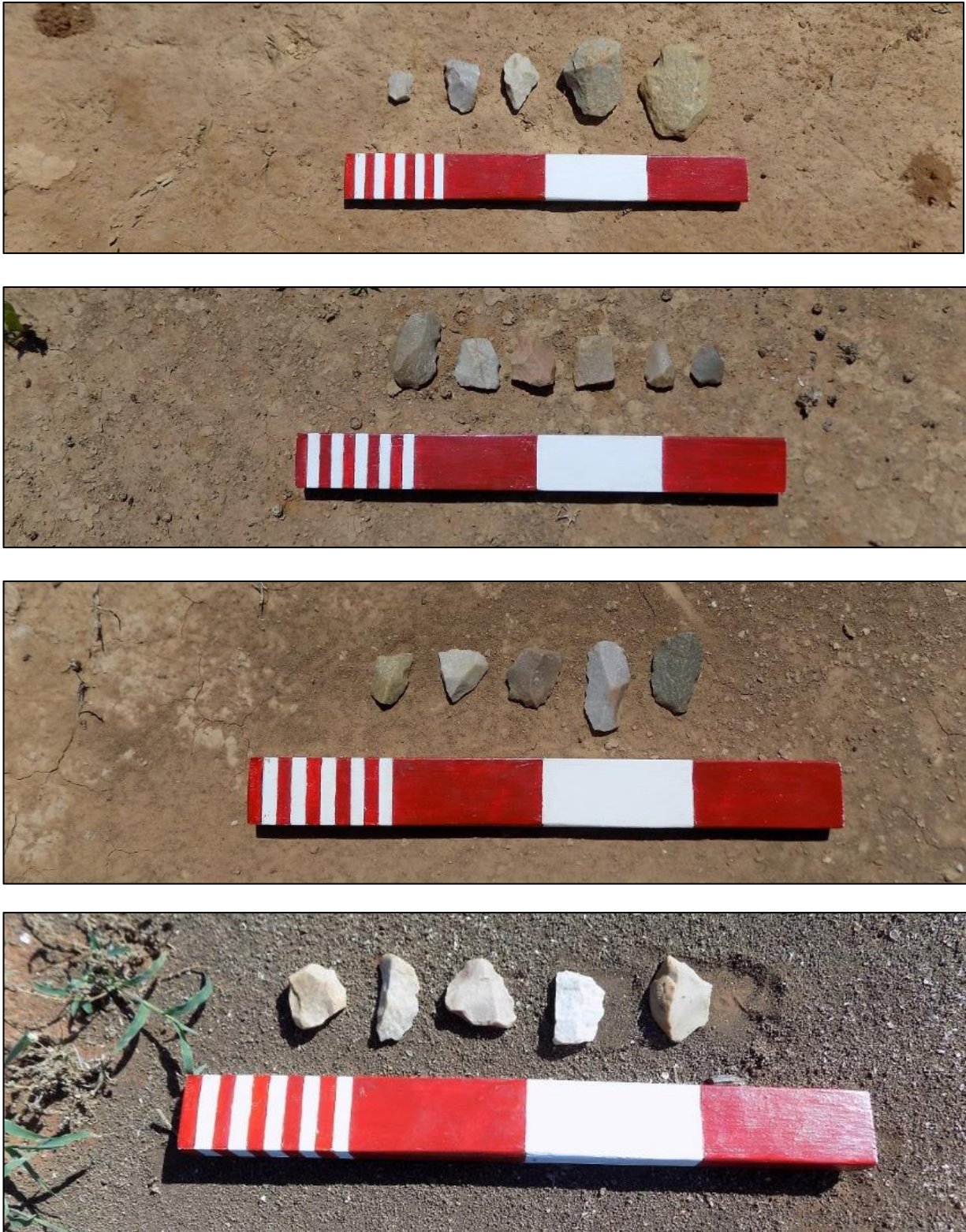
**Figure 2. General views of the area between the Wolf substation and the Skilpad substation that forms part of the proposed route for the development of a new 132 kV transmission line from the Wolf substation near Wolwefontein to the Skilpad substation near Kirkwood to the Grassridge substation near Gqeberha.**



**Figure 3. General views of the area between the Skilpad substation and the Grassridge substation that forms part of the proposed route for the development of a new 132 kV transmission line from the Wolf substation near Wolwefontein to the Skilpad substation near Kirkwood to the Grassridge substation near Gqeberha.**



**Figure 4. General views of the area between the Skilpad substation and the Grassridge substation that forms part of the proposed route for the development of a new 132 kV transmission line from the Wolf substation near Wolfontein to the Skilpad substation near Kirkwood to the Grassridge substation near Gqeberha.**



**Figure 5. Samples of Middle Stone Age (MSA) stone tools observed within the proposed servitude for the proposed new 132 kV transmission line. MSA stone tool scatters between the Wolf substation and Skilpad substation (top image and image below), and between the Skilpad substation and Grassridge substation (bottom image and image above).**



**Figure 6. Buildings and structures observed within or in close proximity to the proposed servitude for the proposed new 132 kV transmission line. Farmstead (top and middle images) and an aerial image of the remains of a possible cattle kraal (bottom image).**





**Figure 7. Fenced off cemeteries with graves observed within or in close proximity to the proposed servitude for the proposed new 132 kV transmission line. Labourer graves (top image) between the Wolf substation and the Skilpad substation on Farm 157 and a cemetery containing only one grave on the Remaining Extent of the Farm Schilpad Laagte No. 141 between the Skilpad substation and the Grassridge substation (bottom images).**

## DISCUSSION AND MITIGATION

The area investigated is mostly covered with short grass and trees and dense / impenetrable thicket vegetation in places. The archaeological visibility was poor in general but it was relatively good in areas disturbed by agricultural and other activities as well as natural open areas along the proposed route for the transmission line. Occasional Middle Stone Age (MSA) tools were observed in the study area as well as Middle Stone Age (MSA) tool scatters on both sides of the Skilpad substation but no further action is required.

The proposed development will take place near the Sundays River as well as other rivers and waterways in an area where one would expect to find freshwater shell middens. These are important archaeological sites and special care must be taken that these sites are not destroyed during the development. Freshwater shell middens were observed along the embankments of the Sundays River near Barkly Bridge as well as Farm 714 near Kirkwood, but it is unknown to what distance they would be situated from the river. Although these sites may date from the past 8000 years or older, the stone tools observed at these middens include large quartzite backed segments that has been ascribed to the Kabeljous Industry (Binneman 2005; 2007 & 2014c). The sites at Barkly Bridge and Farm 714 in Kirkwood does not fall within the proposed development area but it is possible that similar sites / material may be found during the development. . The main impact on possible archaeological sites/remains will be the physical disturbance of the material and its context. However, from the investigation, it would appear that the proposed area earmarked for the development is of **low archaeological sensitivity**.

The disturbance of buildings and structures identified in this report should be avoided during the development and if it cannot be avoided a permit application should be lodged with ECPHRA for any building or structure older than 60 years before it can be destroyed or altered. A historian / heritage practitioner must be appointed to assess these heritage resources if it is suspected that the structure is older than 60 years. It is anticipated that further buildings or structures may be located in the densely vegetated areas and the same procedure should be followed if any of these structures are discovered during the course of the development.

The graves that are located within the servitude are not older than 60 years and therefore falls under the Human Tissues Act, No. 65 of 1983, as well as any local and regional laws and by-laws. Due to the cultural and spiritual significance of graves and burial sites to communities, any disturbance of these sites should be avoided. Due to the number of farmsteads and other settlements in close proximity to the proposed transmission line and servitude it is possible that more graves (including graves older than 60 years) may be discovered during the course of the development. All burial grounds and graves that are older than 60 years are protected in terms of Section 36 of the National Heritage Resources Act, No. 25 of 1999.

It is recommended that:

1. Should any significant *in situ* archaeological remains such as human remains and / or other archaeological remains / sites such as freshwater shell middens, as well as historical material / sites be exposed during construction, all work must cease in the immediate area (depending on the type of find) and it must be reported to the archaeologist at the Albany Museum in Makhanda (Grahamstown) (Tel: 046 6222 312) or to the Eastern Cape Provincial Heritage Resources Authority (Tel: 043 7450 888), so that a systematic and professional investigation can be undertaken. Sufficient time should be allowed to investigate and to remove/collect such material. Recommendations will follow from the investigation (See appendix B for a list of possible archaeological sites that maybe found in the area).

2. All clearing activities must be monitored and managers/foremen should be informed before clearing/construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites. The ECO can be trained to monitor the clearing of the vegetation and to report finds.
3. An archaeologist/ heritage practitioner should conduct a walkthrough of a section of the proposed new servitude for the transmission line after vegetation clearing and before construction starts from: the Remaining Extent of the Farm Brakhill No. 139 (GPS reading: 33.31.328 ; S 25.23.426 E) to the Grassridge substation.

## REFERENCE

- Binneman, J. 2005. Archaeological research along the south-eastern Cape coast part 1: open - air shell middens. *South African Field Archaeology* 13 & 14:49-77.
- Binneman, J. 2007. Archaeological research along the south-eastern Cape coast part 2, caves and shelters: Kabeljous River Shelter 1 and associated tool industries. *South African Field Archaeology* 15 & 16:57-74.
- Binneman, J. 2014c. A phase 1 archaeological impact assessment for the proposed expansion of agricultural activities on the remaining extent of Farm 714, Sunland near Kirkwood, Sundays River Valley Local Municipality, Eastern Cape Province. Prepared for I.W. Terblanche & Associates. Stellenbosch. Eastern Cape Heritage Consultants cc. Jeffreys Bay

## GENERAL REMARKS AND CONDITION

**Note:** This is an Archaeological Impact Assessment (AIA) report compiled for the Eastern Cape Provincial Heritage Resources Authority (ECPHRA) to enable them to make informed decisions regarding the heritage resources assessed in this report and only they have the authority to revise the report. This Report must be reviewed by the ECPHRA where after they will issue their Review Comments to the EAP/developer. The final decision rests with the ECPHRA who must grant permits if there will be any impact on cultural sites/materials as a result of the development. This report is a Phase 1 Archaeological Impact Assessment and does not exempt the developer from any other relevant heritage impact assessments as specified below:

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

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

## **APPENDIX A: brief legislative requirements**

Parts of sections 34, 35(4), 36(3) and 38(1) (8) of the National Heritage Resources Act, No. 25 of 1999 apply:

### ***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.*

### ***Archaeology, palaeontology and meteorites***

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

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

### ***Burial grounds and graves***

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

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

### ***Heritage resources management***

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

- (a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;*
- (b) the construction of a bridge or similar structure exceeding 50m in length;*
- (c) any development or other activity which will change the character of the site –*
  - (i) exceeding 5000m<sup>2</sup> in extent, or*
  - (ii) involving three or more erven or subdivisions thereof; or*
  - (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or*
  - (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA, or a provincial resources authority;*
- (d) the re-zoning of a site exceeding 10 000m<sup>2</sup> in extent; or*
- (e) any other category of development provided for in regulations by SAHRA or a provincial*

*heritage resources authority, must as the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.*

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

### **Human Skeletal material**

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

### **Freshwater mussel middens**

Freshwater mussels are found in the muddy banks of rivers and streams and were collected by people in the past as a food resource. Freshwater mussel shell middens are accumulations of mussel shell and are usually found close to rivers and streams. These shell middens frequently contain stone tools, pottery, bone, and occasionally human remains. Shell middens may be of various sizes and depths, but an accumulation which exceeds 1 m<sup>2</sup> in extent, should be reported to an archaeologist.

### **Large stone cairns**

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

### **Stone artefacts**

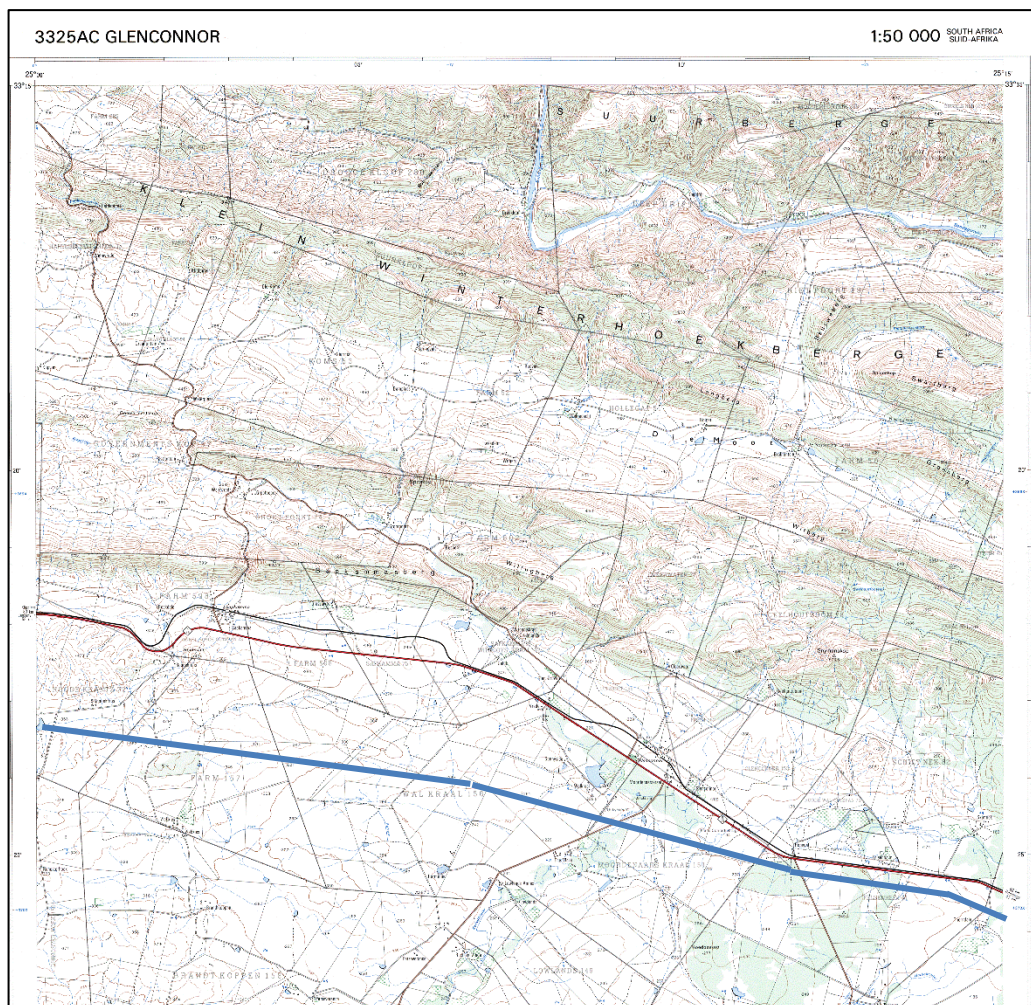
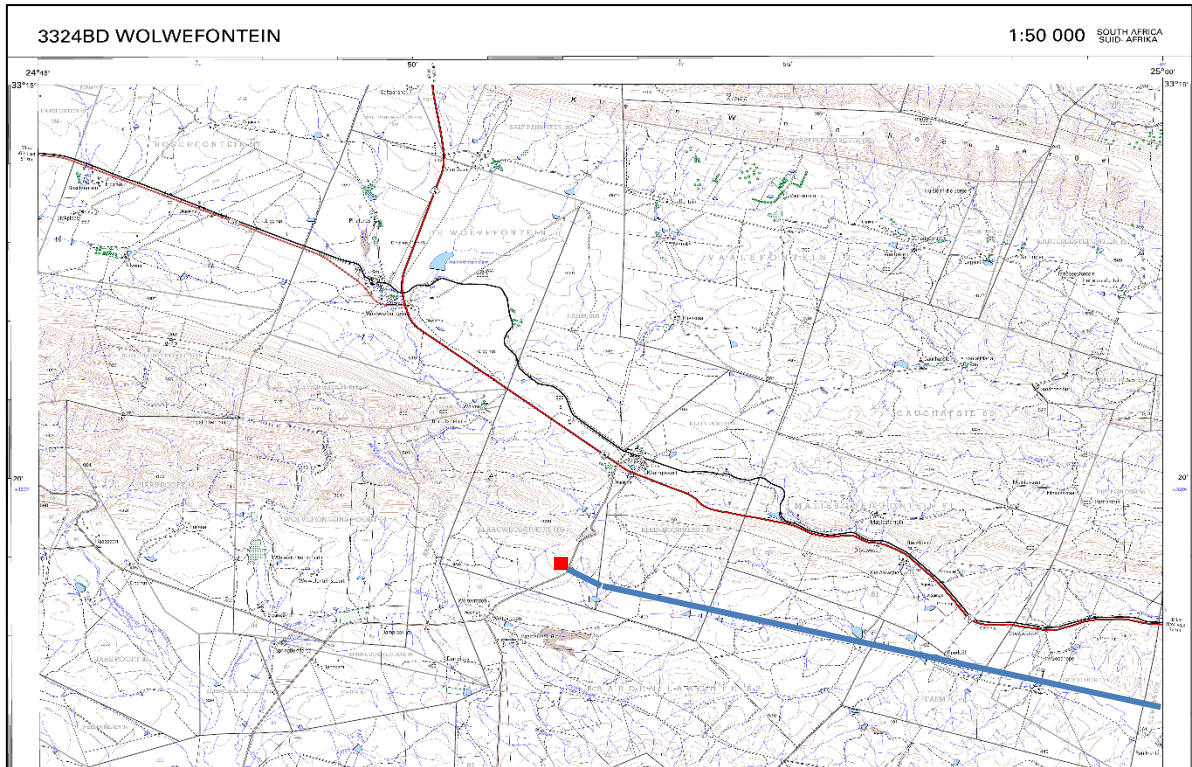
These are difficult for the layman to identify. However, large accumulations of flaked stones which do not appear to have been distributed naturally should be reported. If the stone tools are associated with bone remains, development should be halted immediately, and archaeologists notified.

### **Fossil bone**

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

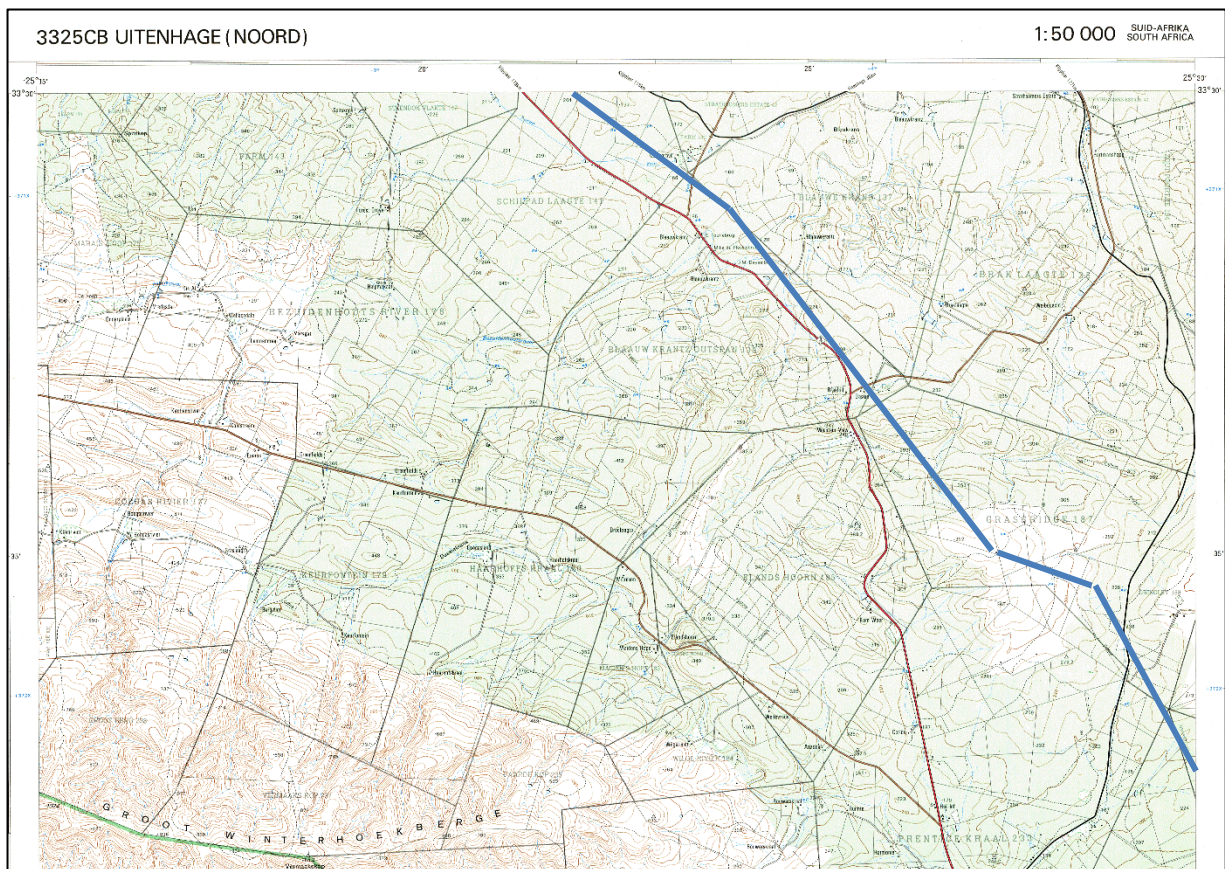
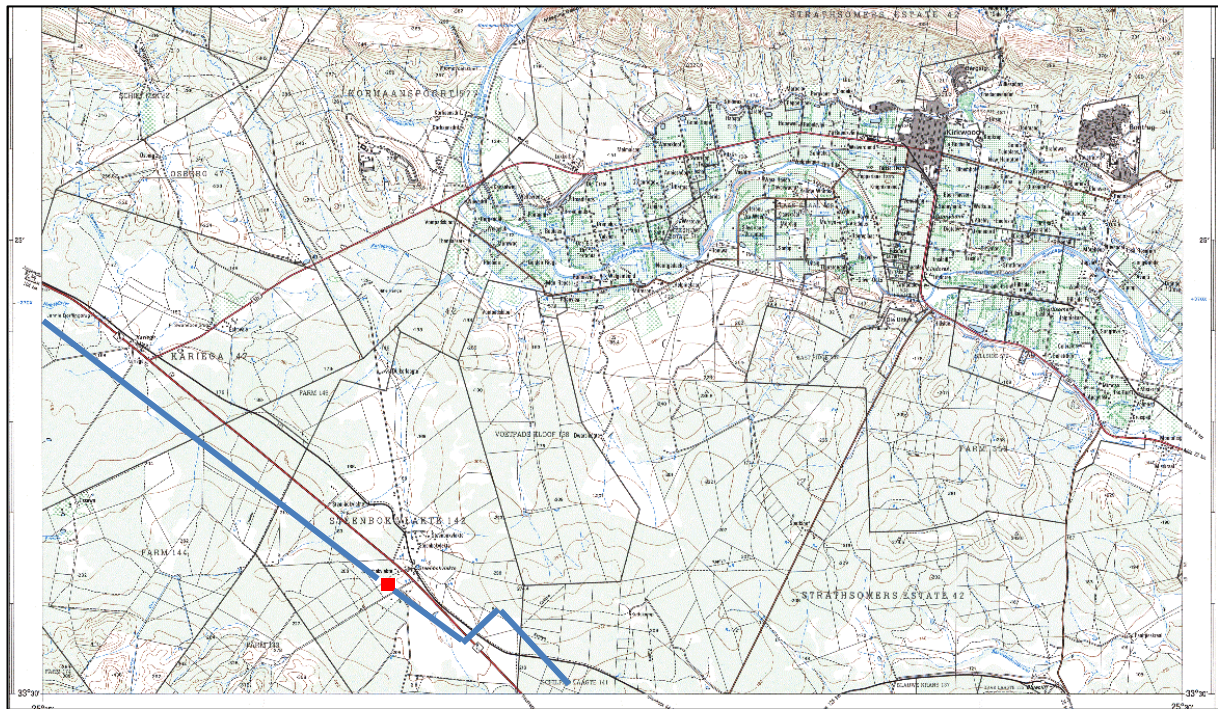
### **Historical artefacts or features**

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



**Map 1 and 2. 1:50 000 Topographic maps indicating the approximate route of the proposed new transmission line (blue line) starting at the Wolf substation (indicated with the red square on Map 1).**

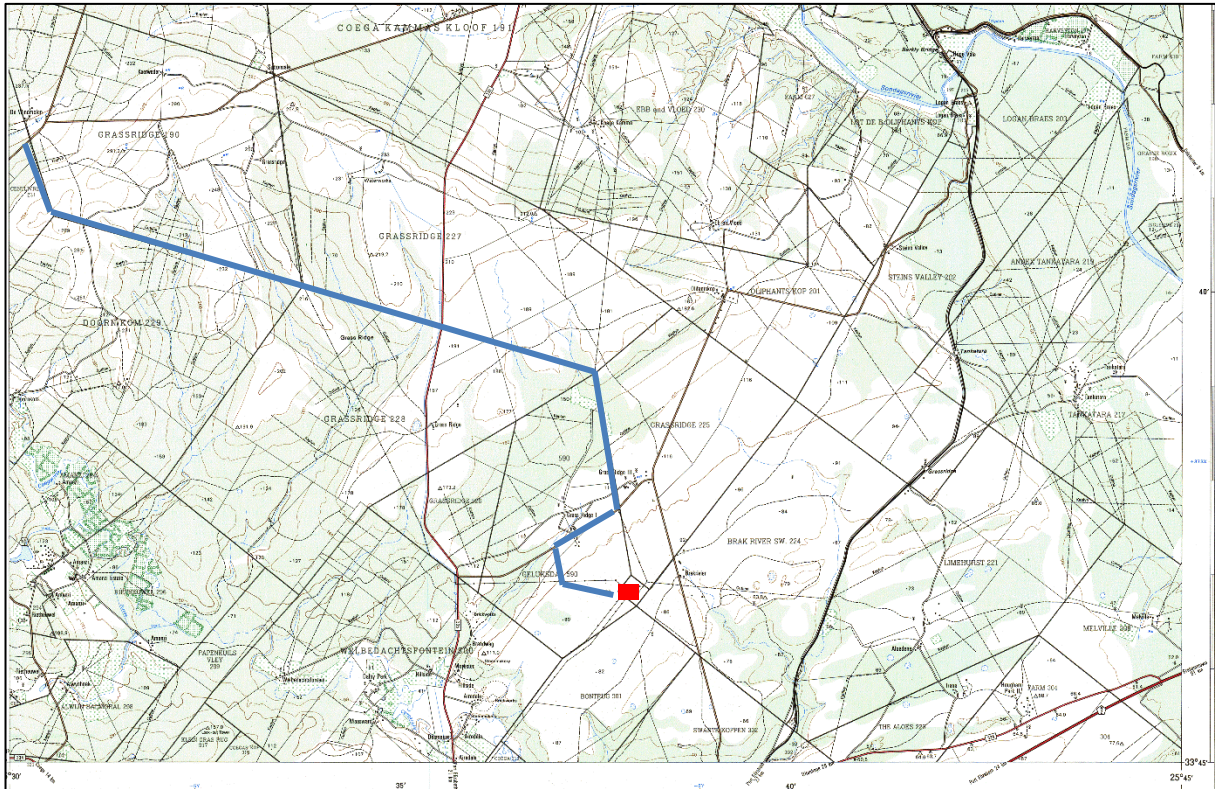
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Map 3 and 4. 1:50 000 Topographic maps indicating the approximate route of the proposed new transmission line (blue line) connecting to the Skilpad substation (indicated with the red square on Map 3).

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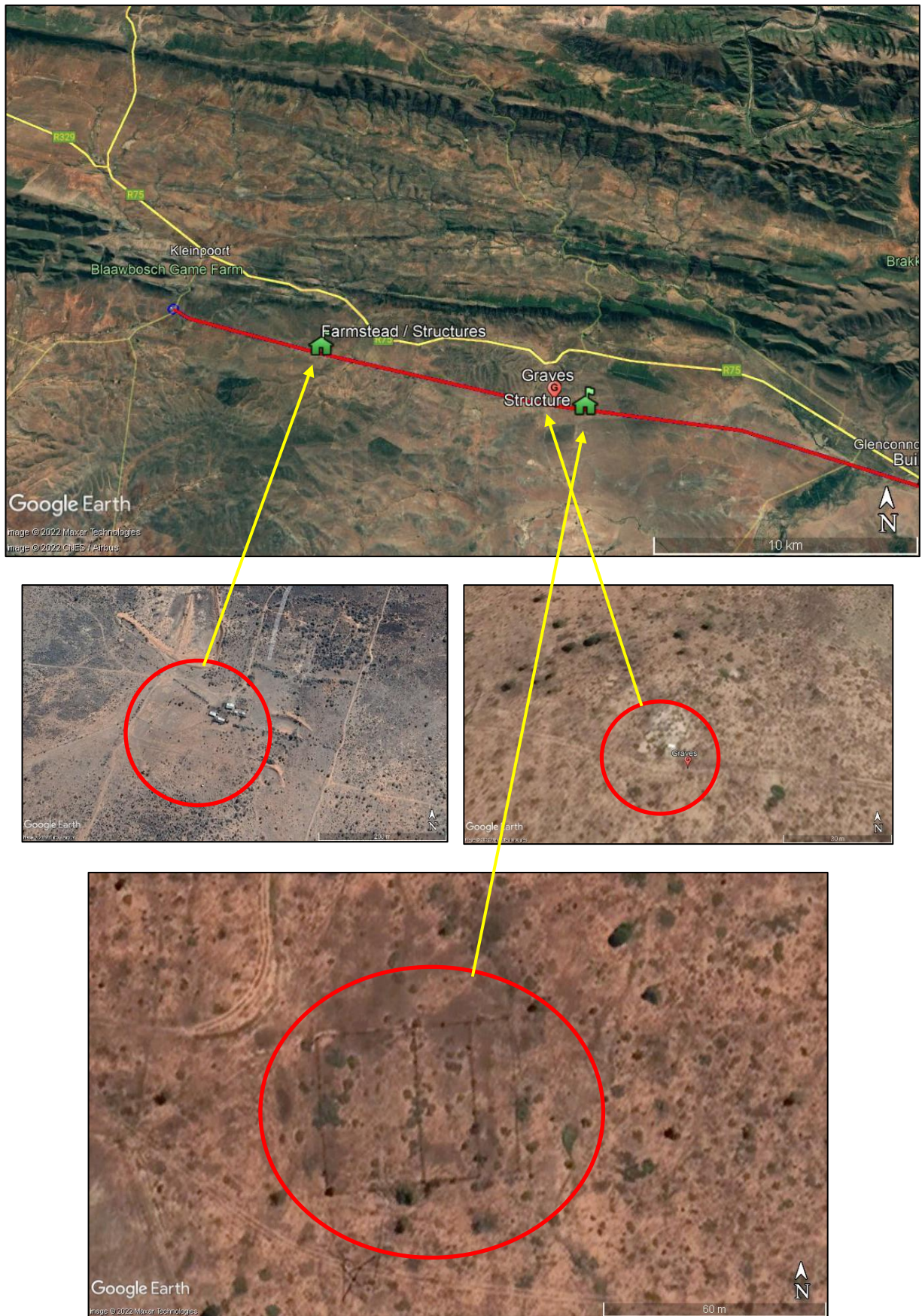




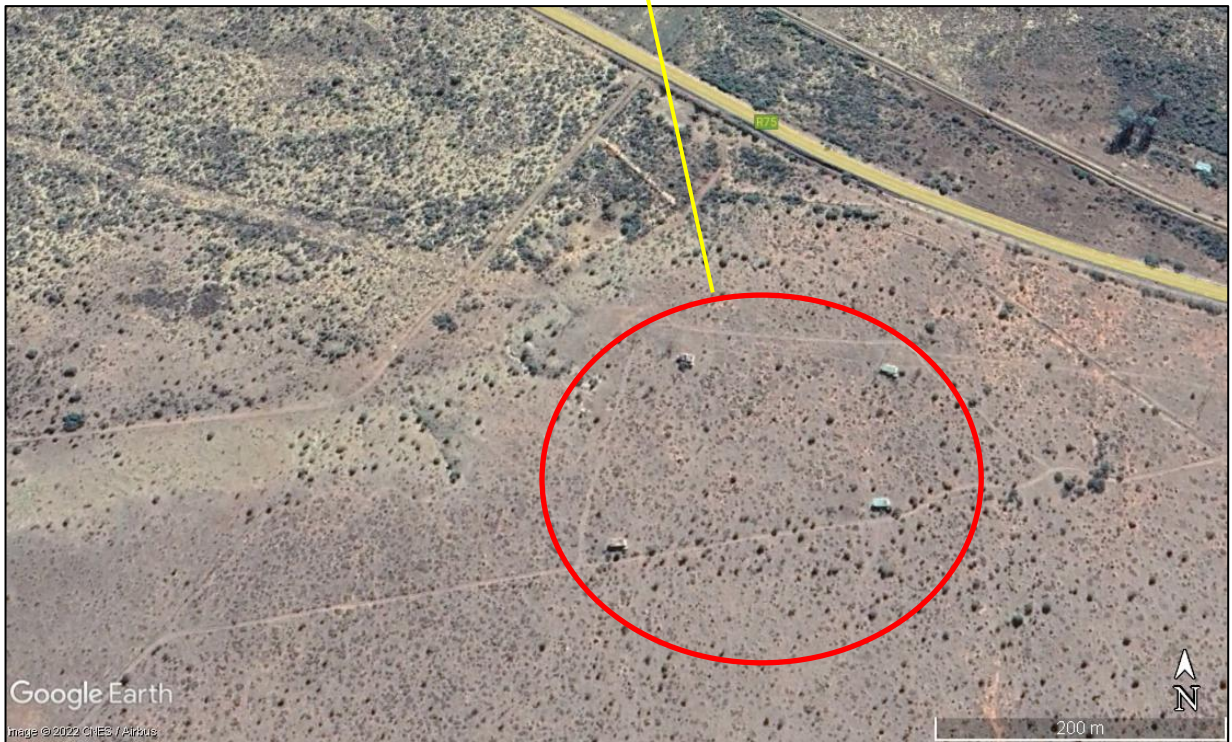
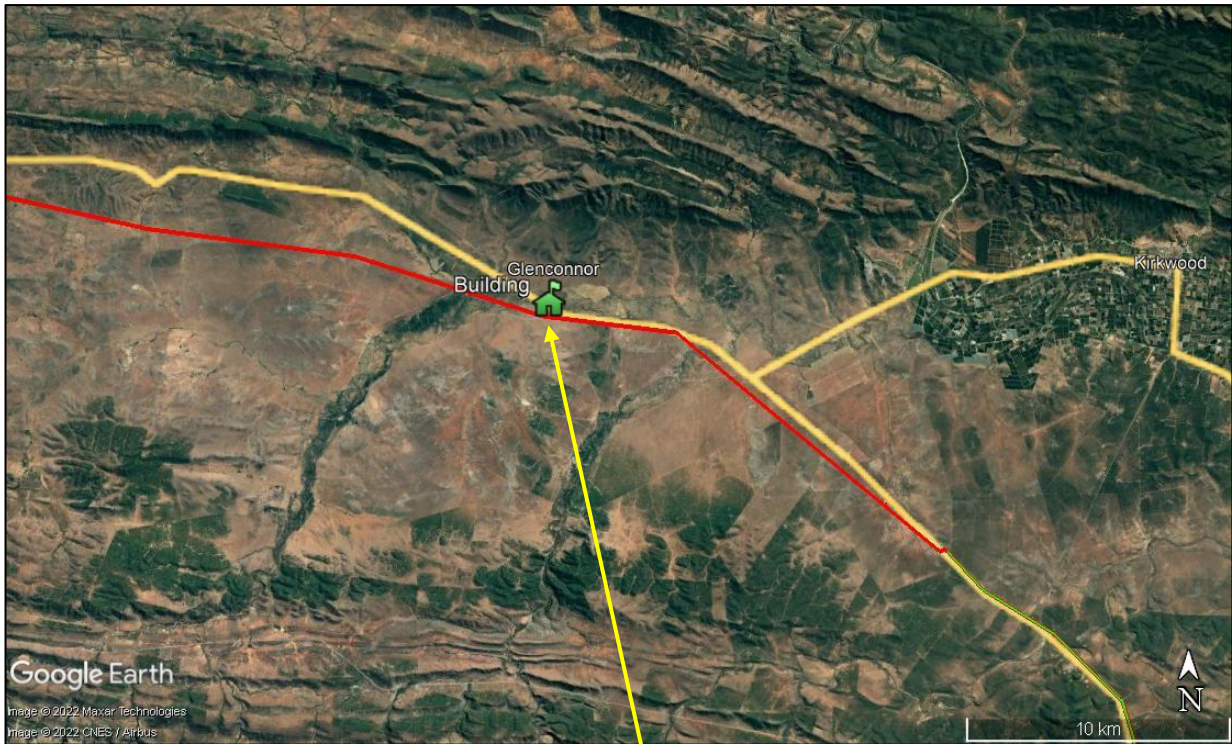
**Map 5. 1:50 000 Topographic map indicating the approximate route of the proposed new transmission line (blue line) connecting to the Grassridge substation (indicated with the red square).**



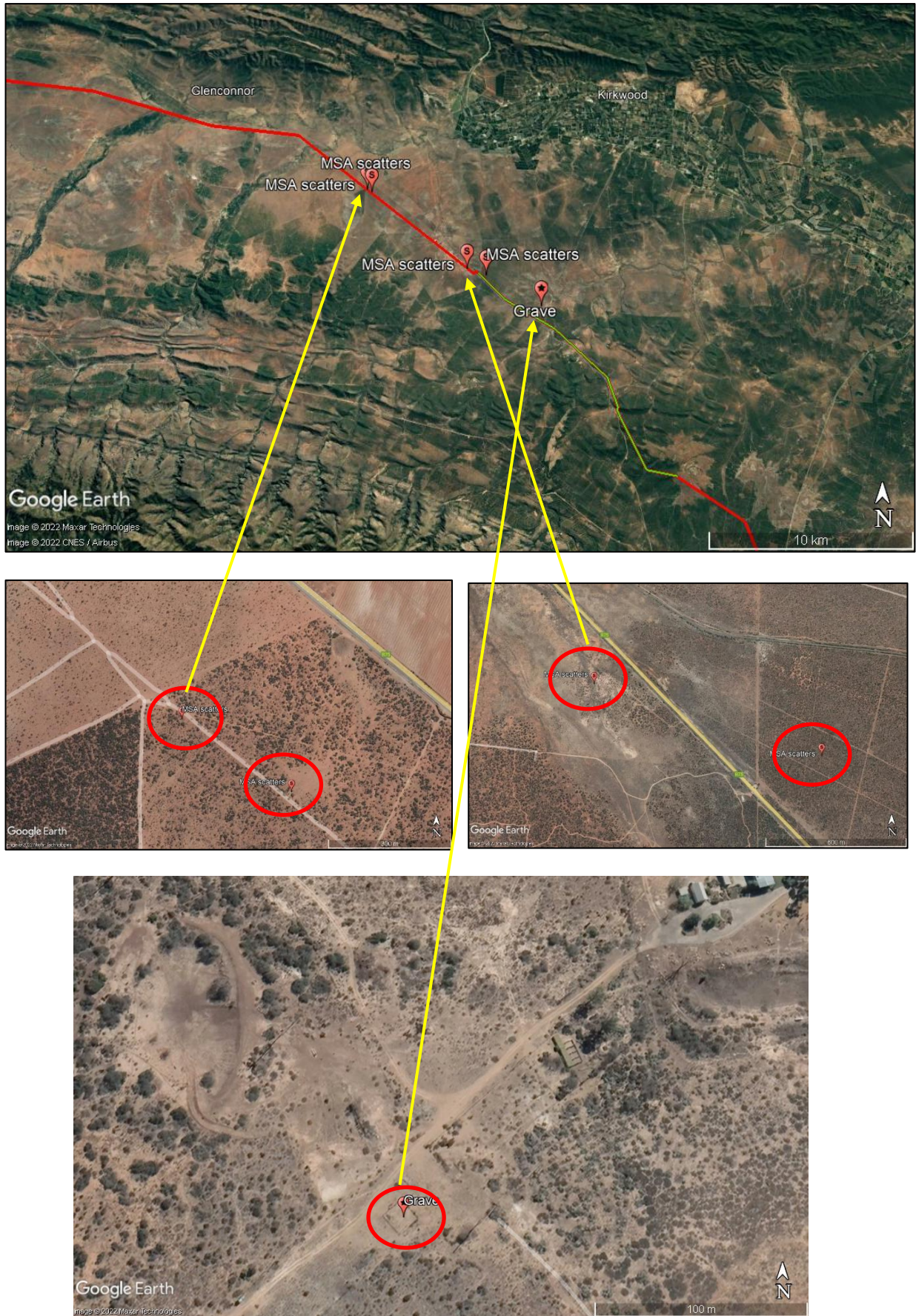
**Map 6. Aerial image indicating the proposed route for the new transmission line in red. The approximate locations of the Wolf, Skilpad and Grassridge substations are indicated by the yellow placemarks.**



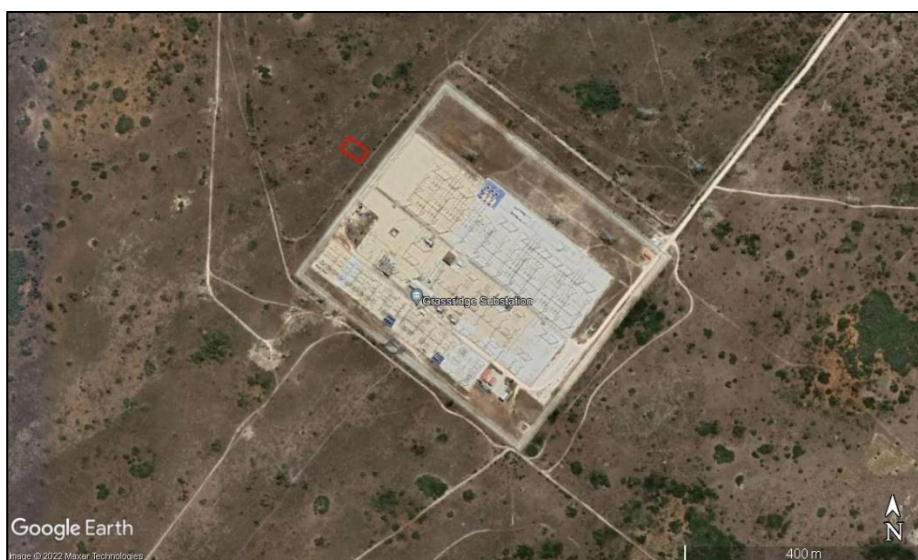
**Map 7. Aerial images indicating the locations of a farmstead and structures, graves and the remains of a possible cattle kraal between the Wolf and Skilpad substations. The locations are indicated by the red circles and yellow arrows.**



**Map 8. Aerial images indicating the locations of buildings and structures between the Wolf and Skilpad substations that are located within and close to the proposed servitude. The location is indicated by the red circle and the yellow arrow**



**Map 9. Aerial images indicating the locations of Middle Stone Age (MSA) stone tool scatters (middle row), and a cemetery with one grave close to the current transmission line that will be decommissioned in future. Locations are indicated with the red circles and the yellow arrows.**



**Map 10. Aerial images indicating the locations of the proposed laydown areas at the Wolf substation (top image), the Skilpad substation (middle image) and the Grassridge substation (bottom image), outlined in red.**

## APPENDIX C: IMPACT ASSESSMENT METHODOLOGY

### Calculations

For each predicted impact, certain criteria are applied to establish the likely **significance** of the impact, firstly in the case of no mitigation being applied and then with the most effective mitigation measure(s) in place.

These criteria include the **intensity** (size or degree scale), which also includes the **type** of impact, being either a positive or negative impact; the **duration** (temporal scale); and the **extent** (spatial scale). These numerical ratings are used in an equation whereby the **consequence** of the impact can be calculated. Consequence is calculated as follows:

$$\text{Consequence} = \text{type} \times (\text{intensity} + \text{duration} + \text{extent})$$

To calculate the significance of an impact, the **probability** (or likelihood) of that impact occurring is applied to the consequence.

Table Error! No text of specified style in document.-1: Calculation of significance

Table Error! No text of specified style in document.-2: Assessment criteria for the evaluation of impacts

Criteria	Numerical Rating	Category	Description
Duration	1	Immediate	Impact will self-remedy immediately
	2	Brief	Impact will not last longer than 1 year
	3	Short term	Impact will last between 1 and 5 years
	4	Medium term	Impact will last between 5 and 10 years
	5	Long term	Impact will last between 10 and 15 years
	6	On-going	Impact will last between 15 and 20 years
	7	Permanent	Impact may be permanent, or in excess of 20 years
Extent	1	Very limited	Limited to specific isolated parts of the site
	2	Limited	Limited to the site and its immediate surroundings
	3	Local	Extending across the site and to nearby settlements
	4	Municipal area	Impacts felt at a municipal level
	5	Regional	Impacts felt at a regional level
	6	National	Impacts felt at a national level
	7	International	Impacts felt at an international level
Intensity	1	Negligible	Natural and/ or social functions and/ or processes are negligibly altered
	2	Very low	Natural and/ or social functions and/ or processes are slightly altered
	3	Low	Natural and/ or social functions and/ or processes are somewhat altered
	4	Moderate	Natural and/ or social functions and/ or processes are moderately altered
	5	High	Natural and/ or social functions and/ or processes are notably altered
	6	Very high	Natural and/ or social functions and/ or processes are majorly altered
	7	Extremely	Natural and/ or social functions and/ or processes are

Criteria	Numerical Rating	Category	Description
		high	severely altered
Probability	1	Highly unlikely / None	Expected never to happen
	2	Rare / improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
	3	Unlikely	Has not happened yet but could happen once in the lifetime of the project, therefore there is a possibility that the impact will occur
	4	Probable	Has occurred here or elsewhere and could therefore occur
	5	Likely	The impact may occur
	6	Almost certain / Highly probable	It is most likely that the impact will occur
	7	Certain / Definite	There are sound scientific reasons to expect that the impact will definitely occur

When assessing impacts, broader considerations are also taken into account. These include the level of confidence in the assessment rating; the reversibility of the impact; and the irreplaceability of the resource as set out in Table Error! No text of specified style in document.-3, Table Error! No text of specified style in document.-4, and Table Error! No text of specified style in document.-5, respectively.

Table Error! No text of specified style in document.-3: **Definition of confidence ratings**

Category	Description
Low	Judgement is based on intuition
Medium	Determination is based on common sense and general knowledge
High	Substantive supportive data exists to verify the assessment

Table Error! No text of specified style in document.-4: **Definition of reversibility ratings**

Category	Description
Low	The affected environment will not be able to recover from the impact - permanently modified
Medium	The affected environment will only recover from the impact with significant intervention
High	The affected environmental will be able to recover from the impact

Table Error! No text of specified style in document.-5: **Definition of irreplaceability ratings**

Category	Description
Low	The resource is not damaged irreparably or is not scarce
Medium	The resource is damaged irreparably but is represented elsewhere
High	The resource is irreparably damaged and is not represented elsewhere