

HERITAGE WALKDOWN REPORT

for the approved Great Karoo Wind Energy Facility and associated infrastructure
near Sutherland in the Northern Cape

Prepared by



CTS HERITAGE

In Association with

Savannah

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EXECUTIVE SUMMARY

Great Karoo Wind Farm (Pty) Ltd, an Independent Power Producer (IPP) obtained an Environmental Authorisation (EA) from the Department of Forestry, Fisheries and the Environment (DFFE) on 12 August 2014 (DFFE Reference: 12/12/20/2370/3) for the construction of the 140MW Great Karoo Wind Energy Facility (WEF) on The Farm Kentucky 206 and Portion 1 of the Farm Wolvenkop 207, within the Karoo Hoogland Local Municipality of the Northern Cape Province. In addition, the project contains an electrical grid infrastructure (EGI) (DFFE Reference: 14/12/16/3/3/1/2253) including a 132kV overhead powerline and onsite substation which will connect to the Eskom Hidden Valley Substation. The grid connection infrastructure is located on The Farm De Hoop 202, the Farm Kentucky 206 and the Remainder of Portion 1 of the Farm Orange Fontein 203. The purpose of the facility will be to provide up to 140MW of power to be exported to the national energy grid. Lastly, the project includes the construction and development of a Battery Energy Storage System (BESS)(DFFE Ref: 14/12/16/3/3/1/2237) located near the on-site WEF substation on The Farm Kentucky 206.

In the HIA completed for the Hidden Valley WEF which included a cluster of three wind farms, one of which was Great Karoo, Booth (2012) recommended that the final layout of the wind energy facility be walked by an archaeologist in order to ensure that no significant heritage resources are directly impacted by the WEF. Although this requirement was not reiterated by SAHRA, nor was it included in the EA for the project, this report is completed in order to satisfy this recommendation. Furthermore, the EA granted for the grid connection and the BESS EA require a pre-construction heritage/ archaeology walkdown. The BESS EA specifically requires that a report of the walkdown be submitted to SAHRA. This walkdown report is also in fulfillment of the BESS and Grid EA conditions.

Most of the built environment heritage resources were recorded during the earlier preliminary studies by Booth in 2011 and 2012 such as the De Plaat farmhouse complex and the formal graveyard. None of these sites are located anywhere near the WEF or associated infrastructure in the final layout.

Very few LSA and MSA artefacts were found on the ridges where the roads, powerlines and turbine positions for the WEF are proposed despite covering the ground extensively on foot. Historical objects included porcelain and tin bells (which are still being used) and these date to the period after the establishment of the sheep farm. None of the heritage resources identified during the walkdown were of significance but they have added to the generally sparse findings recorded in the Roggeveld and Moordernaars Karoo thus far. The ridges are very rocky underfoot and are exposed which goes a long way to explaining the very low amount of archaeological material found on them. As mentioned earlier, the broken rock is likely obscuring some of the archaeological material but it is clear that there are very few open sites with high densities of MSA or LSA material in the areas proposed for the WEF infrastructure in the final layout.

Based on the outcomes of the required walkdown, it is not anticipated that the proposed development of turbines, cables, grid connection infrastructure and roads associated with the proposed WEF will negatively impact on significant archaeological heritage and as such, there is no heritage objection to the final alignment proposed for the WEF, BESS or grid connection infrastructure development. The identified built environment and graves do not fall within the development footprint and will not be directly impacted.



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1. INTRODUCTION

1.1 Background Information on Project

Great Karoo Wind Farm (Pty) Ltd, an Independent Power Producer (IPP) obtained an Environmental Authorisation (EA) from the Department of Forestry, Fisheries and the Environment (DFFE) on 12 August 2014 (DFFE Reference: 12/12/20/2370/3) for the construction of the 140MW Great Karoo Wind Energy Facility (WEF) on The Farm Kentucky 206 and Portion 1 of the Farm Wolvenkop 207, within the Karoo Hoogland Local Municipality of the Northern Cape Province. In addition, the project contains an electrical grid infrastructure (EGI) (DFFE Reference: 14/12/16/3/3/1/2253) including a 132kV overhead powerline and onsite substation which will connect to the Eskom Hidden Valley Substation. The grid connection infrastructure is located on The Farm De Hoop 202, the Farm Kentucky 206 and the Remainder of Portion 1 of the Farm Orange Fontein 203. The purpose of the facility will be to provide up to 140MW of power to be exported to the national energy grid. Lastly, the project includes the construction and development of a Battery Energy Storage System (BESS)(DFFE Ref: 14/12/16/3/3/1/2237) located near the on-site WEF substation on The Farm Kentucky 206.

The WEF, BESS and grid connection infrastructure occupies three properties which comprise an area of ~7000ha considered together. The project infrastructure includes the following infrastructure:

- Wind turbines and associated foundations;
- Medium voltage cabling between the turbines, to be laid underground where practical;
- Access roads to each turbine, the substation complex and the ancillary infrastructure
- One on-site substation complex to facilitate stepping up the voltage from medium to high voltage (up to 132kV). Switching station facilities will also be developed within the substation complex;
- A high voltage (132kV) power line to connect the WEF substation complex to the Eskom Hidden Valley substation;
- Operations and service workshop area/ office building for control, maintenance and storage;
- Temporary infrastructure including a site camp, laydown areas and batching plant;
- A Battery Energy Storage Facility (BESS) of up to 5ha in size, inside containers or other housing structures with a maximum height of 4m;

The Great Karoo Wind Farm (Pty) Ltd (the developer) was issued with an environmental authorisation (EA) on the 12 August 2014 for the construction of the Great Karoo Wind Energy Facility (WEF) (previously part of the larger Hidden Valley WEF), approximately 40km south of Sutherland, Northern Cape Province. Savannah Environmental (Pty) Ltd (Savannah) conducted an environmental Impact Assessment (EIA) study, which incorporated the findings of a specialist Heritage Impact Assessment report compiled by the Heritage Contracts CC.

The Final Environmental Impact Report (FEIR) assessed a layout of:

- 57 Wind turbines (between 2MW and 3.5MW in capacity and with a 120m rotor diameter and a hub height of up to 120m) and associated foundations;
- Medium voltage cabling between the turbines, to be laid underground where practical;



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- Internal access roads to each turbine, the substation complex and the ancillary infrastructure;
- One on-site substation complex to facilitate stepping up the voltage from medium to high voltage (up to 132kV) to enable the connection of the wind energy facility and the Eskom grid to Eskoms's Komsberg Substation;
- A high voltage power line to connect to a double circuit high voltage power line from the Karusa Wind Farm Substation to the Eskom Komsberg Substation;
- Operations and Services workshop area/ office building for control, maintenance and storage; and
- Temporary infrastructure including the site camp.

In 2019 the developer was granted an amendment to the EA for the following changes:

- 52 Wind turbines (up to 42 turbines, at 6.5MW WTG capacity, 150m Hub height and 180m Rotor diameter) and associated foundations;
- Medium voltage cabling between the turbines, to be laid underground where practical;
- Internal access roads to each turbine, the substation complex and the ancillary infrastructure;
- One on-site substation complex to facilitate stepping up the voltage from medium to high voltage (up to 132kV) to enable the connection of the wind energy facility and the Eskom grid to Eskoms's Komsberg Substation;
- A high voltage power line for connection to a double circuit high voltage power line from the Karusa Wind Farm Substation to the Eskom Komsberg Substation;
- Operations and Services workshop area/ office building for control, maintenance and storage; and
- Temporary infrastructure including the site camp, laydown areas and a batching plant.

SAHRA Comments

As the Great Karoo WEF project previously formed part of the Hidden Valley WEF development, the comments from SAHRA for the Hidden Valley WEF Project (Case 218) are relevant to this project.

In their comment dated 14 May 2014, SAHRA recommended that:

- Turbines 197, 200, 201 and 202 be removed in order to protect the sense of place experienced along the R354. SAHRA acknowledges that the latest layout at page 186 of the EIR makes provision for the removal of these four turbines.
- If any further turbine should be located within 3kms from the R354, the impact on the sense of place of this road must be assessed separately.
- Ancillary infrastructure should be no closer than 500m to the R354.
- A palaeontological impact assessment inclusive of a field survey **must** be undertaken at the earliest opportunity, preferably before the submission of the final EIR to DEA as it is likely that the findings of this study may impact on turbine placement. This palaeontological field assessment must identify specific outcrops of palaeontological sensitivity and provide appropriate management strategies for the conservation of this significant heritage. This report must be submitted to SAHRA for comments.



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- Alternative access roads must be identified and be located at least 30m from any sensitive heritage features, such as graveyards. An archaeologist will need to survey the routes of the new access roads.
- The graves should be restored where these are dilapidated, protected and conserved. For this purpose, a proper fence must be built around the unfenced graveyards, with entry gates to allow visits from relatives and friends. The fence must be placed 5 meters away from the perimeter of the graves. No development is allowed within 30 meters of the fence line surrounding the graves.
- Once the final layout of turbines, substations, powerlines and access roads has been decided, the archaeologist must be informed and, if necessary, another field survey may be conducted. The archaeological report must be submitted to SAHRA for further comments.

In a subsequent comment dated 26 May 2014, SAHRA indicated that they do not object to the development of the project in three phases (i.e. Soetwater, Karusa and Great Karoo) on condition that the following recommendations are adhered to:

- a palaeontological impact assessment inclusive of a field survey be undertaken at the earliest practical opportunity before construction to inform the final layout of the wind farm. This field assessment must identify specific outcrops of palaeontological sensitivity and provide appropriate management strategies for the conservation of this significant heritage. This report must be submitted to SAHRA for comments.
- turbines 197, 200, 201 and 202 be removed in order to protect the sense of place experienced along the R354. SAHRA acknowledges that the latest layout at page 186 of the EIR already makes provision for the removal of these four turbines.
- if any turbine be located within 3kms from the R354, the impact on the sense of place of this road must be assessed separately.
- ancillary infrastructure should be no closer than 500m to the R354.
- alternative access roads must be identified and be located at least 30m from any sensitive heritage features, such as graveyards.
- the graves should be restored where these are dilapidated, protected and conserved. For this purpose, a proper fence must be built around the unfenced graveyards, with entry gates to allow visits from relatives and friends. The fence must be placed 5 meters away from the perimeter of the graves. No development is allowed within 30 meters of the fence line surrounding the graves.
- once the final layout of turbines, substations, powerlines and access roads has been decided, the archaeologist must be informed and, if necessary, another field survey may be conducted. The archaeological report must be submitted to SAHRA for further comments.

SAHRA's last comment on the Hidden Valley WEF dated 1 March 2016 refers specifically to the results of the walkdown reports for the Soetwater and Karusa WEF developments and is therefore not relevant to this report. However, SAHRA did note that "the Great Karoo Wind Farm Project is on hold until further notice. SAHRA requests that the relevant Heritage reports are submitted to SAHRA when the project resumes."



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Environmental Authorisations (EA)

Initial EA was granted for the Great Karoo WEF on 12 August 2014. In terms of this EA:

- All buffer zones recommended in the specialist environmental reports be respected
- The locations identified as sensitive such as grave sites should also be protected by buffers. A buffer of 30m from heritage features must be implemented throughout the development footprint.
- If concentrations of archaeological heritage material, fossils and human remains are uncovered during construction, all work must cease immediately and be reported to SAHRA so that systematic and professional investigation/excavation can be undertaken
- Construction managers/foreman must be informed before construction starts on the possible types of heritage sites and cultural material that may be encountered and the procedures to follow when they find sites
- All buffers and no-go areas stipulated in this report must be adhered to for both the facilities and all roads and powerlines
- Should any human remains be uncovered during development they must be immediately protected in situ and reported to the heritage authorities or to an archaeologist. The remains will need to be exhumed at the cost of the developer
- All construction and maintenance crew and vehicles (except small vehicles which may use existing farm tracks) should be kept out of the buffer zones
- The final layout should be shown to the appointed archaeologist before implementation to confirm that all significant heritage resources have been adequately protected

The EA granted for the BESS dated 13 May 2021 required that:

- A walkdown of the BESS area must be undertaken prior to construction by a qualified archaeologist to ensure that no heritage resources are to be impacted by the development. If heritage resources are identified at or near any proposed infrastructure, an assessment of the significance of the heritage resources and the impact to the identified heritage resource must be completed. A report detailing the results of the survey must be submitted to SAHRA before construction commences.
- If any further evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich egg shell fragments, marine shell and charcoal/ash concentrations), unmarked human burials, fossils or other categories of heritage resources are found during construction, SAHRA must be alerted immediately and a professional archaeologist or palaeontologist depending on the nature of the findings, must be contacted as soon as possible to inspect the findings.
- A pre-construction walkthrough of the powerline route to identify heritage sites that will be impacted by the grid connection infrastructure must be undertaken prior to the commencement of the construction phase. Further the placement of infrastructure must avoid the heritage feature found within the assessment corridor and associated 35m no-go zone



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1.2 Description of Property and Affected Environment

The Great Karoo WEF primarily lies on Kentucky 206 with the De Plaat farm and associated infrastructure for sheep farming. There are also guest accommodation facilities on the farm. The route of the OHL is primarily west of the 'Smoushoogte' gravel road that separates Kentucky 206 from Orange Fontein 203 and De Hoop 202. The OHL will connect the WEF from the project site to the Hidden Valley Substation on Karusa Wind Farm. A long west-east ridge starting with "Perdeplaas se Berg" of hills runs along De Hoop 202's northern end and across Kentucky 206 where the OHL is proposed. The same ridge forms part of the Southern end of the Great Karoo WEF project site on Kentucky 206. The topography of Kentucky 206 drops off into a valley as one moves northwards before rising up again into another band of higher hills and ridges ("Langeberg") in the direction of Sutherland. Another series of proposed turbine positions have been situated on these ridges. A series of jeep tracks are in use across the De Plaat farm to manage the sheep, small dams and grazing areas.

The region is regarded as semi-arid as it receives limited precipitation. It is located on the border of the summer and winter rainfall regions. Precipitation is in the form of snow and rain in winter, with occasional thunderstorms during the summer. The vegetation cover falls within the Roggeveld Shale Renosterveld of the Karoo Renosterveld Bioregion and consists predominantly of low shrubs and very few trees in this area.



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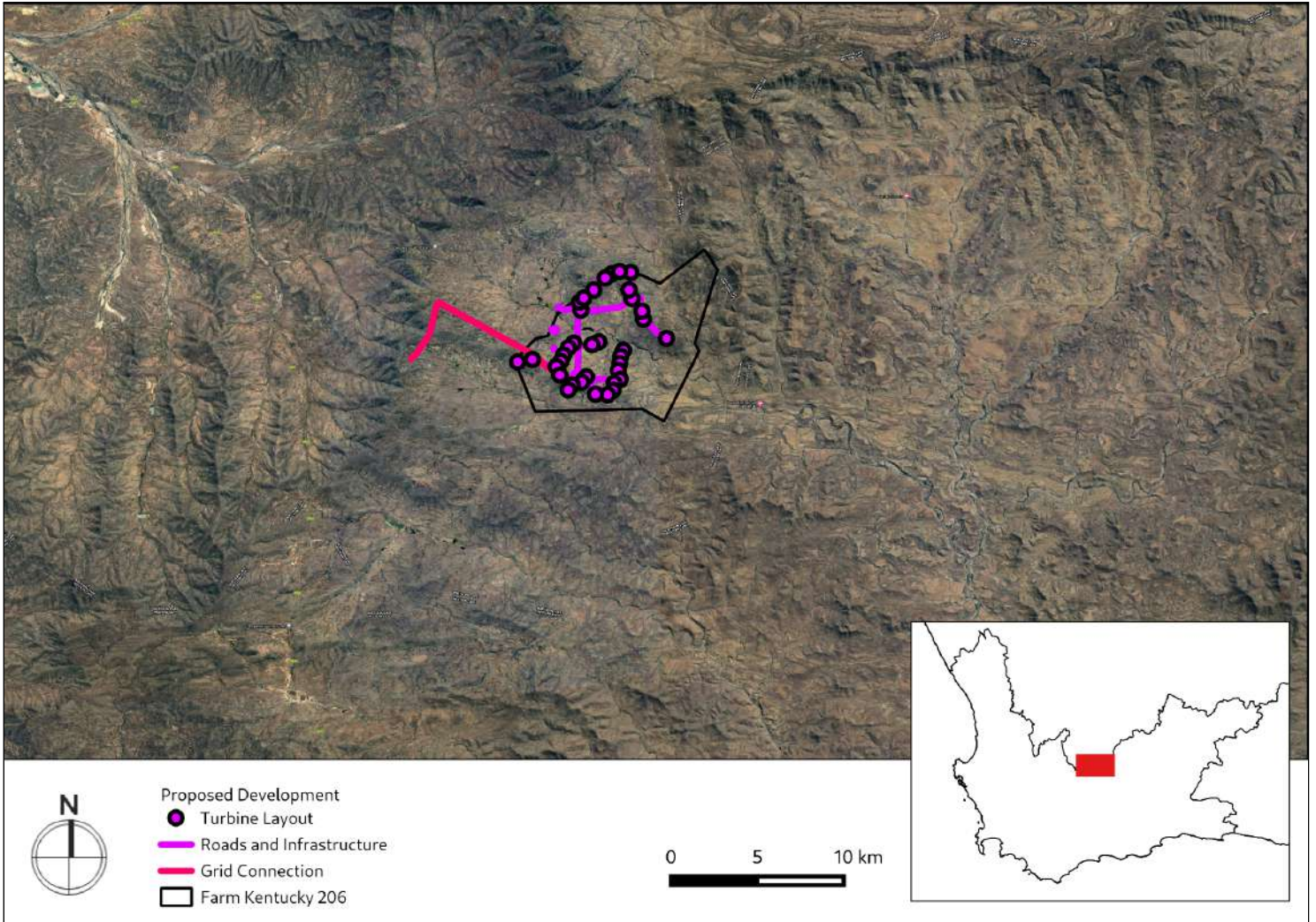


Figure 1.1: Close up satellite image indicating proposed location of the Great Karoo WEF development



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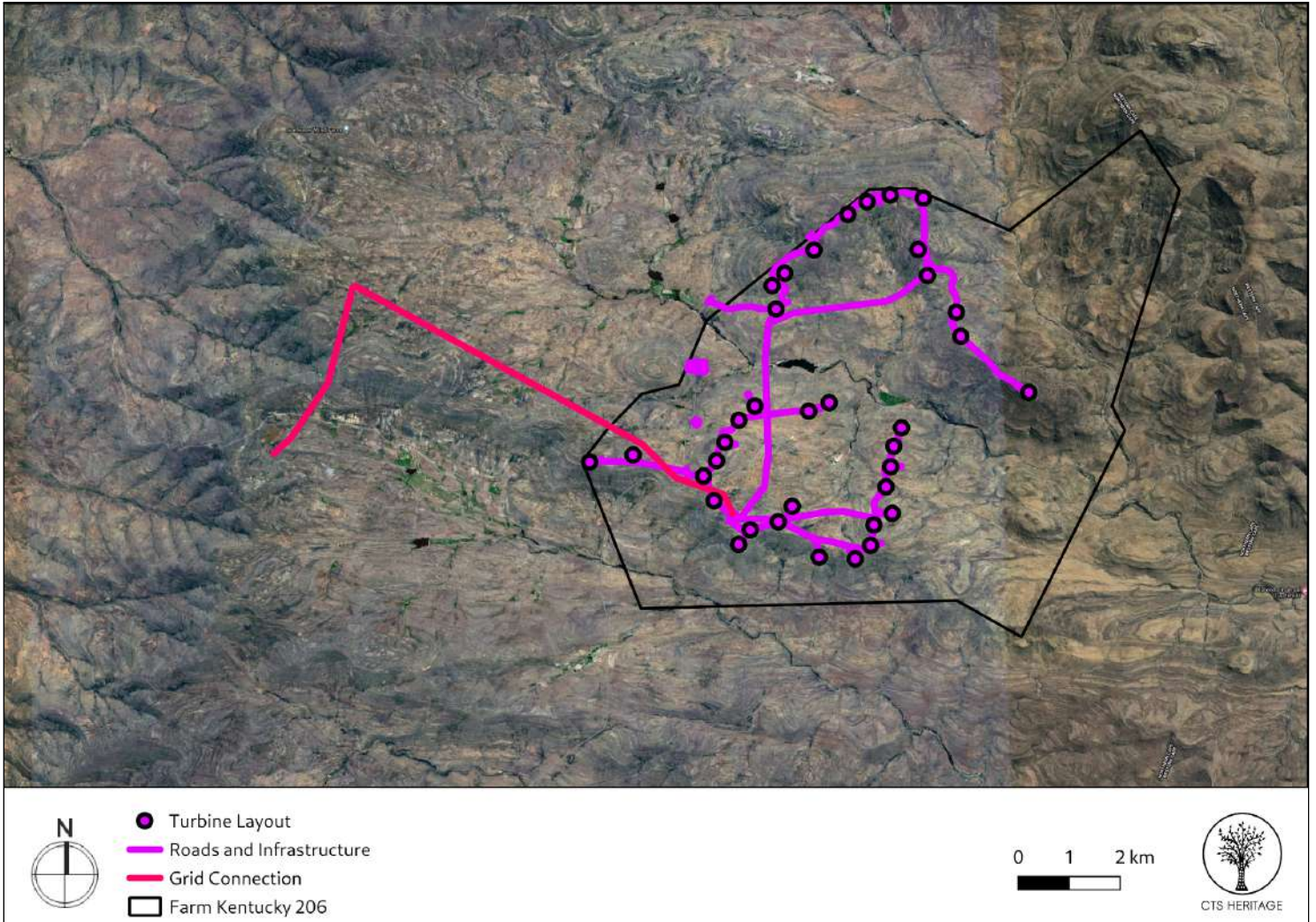


Figure 1.2: Final proposed layout for the Great Karoo WEF development

2. METHODOLOGY

2.1 Purpose of Walkdown

In the HIA completed for the Hidden Valley WEF, Booth (2012) recommended that the final layout of the wind energy facility be walked by an archaeologist in order to ensure that no significant heritage resources are directly impacted by the WEF. Although this requirement was not reiterated by SAHRA, nor was it included in the EA for the project, this report is completed in order to satisfy this recommendation. Furthermore, the EA granted for the grid connection and the BESS EA require a pre-construction heritage/ archaeology walkdown. The BESS EA specifically requires that a report of the walkdown be submitted to SAHRA. This walkdown report is also in fulfillment of the BESS and Grid EA conditions.

2.2 Summary of steps followed

- An archaeologist conducted a full detailed walkdown and micro-siting of the Final development footprint for the Great Karoo WEF, BESS and grid connection development footprint between 19 and 26 November 2020 (7 days) and again in May 2021 to determine what archaeological resources are likely to be impacted by the proposed development.



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- The area proposed for development was assessed on foot and by 4x4 vehicle, photographs of the context and finds were taken, and tracks were recorded (at 20m intervals) using a GPS.
- The identified resources were assessed to evaluate their heritage significance in terms of the grading system outlined in section 3 of the NHRA (Act 25 of 1999).

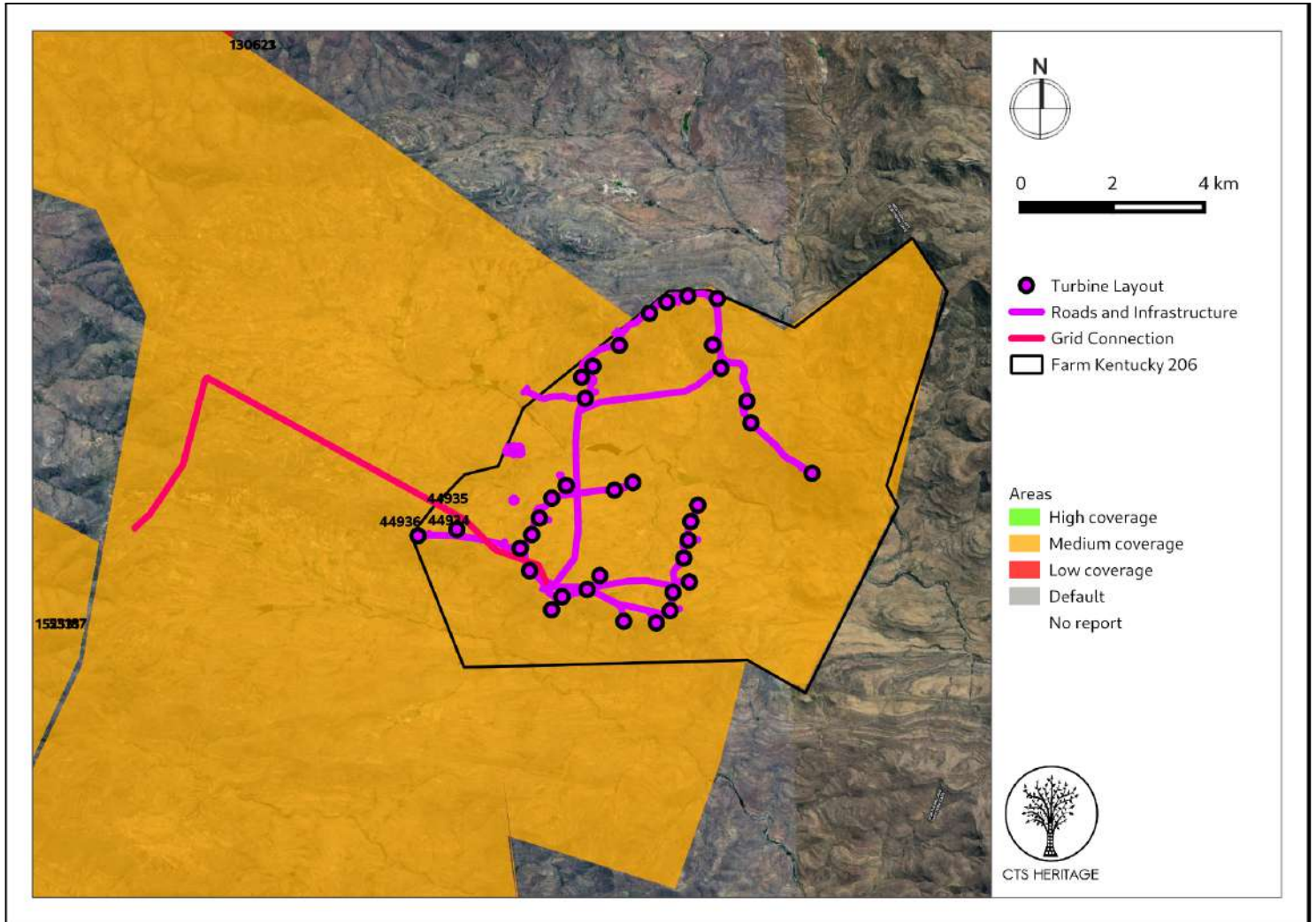


Figure 2: Close up satellite image indicating proposed location of development in relation to heritage studies previously conducted

2.3 Constraints & Limitations

The vegetation did not pose any challenges to the archaeological survey but much of the ground was covered in broken rock and stone eroding down the slopes of the ridges. This is where most of the turbine positions have been placed to take advantage of the better wind conditions. This obscured the visibility of the Stone Age material to some degree but given the time spent on walkdowns in this area the very low artefact counts on the ridges is consistent and resonates with previous studies conducted in the vicinity. However, the material is present, albeit in low amounts. Low density concentrations of Middle and Later Stone Age material were found more easily in areas covering the undeveloped kloofs and floodplains en route to the turbine positions.



A rock art site was found in another walkdown for the Komsberg East WEF completed recently to the east of the Great Karoo WEF and it is likely that a dedicated rock art survey of the Roggeveld and Moordenaars Karoo areas would reveal more sites that would give a better representation of the paintings made in the area. Fortunately these sites tend to be located in areas that are completely unsuitable for the development of the WEFs and associated infrastructure assessed during the walkdowns.

The walkthrough has provided a thorough assessment of the archaeological sensitivity of the proposed development area.

3. HISTORY AND EVOLUTION OF THE SITE AND CONTEXT

The area proposed for the Great Karoo WEF was previously assessed as part of the larger Hidden Valley WEF. As part of the HIA process for the Hidden Valley WEF, Booth completed a desktop assessment for the area in 2011 and a field assessment in 2012. The information below is taken from Booth (2011 and 2012).

According to Booth (2011); “No systematic archaeological research has been conducted within this region of the Northern Cape, therefore little is known about the archaeology of the immediate area proposed for the Hidden Valley Wind Energy Facility. However two heritage impact assessments have been conducted to south of Sutherland (Hart 2005; Hart *et al.* 2010; Rossouw 2007) and two within the Witteberg region near to Matjiesfontein (Hart, 2007; Hart and Miller nd), and a mitigation phase excavation (Evans *et al.* 1985) has been undertaken at two small rock shelters in the grounds of the South African Astronomical Observatory near Sutherland during November 1983 and March 1984. The wider Karoo landscape has been occupied by humans since the Early Stone Age (ESA), spanning an occupation period of about 1.5 million years. Archaeological evidence is usually observed as surface scatters and is widely dispersed across the landscape. Caves are uncommon in the Karoo and open sites (Early Stone Age to the last 2000 years) generally consist of single- level occupations near sources of water such as rivers, streams and springs. Rock engravings are widespread over the Karoo landscape, substantial research has been conducted within the Northern and Western Cape areas of the Karoo (Parkington *et al.* 2008). Early travellers and *trekboere* (Dutch farmers) started entering this part of the Northern Cape towards the end of the 18th century and colonial settlement increased towards the second half of the 19th century.”

Booth (2011) notes the likelihood of evidence of the Early, Middle and Later Stone Ages within the property. Booth (2011) further noted the likelihood of evidence of pastoral communities - “Circular dry stone piled wall enclosures up to half a metre high and 3-4m and 9m in diameter situated on the leeward slopes of low ridges were documented on the site south of Sutherland (Hart *et al.* 2010). These enclosures were arranged in complexes of up to 13 interlocking enclosures with adjoining ‘lammerkraals’ (lamb pens). Archaeological remains associated with these enclosures included fine thin red burnished pottery and ostrich eggshell fragments (OES). In addition, open Khoekhoen encampments situated among the *Kameeldoring* trees along dry river beds in the bottom of valleys were documented on the site south of Sutherland. These encampments are rare and have only been recorded in the Richtersveld area (Hart *et al.* 2010). These sites are relative extensive, approximately 80 - 80m in diameter. The archaeological material remains associated with these encampments included very fine thin wall burnished Cape coastal pottery, numerous informal stone artefacts,



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stone features, grinding surfaces, discreet ash middens, animal bone, and a number of graves that have broken grinding stones placed on top. Nineteenth century glass and ceramics were documented at two of the sites. A few small plain body sherds of fine-grained pottery, about 5mm thick, and probably from the same pot, were documented on a talus slope of one of the two Observatory Shelters near Sutherland (Evans *et al.* 1985).”

Additional heritage resources known from the broader area include rock art, human remains and evidence of colonial settlement. Unfortunately, no specific research into the origins of the impacted farms has been undertaken and as such, a more detailed history of the area proposed for development is not available. However, the heritage context of the proposed development area can be extrapolated from the detailed research completed for neighbouring WEF projects including the Gunstfontein WEF and the Komsberg WEF.

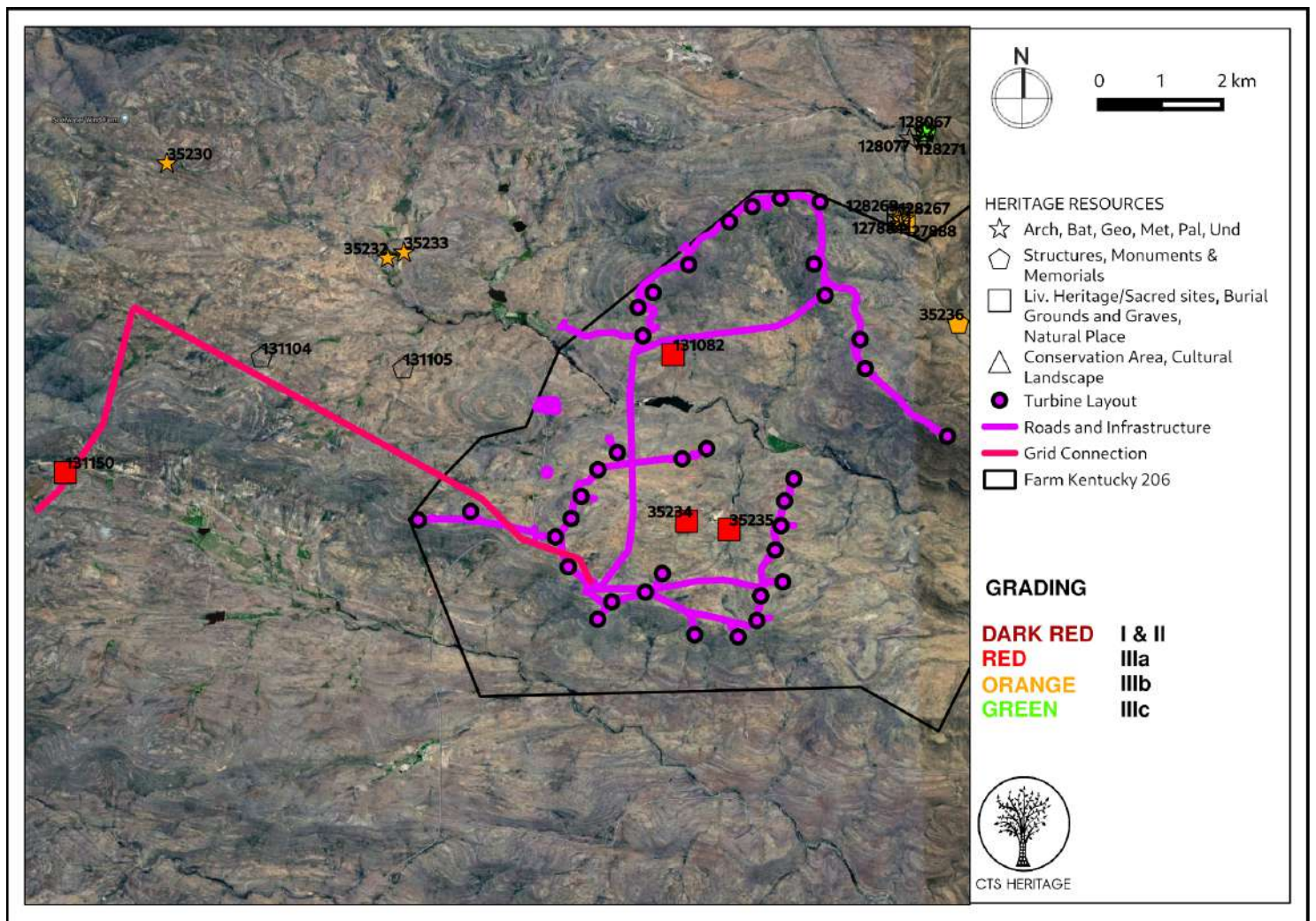


Figure 3.1. Heritage Resources Map. Heritage Resources previously identified in and near the study area from SAHRIS



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4. IDENTIFICATION OF HERITAGE RESOURCES

4.1 Findings of previous assessments

Archaeology

Booth (SAHRIS NID 44935) conducted a field assessment of the area proposed for development in 2012. Booth's assessment (2012) was used to inform the heritage recommendations made by CTS Heritage for the Great Karoo OHL (SAHRIS Case 15700) and the Great Karoo BESS (SAHRIS Case 15615). Booth (2012) noted that "No archaeological heritage remains were documented within the areas proposed for the development of the wind turbines." Furthermore, the proposed OHL and switching station is to be located in an area that has been previously assessed for impacts to archaeological resources by Booth (2012). Booth (2012) identified no heritage resources in this area. However, Booth (2012) did identify a family graveyard (Site ID 35235) and an informal labourers' graveyard (Site ID 35281) situated near the current farmstead complex (approximately 1.5 to 2km from the authorised Great Karoo WEF Substation), the remnants of a stone-walled kraal to the north of the current farmstead complex (not mapped) and the ruins of a stone walled, large farmstead complex were documented within one of the valleys (Site ID 35230, 35232 and 35233). These identified sites have been mapped in relation to the proposed development (Figure 3, Table 1).

A portion of the proposed Great Karoo OHL lies immediately adjacent and parallel to the Soetwater OHL. In a recent walkdown of the proposed Soetwater OHL (July 2020), a stone packed feature (possible burial) was identified within the proposed OHL corridor (Figure 3 and 3a). This site is recorded on SAHRIS as Site 131150 and is described in detail by Booth (2020, SAHRIS NID 539589, Case ID 15452); "The stone packed feature cannot be confirmed as being a grave unless systematic excavations are conducted to establish whether the area contains a burial. This method of mitigation is however the least preferred. The stone packed feature may be established as being older than 30 years owing the landowner and farm staff being unaware of its origin or existence, or older than the establishment of colonial settlements and farming activities within the area. However, the more recent-looking packing of the stones may not confirm that the feature is older than 100 years." Booth (2020) makes the following recommendations regarding this site, which have been endorsed and added to by SAHRA (September 2020). Cognisance of these recommendations, included verbatim below, must be taken in the development of the Great Karoo OHL:

- The stone-packed feature should be fenced with an entry gate and clearly demarcated prior to the construction activities for the establishment of pylon No. 5. SAHRA's previous recommendations (26 May 2014) stipulate that the fence be placed 5 meters away from the perimeter of the graves and that no development is allowed within 30 meters of the fence line surrounding the graves. However, it is acceptable that the relocation of Pylon No. 5 be shifted 15 m south to allow for a 5 m buffer between the stone packed feature and the fence and therefore allow a 10 m buffer between the fence and tower, taking into consideration the limiting factors mentioned above.
- General fencing materials may be used, mesh fencing approximately 1.2 m in height, and treated wooden droppers as the corner posts, approximately 5 cm in width, or similar alternative materials.
- The environmental control officers (ECOs) must liaise with the archaeologist regarding the fencing materials being used for the erection of the fence, the planned area for the establishment of the fence, during the erection and completion of the fence, as well as during the construction of the tower.



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- At this point it is not necessary for the archaeologist to be on-site during the construction of the fence and pylon if the ECO keeps in contact with the archaeologist, as in recommendation 3.
- If concentrations of 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 archaeologist and/or the South African Heritage Resources Authority (SAHRA) (021 462 4502) for Northern Cape findings and Heritage Western Cape (HWC) (021 483 5959) 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 may then be conducted to establish the contextual status of the sites and possibly remove the archaeological deposit before development activities continue.

This site (SAHRIS Site ID 131150) was fenced off when observed during the walkdown for this report by the construction team for the Soetwater WEF and as such, the above recommendations have been implemented. We think it is highly unlikely to be a burial site and it is more than likely another historical beacon similar to the one found at De Plaat (Observation 002).

Palaeontology

The area proposed for development of the OHL and switching station is underlain by sediments that have very high palaeontological sensitivity according to the SAHRIS Fossil Sensitivity Map (Figure 4). The geology map of the area (Council of GeoScience Map 3220 Sutherland, Figure 5) indicates that the area is underlain by sediments of the Karoo Supergroup assigned to the Beaufort group, within the Abrahamskraal Formation of the Adelaide Subgroup. This was confirmed by Rossouw (2012, SAHRIS ID 44936) in the Desktop Palaeontological Impact Assessment conducted for the proposed Hidden Valley WEF which includes the area proposed for development. In an assessment for the Soetwater WEF conducted by Almond (2015, SAHRIS NID 353707) which covers the area assessed in this report, it is noted that “that the Lower Beaufort Group bedrocks in the Soetwater Wind Farm study area are generally of **low palaeontological sensitivity** and this also applies to the overlying Late Caenozoic superficial sediments (colluvium, alluvium, calcrete, surface gravels, soils etc).” Almond (2015) goes on to state that “Construction of the proposed Soetwater Wind Farm is unlikely to entail significant impacts on local fossil heritage resources. Due to the general great scarcity of fossil remains as well as the extensive superficial sediment cover observed within the study area, the overall impact significance of the construction phase of the proposed Soetwater Wind Farm is assessed as LOW. The operational and decommissioning phases of the wind farm are very unlikely to involve further adverse impacts on local palaeontological heritage.” This same conclusion can be applied to the Great Karoo OHL and switching station as these developments fall within the area assessed by Almond (2015).

Rossouw (2012) recommended that a palaeontological field assessment be conducted of the turbine footings, access roads, offices and substation and underground cable routes prior to the commencement of development activities associated with the Great Karoo WEF. In addition, Rossouw (2012) recommended that palaeontological monitoring take place during the construction phase of the Great Karoo WEF development. In their Final Comment for the Great Karoo



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WEF dated 25 August 2016, SAHRA recommended that a walk-down of the amended layout is required prior to construction. This must be conducted by a qualified palaeontologist to ensure that no heritage resources are to be impacted by the new locations of the turbines. If heritage resources are identified at or near any proposed infrastructure, an assessment of the significance of the heritage resources and the impact to the identified heritage resource must be completed. A report detailing the results of the survey must be submitted to SAHRA before construction of the Great Karoo WEF commences. A palaeontological walk down conducted for the Soetwater 132kv OHL confirmed the low palaeontological sensitivity of this area.

In a subsequent letter from SAHRA dated 21 October 2016, SAHRA indicated that “There will be no need for further palaeontological field assessment, as the Desktop Study is sufficient. A map of the identified palaeontological resources relative to the layout of the proposed development must be emailed to the case officer and the ECO must monitor all excavations in the Great Karoo WEF.” This was reiterated in a subsequent comment from SAHRA for the Great Karoo WEF dated 31 May 2019 (CaseID 9373).

Summary of heritage recommendations from the completed reports:

- A walk-down of the proposed development area is required prior to construction. This must be conducted by a qualified archaeologist to ensure that no heritage resources are to be impacted by the development. If heritage resources are identified at or near any proposed infrastructure, an assessment of the significance of the heritage resources and the impact to the identified heritage resource must be completed. A report detailing the results of the survey must be submitted to SAHRA before construction commences.

This walkthrough report is submitted in order to satisfy this requirement for the WEF, BESS and Grid Connection infrastructure.

- If concentrations of archaeological heritage material and human remains are uncovered during construction, all work must cease immediately and be reported to the Albany Museum (046 622 2312) and/or the South African Heritage Resources Agency (SAHRA) (021 642 4502) so that systematic and professional investigation/excavation can be undertaken.
- Construction managers/foremen should be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites.
- A map of the identified palaeontological resources relative to the layout of the proposed development must be emailed to the case officer and the ECO must monitor all excavations associated with the development.



Figure 5.1: Contextual Image of development area



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Figure 5.2: Contextual Image of development area



Figure 5.3: Contextual Image of development area



Figure 5.4: Contextual Images of Development Area



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Figure 5.5: Contextual Images of Development Area



Figure 5.6: Contextual Images of Development Area



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Figure 5.7: Contextual Images of Landscape



Figure 5.8: Contextual Images of Development Area



Figure 5.9: Contextual Images of Development Area



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Figure 5.10: Contextual Images of Development Area



Figure 5.11: Contextual Images of Development Area



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Figure 5.12: Contextual Images of Development Area



Figure 5.13: Contextual Images of Development Area

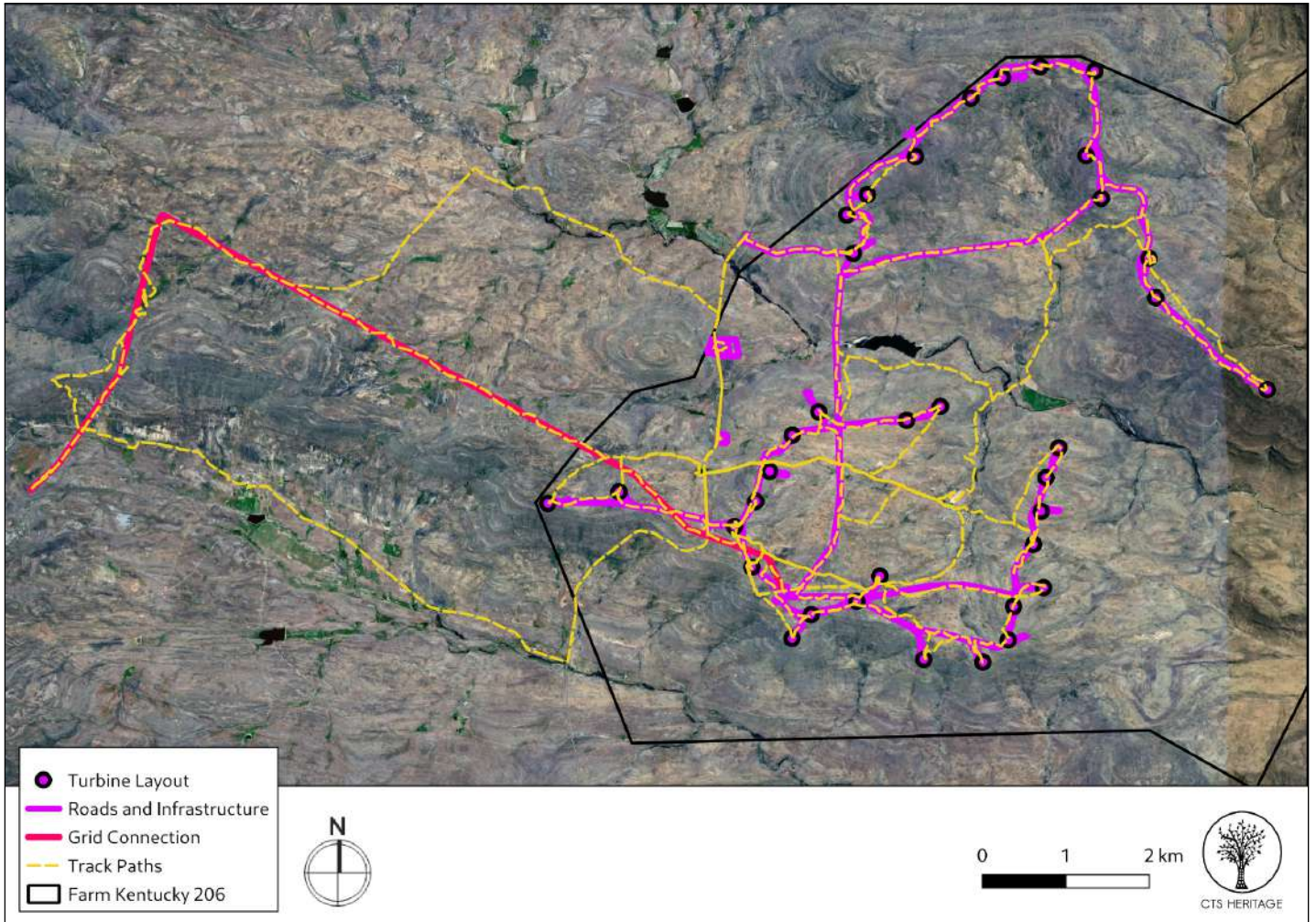


Figure 6.1: Overall track paths of foot survey

4.2 Heritage Resources identified in the Walkdown

Most of the built environment heritage resources were recorded during the earlier preliminary studies by Booth in 2011 and 2012 such as the De Plaat farmhouse complex and the formal graveyard. None of these sites are located anywhere near the WEF or associated infrastructure in the final layout.

Very few LSA and MSA artefacts were found on the ridges where the roads, powerlines and turbine positions for the WEF are proposed despite covering the ground extensively on foot. Historical objects included porcelain and tin bells (which are still being used) and these date to the period after the establishment of the sheep farm. None of the heritage resources identified during the walkdown were of significance but they have added to the generally sparse findings recorded in the Roggeveld and Moordernaars Karoo thus far. The ridges are very rocky underfoot and are exposed which goes a long way to explaining the very low amount of archaeological material found on them. As mentioned earlier, the broken rock is likely obscuring some of the archaeological material but it is clear that there are very few open sites with high densities of MSA or LSA material in the areas proposed for the WEF infrastructure in the final layout.



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Table 2: Archaeological, palaeontological and built environment observations noted during both walk downs for the WEF and associated infrastructure

Observation #	Description	Co-ordinates		Grading
001	Hornfels flake, LSA	-32.77092	20.73958	NCW
002	Stone beacon, historic	-32.76412	20.75534	NCW
003	Tin can - sheep "klokkie" bell, historic	-32.77416	20.76045	NCW
004	Hornfels core , MSA	-32.7856	20.76715	NCW
005	Silcrete flake, looks heat treated, MSA	-32.81213	20.73326	NCW
006	Porcelain, blue decoration, historic	-32.81353	20.73206	NCW
007	Quartz flake and core, Silcrete micro debitage flake, LSA	-32.80387	20.72408	NCW
008	Green hornfels core, LSA	-32.80157	20.73904	NCW
009	Hornfels core flakes, MSA	-32.8154	20.71505	NCW
010	Fine grained hornfels core, MSA	-32.82139	20.74901	NCW
011	Chert core, LSA	-32.80104	20.6332	NCW



4.3 Selected photographic record

(a full photographic record is available upon request)



Figure 7.1: Observation 001



Figure 7.2: Observation 002



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Figure 7.3: Observation 003



Figure 7.4: Observation, 004



Figure 7.5 Observation 005



Figure 7.6 Observation 006



Figure 7.7 Observation 007



Figure 7.8 Observation 008



Figure 7.9 Observation 009



Figure 7.10 Observation 010



Figure 7.11 Observation 011



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5. ASSESSMENT OF THE IMPACT OF THE DEVELOPMENT

5.1 Assessment of impact to Archaeological Resources

Given the paucity of finds, the WEF and associated infrastructure will have a negligible impact on archaeological heritage resources and based on the walkdown assessment completed, the area proposed for development has an overall low archaeological sensitivity. The identified built environment resources and graves do not fall within the development footprint and will not be directly impacted.

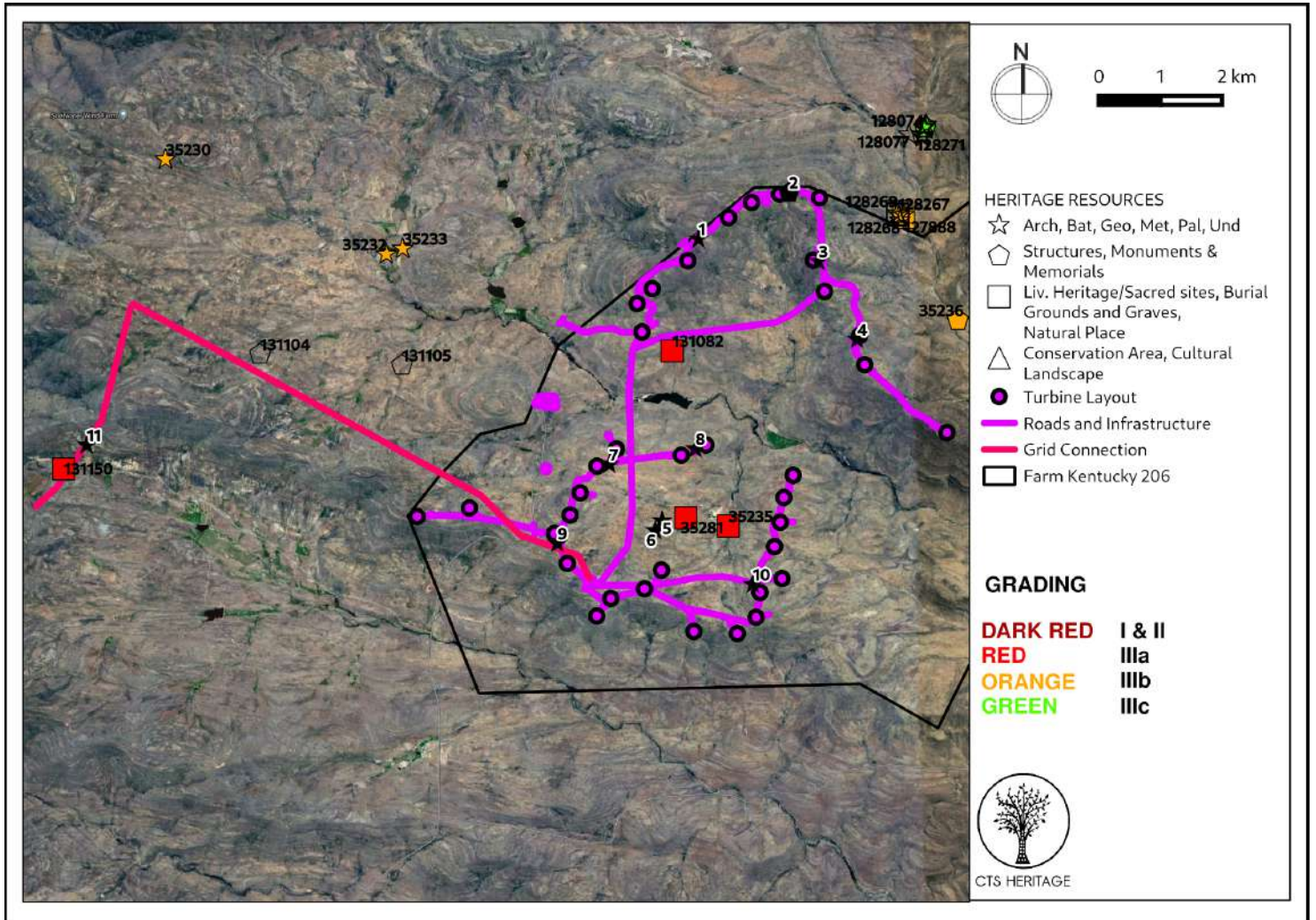


Figure 8.1: Map of heritage resources identified during both field assessments relative to the final proposed development footprint



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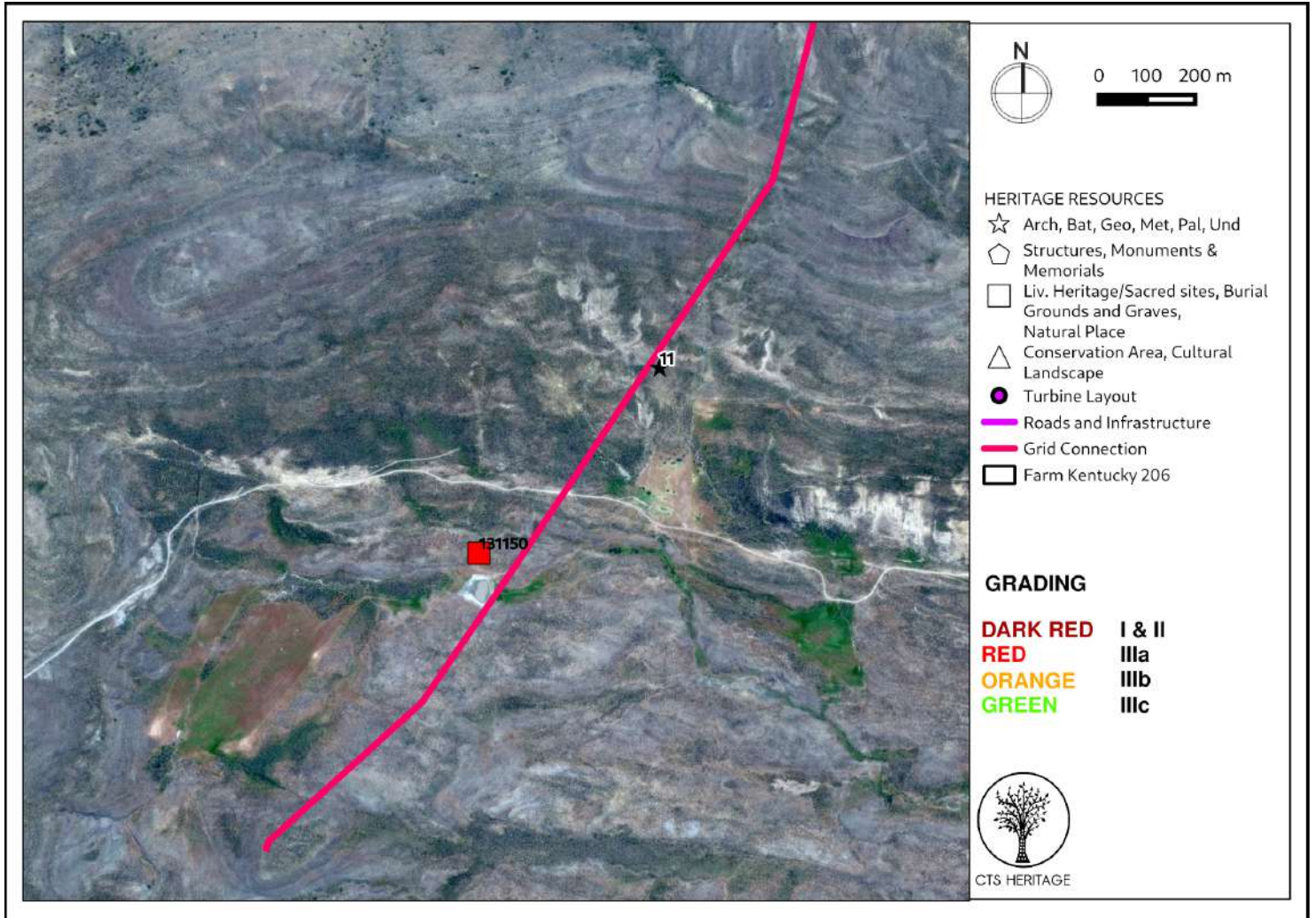


Figure 8.2: Map of heritage resources identified during the field assessment relative to the final proposed development footprint



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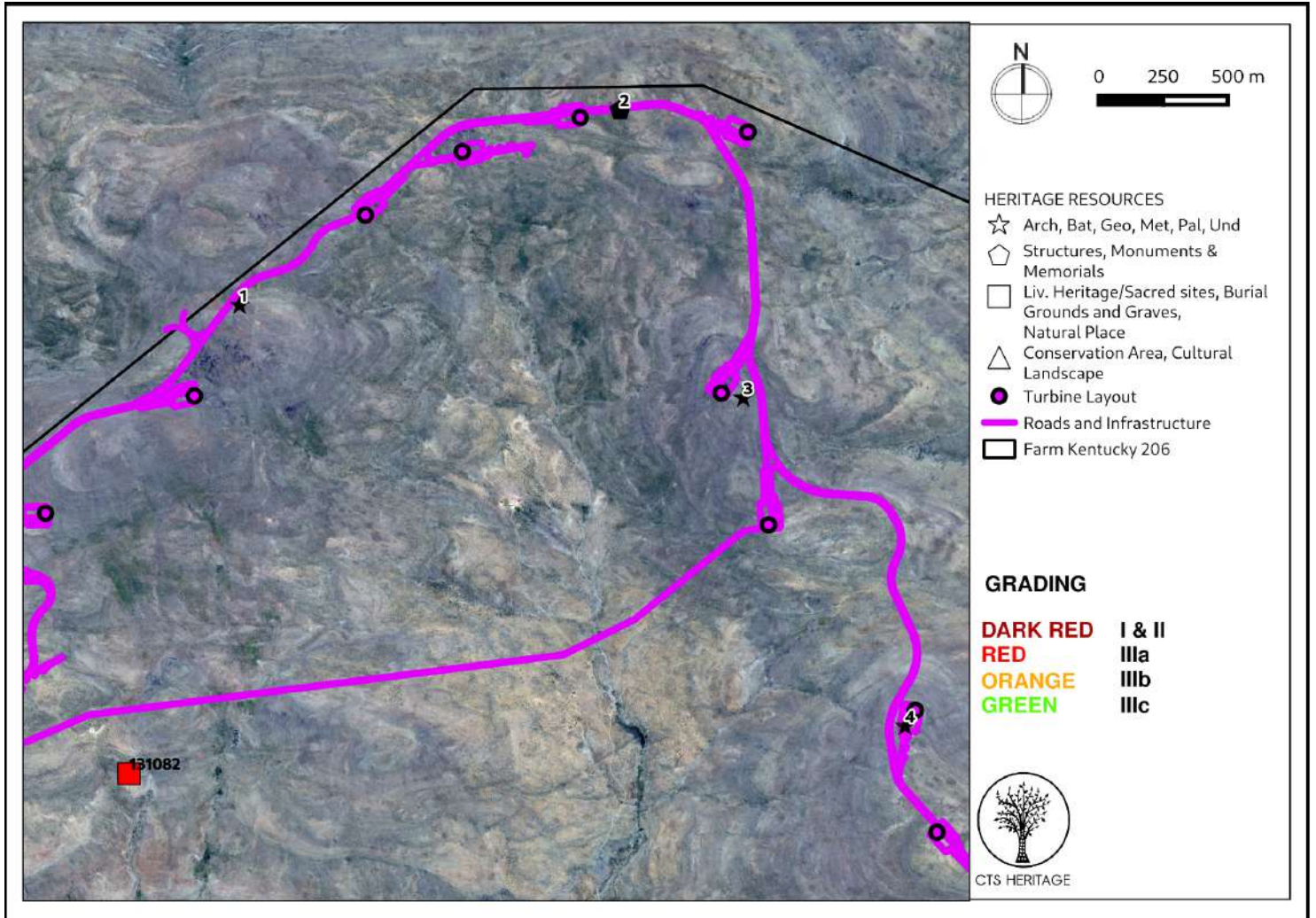


Figure 8.3: Map of heritage resources identified during the field assessment relative to the final proposed development footprint



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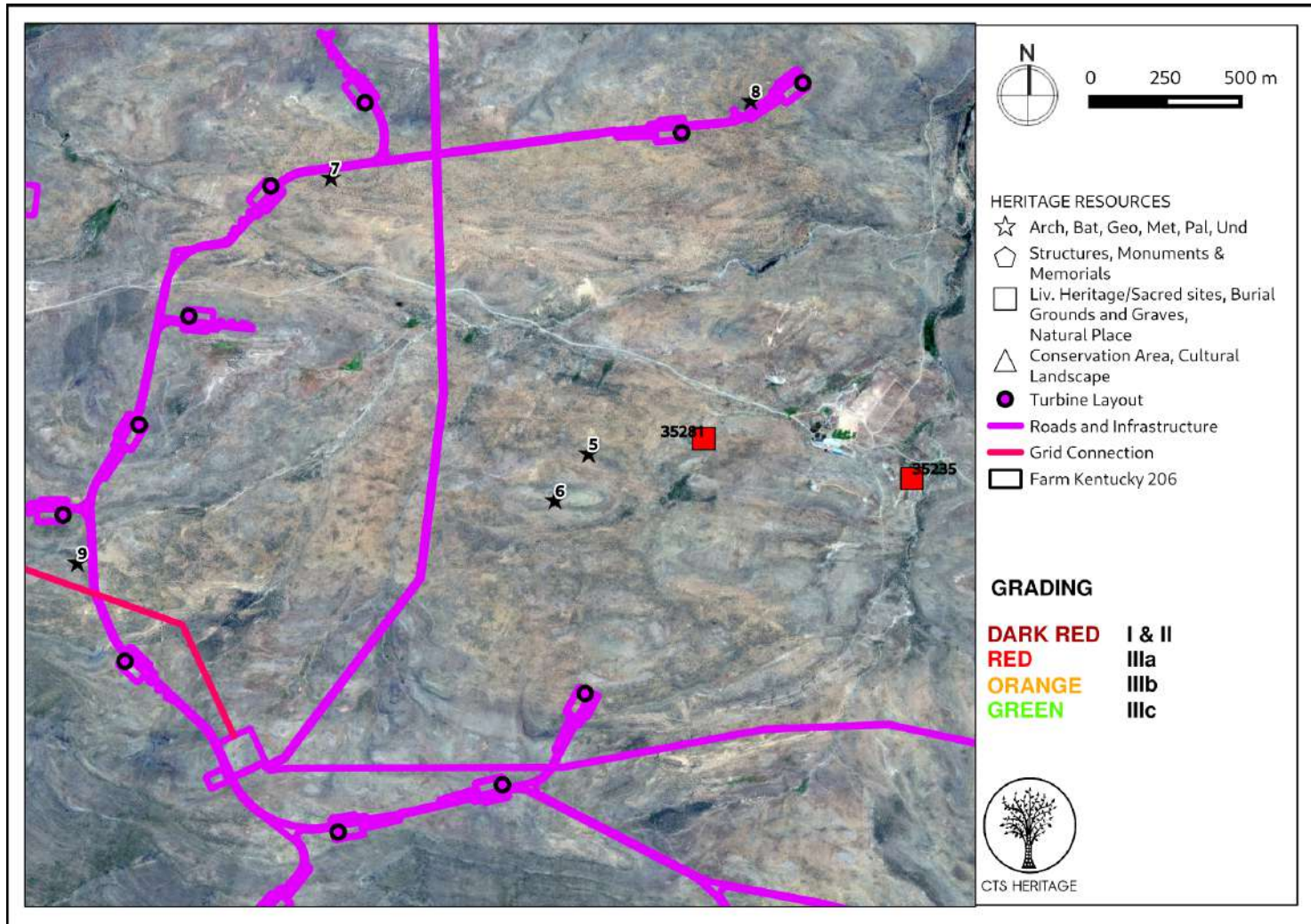


Figure 8.4: Map of heritage resources identified during the field assessment relative to the final proposed development footprint

6. CONCLUSION AND RECOMMENDATIONS

In a recent walkdown of the proposed Soetwater OHL (July 2020), a stone-packed feature (possible burial) was identified within the proposed OHL corridor for Great Karoo. This site is recorded on SAHRIS as Site 131150 and is described in detail by Booth (2020, SAHRIS NID 539589, Case ID 15452); “The stone packed feature cannot be confirmed as being a grave unless systematic excavations are conducted to establish whether the area contains a burial. This method of mitigation is however the least preferred. The stone-packed feature may be established as being older than 30 years owing to the landowner and farm staff being unaware of its origin or existence, or older than the establishment of colonial settlements and farming activities within the area. However, the more recent-looking packing of the stones may not confirm that the feature is older than 100 years.” Booth (2020) a number of recommendations regarding this site, which have been endorsed and added to by SAHRA (September 2020).

This site was fenced off when observed during the walkdown for this report by the construction team for the Soetwater WEF and as such, SAHRA’s recommendations have been implemented. We think it is highly unlikely to be a burial site and it is more than likely another historical beacon similar to the one found at De Plaats (Observation 002). No further recommendations in this regard are included in this report.



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Based on the outcomes of the required walkdown, it is not anticipated that the proposed development of turbines, cables, powerlines and associated infrastructure including roads associated with the proposed WEF will negatively impact on significant archaeological heritage and as such, there is no heritage objection to the final alignment proposed for the WEF development. The identified built environment and graves do not fall within the development footprint and will not be directly impacted.

This report therefore satisfies the heritage requirements included in Booth (2012) as well as the requirements in the EA granted for the grid connection and the BESS EA conditions. No further heritage work is recommended for the development of the Great Karoo WEF and associated infrastructure.



7. REFERENCES

Heritage Impact Assessments				
Nid	Report Type	Author/s	Date	Title
53187	HIA Phase 1	Timothy Hart, Lita Webley	01/03/2011	HERITAGE IMPACT ASSESSMENT PROPOSED WIND ENERGY FACILITY
44935	AIA Phase 1	Celeste Booth	01/02/2012	A Phase 1 AIA for the proposed Hidden Valley Wind Energy Facility, near Sutherland, Northern cape Province
44936	PIA Phase 1	Lloyd Rossouw	01/03/2012	Palaeontological desktop assessment of the proposed Hidden Valley Wind Energy Facility near Sutherland, Northern Cape Province
183350	HIA Phase 1	Natalie Kendrick	27/10/2014	Heritage Impact Assessment for the Karreebosch Wind Farm (Phase 2 Roggevelt Wind Farm)
152531	HIA Phase 1	Timothy Hart, Lita Webley	20/12/2013	Heritage Impact Assessment Report for the Phase 1 Roggeveld Wind Farm
357422	AIA	Jaco van der Walt	21/12/2015	Archaeological Impact Assessment Report for the Proposed Gunstfontein WEF near Sutherland, Karoo Hoogland Local Municipality, NC Province
357423	PIA	John Almond	21/12/2015	Palaeontological Heritage Assessment: Combined Desktop and Field Based Report for the Proposed Gunstfontein WEF near Sutherland, Karoo Hoogland Local Municipality, NC Province
341109	AIA	Celeste Booth	03/08/2015	A Phase 1 Archaeological Impact Assessment for the Proposed Soetwater Substation, 132kV Overhead Powerline and Ancillaries Soetwater Wind Energy Facility, Near Sutherland, Karoo Hoogland Local Municipality, Namakwa District Municipality, Northern Cape Province.
354172	PIA	John Almond	08/01/2016	Recommended Exemption from further Palaeontological studies: Proposed Construction of the Eskom Soetwater Switching Station Complex, 132kV Double Circuit Overhead Power Line, Soetwater Facility Substation Complex and Ancillary Developments near Sutherland, NC Province
353706	AIA	Celeste Booth	03/08/2015	An Archaeological Walk-Through For The Proposed Soetwater Wind Energy Facility Situated On The Farms: The Remainder Of And Portion 1, 2 And 4 Of Farm Orange Fontein 203 And Annex Orange Fontein 185, Farm Leeuwe Hoek 183 And Farm Zwanepoelshoek 184, Near Sutherland, Karoo Hoogland Local Municipality, Namakwa District Municipality, Northern Cape Province.
353707	PIA	John Almond	12/10/2015	Palaeontological Heritage Assessment: Combined Desktop & Field-Based Study: Authorised Soetwater Wind Farm Near Sutherland, Northern Cape Province

Additional References:

Hart, T. et al. (2016). **HERITAGE IMPACT ASSESSMENT (SCOPING) FOR THE PROPOSED KOLKIES WIND ENERGY FACILITY AND ASSOCIATED GRID CONNECTION TO BE SITUATED IN THE SOUTHERN TANKWA KAROO.** (Assessment conducted under Section 38 (8) of the National Heritage Resources Act (No. 25 of 1999) as part of an EIA). For Arcus Consulting. Unpublished and not submitted.

Hart, T. et al. (2016). **HERITAGE IMPACT ASSESSMENT (SCOPING) FOR THE PROPOSED KAREE WIND ENERGY FACILITY AND ASSOCIATED GRID CONNECTION TO BE SITUATED IN THE SOUTHERN TANKWA KAROO.** (Assessment conducted



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under Section 38 (8) of the National Heritage Resources Act (No. 25 of 1999) as part of an EIA). For Arcus Consulting. Unpublished and not submitted.

Shaw, Matthew & Ames, Christopher & Phillips, Natasha & Chambers, Sherrie & Dosseto, Anthony & Douglas, Matthew & Goble, Ron & Jacobs, Zenobia & Jones, Brian & Lin, Sam & Low, Marika & Mcneil, Jessica-Louise & Nasoordeen, Shezani & O'driscoll, Corey & Saktura, Rosaria & Sumner, T. & Watson, Sara & Will, Manual & Mackay, Alex. (2020). **The Doring River Archaeology Project: Approaching the Evolution of Human Land Use Patterns in the Western Cape, South Africa.**

Smith, Andrew B., and Michael R. Ripp. "An Archaeological Reconnaissance of the Doorn/Tanqua Karoo." The South African Archaeological Bulletin, vol. 33, no. 128, 1978, pp. 118-133



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APPENDIX 1:

Known heritage resources within and near the Great Karoo WEF Development Area (Figure 3.1)

SAHRIS ID	Site No	Site Name	Description (Detailed descriptions on SAHRIS)	Co-ordinates		Grading
35230	HDV005	Hidden Valley 05	Stone walling	-32,759278	20,646889	Grade IIIb
35232	HDV007	Hidden Valley 07	Stone walling	-32,773144	20,685281	Grade IIIb
35233	HDV008	Hidden Valley 08	Stone walling	-32,772306	20,688139	Grade IIIb
35236	HDV011	Hidden Valley 011	Building	-32,782778	20,784667	Grade IIIb
35234	HDV009	Hidden Valley 09	Burial Grounds & Graves	-32,811667	20,737361	Grade IIIa
35235	HDV010	Hidden Valley 010	Burial Grounds & Graves	-32,812861	20,744778	Grade IIIa
35281	HDV009	Hidden Valley 009	Burial Grounds & Graves	-32,811667	20,737361	Grade IIIa
127884	3220DB/ME WEF/2017/L 009	Maralla East Wind Energy Facility Site L009	Archaeological	-32,767623	20,775229	Ungraded
127888	3220DB/ME WEF/2017/L 010	Maralla East Wind Energy Facility Site L010	Artefacts	-32,767734	20,775234	Ungraded
127893	3220DB/ME WEF/2017/L 011	Maralla East Wind Energy Facility Site L011	Burial Grounds & Graves	-32,767749	20,775219	Grade IIIb
127895	3220DB/ME WEF/2017/L 012	Maralla East Wind Energy Facility Site L012	Archaeological	-32,767396	20,775218	Ungraded
127901	3220DB/ME WEF/2017/L 013	Maralla East Wind Energy Facility Site L013	Artefacts	-32,754852	20,779077	Grade IIIc
127926	3220DB/ME WEF/2017/L 014	Maralla East Wind Energy Facility Site L014	Structures	-32,754581	20,77898	Grade IIIc
128067	3220DB/ME WEF/2017/L 047	Maralla East Wind Energy Facility Site L047	Settlement	-32,754539	20,778821	Ungraded
128068	3220DB/ME WEF/2017/L 048	Maralla East Wind Energy Facility Site L048	Settlement	-32,754435	20,778896	Ungraded
128072	3220DB/ME WEF/2017/L	Maralla East Wind Energy Facility Site	Stone walling	-32,754219	20,779161	Ungraded



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	049	L049				
128074	3220DB/ME WEF/2017/L 050	Maralla East Wind Energy Facility Site L050	Stone walling	-32,754667	20,77874	Ungraded
128077	3220DB/ME WEF/2017/L 051	Maralla East Wind Energy Facility Site L051	Stone walling	-32,755638	20,77617	Ungraded
128264	3220DB/ME WEF/2017/D 013	Maralla East Wind Energy Facility Site D013	Archaeological	-32,767436	20,774436	Ungraded
128265	3220DB/ME WEF/2017/D 014	Maralla East Wind Energy Facility Site D014	Burial Grounds & Graves	-32,767402	20,774282	Ungraded
128266	3220DB/ME WEF/2017/D 047	Maralla East Wind Energy Facility Site D047	Deposit	-32,767145	20,774134	Ungraded
128267	3220DB/ME WEF/2017/D 048	Maralla East Wind Energy Facility Site D048	Burial Grounds & Graves	-32,767233	20,774204	Ungraded
128268	3220DB/ME WEF/2017/D 049	Maralla East Wind Energy Facility Site D049	Stone walling	-32,768205	20,774612	Ungraded
128269	3220DB/ME WEF/2017/D 050	Maralla East Wind Energy Facility Site D050	Burial Grounds & Graves	-32,766843	20,774153	Ungraded
128270	3220DB/ME WEF/2017/D 051	Maralla East Wind Energy Facility Site D051	Artefacts	-32,756004	20,778525	Ungraded
128271	3220DB/ME WEF/2017/D 052	Maralla East Wind Energy Facility Site D052	Stone walling	-32,755735	20,778443	Ungraded
131082	KDB108	Kudusberg	Burial Grounds & Graves	-32,78725	20,735	Grade IIIa
131104	KDB129	Kudusberg	Structures	-32,78775	20,663333	Grade IV
131105	KDB130	Kudusberg	Structures	-32,789364	20,688	Grade IV
131150	DHP001	De Hoop 001	Burial Grounds & Graves	-32,8045	20,629181	Grade IIIa