

HERITAGE WALKDOWN REPORT

for the approved Rietkloof WEF near Matjiesfontein in the Western Cape

Prepared by



CTS HERITAGE

In Association with

WSP

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EXECUTIVE SUMMARY

Rietkloof Wind Farm (Pty) Ltd, a subsidiary of G7 Renewable Energies (Pty) Ltd, has received approval to develop a 140 megawatt (MW) Wind Energy Facility (WEF) near Matjiesfontein, in the Western Cape Province in South Africa. The authorised WEF is located in the Laingsburg Local Municipality, which falls within the Central Karoo District Municipality. It comprises up to 58 turbines, with a generating capacity of between 1.5MW and 4MW each.

In response to the original Heritage Impact Assessment completed by Booth in 2016, it was recommended by HWC that a targeted walk down of the final layout must be conducted by an archaeologist. This recommendation was reiterated as a condition of authorisation in the original EA granted for the Rietkloof WEF project in 2019.

The final layout for the Rietkloof WEF avoids impact to all known significant heritage resources present within the development area. The walkdown of the final layout revealed no new significant heritage resources that are likely to be impacted. It is therefore recommended that this report is accepted as satisfying the following conditions of the Environmental Authorisation issued for the Rietkloof WEF project:

- All wind turbines must avoid all areas designated as "no-go" areas as well as their buffers
- The final placement of turbines must follow a micro siting procedure involving a walk-through and identification of any sensitive areas by ecological, avifaunal, bat, surface water and heritage specialists
- A 60m buffer must be applied around all identified archaeological sites.
- Pre-construction archaeological monitoring is required. The appointed archaeologist must keep a list documenting all identified farm infrastructure.
- All buffers and no-go areas stipulated in the EIAR must be adhered to for both the facilities and all roads and powerlines
- The final layout must be shown to the appointed archaeologist before implementation to confirm that all significant heritage resources have been adequately protected.

Although the EA did not make any specific conditions pertaining to the conservation of palaeontological heritage, the PIA completed for the Rietkloof WEF recommended that the area marked in Orange in Figure 4.2 and 4.3 should be inspected for fossil wood occurrences by a professional palaeontologist prior to construction. It is recommended that this mitigation step be completed prior to the construction of the turbines in this area.

Once the above step is complete, all conditions of authorisation have been satisfied for this project in terms of impacts to heritage resources.



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1. INTRODUCTION

1.1 Background Information on Project

Rietkloof Wind Farm (Pty) Ltd, a subsidiary of G7 Renewable Energies (Pty) Ltd, has received approval to develop a 140 megawatt (MW) Wind Energy Facility (WEF) near Matjiesfontein, in the Western Cape Province in South Africa. The authorised WEF is located in the Laingsburg Local Municipality, which falls within the Central Karoo District Municipality. It comprises up to 58 turbines, with a generating capacity of between 1.5MW and 4MW each.

The Rietkloof Wind Energy Facility (WEF) is proposed in the Western Cape at the border with the Northern Cape along the R354 road which connects Matjiesfontein to Sutherland. An inclusion zone of 10km was assessed around the proposed WEF in order to better characterise the heritage resources of the area. Several WEFs have previously been proposed within the 10km inclusion zone, including the Hidden Valley Phase 1 Karusa, the Hidden Valley Phase 2 Soetwater, the Hidden Valley Phase 3, Great Karoo, Roggeveld Wind Farm Phase 1 and Kareebosch Wind Project (Roggeveld Phase 2). The Brandvalley WEF (a phase of the Roggeveld Wind Farm) is proposed contemporaneously to the Rietkloof WEF on some overlapping properties. This WEF is also a part of Roggeveld Wind Energy Facility

The authorised Rietkloof Wind Energy Facility (WEF) falls entirely within the Western Cape and as such, falls under the jurisdiction of Heritage Western Cape (HWC).

On 20 October 2016, HWC issued a Final Comment on the Rietvally WEF development in terms of section 38(8) of the NHRA. and made a number of recommendations (see below). The validity of this final comment was reiterated in correspondence from HWC dated 6 July 2018. As such, the requirements of section 38(8) of the NHRA have been satisfied. In their Final Comment, the IACom of HWC noted that:

- There are concerns that the archaeological assessment was not sufficiently comprehensive in order to understand the extent and significance of the archaeological heritage resources. However, it would appear from both the HIA and the prior experience of a committee member that the area proposed for the turbines is not likely to be archaeologically rich. The importance of identifying and recording any potential resources is emphasized.
- The built environment assessment was not thorough. However, none of these buildings are to be directly impacted by the proposed turbines.
- The cumulative impacts upon the R354 scenic route will be equally significant and this is an important tourist route into the region. These impacts are inevitable and cannot be mitigated.
- The Wind Energy Facilities proposed in this area are included in the renewable energy development zone (REDZ). It is understood that an SEA was conducted as part of the process of identifying the REDZ's. HWC has not had the opportunity to input into the SEA nor has it had sight of the document.

HWC resolved to support the recommendations of the HIA subject to the following conditions:

- The 20-30 metre buffers proposed in the archaeological specialist study for the graveyard (RK_GI) should be implemented and respected throughout the lifetime of the project;

- The standard buffer of 500 meters from any wind turbine that applies to occupied buildings must be equally applied to all unoccupied buildings older than 60 years on the site.
- All stone walled sites, regardless of whether they have been identified prior to construction or not, should be regarded as no-go areas. If they cannot be avoided then they should be reported to an archaeologist who would advise on the need for mitigation;
- The small area on Kranskop, Wilgehout Fontein 87, outlined in green on figure 2 of the palaeontological study by J. E. Almond (2016), "features palaeontologically important, well-preserved fossil wood from the Waterford Formation and must be safeguarded from development". Once the final WEF layout is determined and before construction commences, the two areas of Waterford Formation outcrop nearby, that are outlined in red (figure 2 of palaeontological study by J.E. Almond) must be surveyed by a professional palaeontologist to record, safeguard and sample any well preserved fossil material.
- A targeted walk-down of the final layout must be conducted by an archaeologist approved by the responsible heritage authority (and with relevant qualifications and experience and professional standing in heritage management in terms of S 38 (2) (a)), at least six months prior to construction in order to determine whether any archaeological recording and mitigation measures may still be required and to identify any further sites in proximity to the footprint that need to be mitigated or treated as no-go areas during all phases of the project. A report to HWC is required for approval;
- The ECO must be briefed on what to look out for in terms of archaeological and palaeontological heritage resources that might be revealed during construction;
- The ECO must report as described below. If any archaeological material, palaeontological material or human burials are uncovered during the course of development then work in the immediate area must be halted and the find protected in situ as far as is possible. The find would need to be reported to the heritage authorities and may require inspection by an appropriate heritage practitioner. Such heritage is the property of the state and may require excavation and curation in an approved institution.

EA was granted for the Rietvalley WEF on 17 September 2019. In the EA, various requirements were stipulated in terms of impacts to Historical, Cultural and Palaeontological sites (Table 1 below).

Table 1: EA requirements for Heritage

<i>EA Requirements</i>	<i>Implementation</i>
All wind turbines must avoid all areas designated as "no-go" areas as well as their buffers	Addressed in this report
The final placement of turbines must follow a micro siting procedure involving a walk-through and identification of any sensitive areas by ecological, avifaunal, bat, surface water and heritage specialists	Addressed in this report
If archaeological heritage material, fossils and human remains are uncovered during construction, all work must cease immediately and be reported to the South African Heritage Resources Agency (SAHRA) so that a systematic and professional investigation / excavation can be undertaken.	During construction
Exclusion of sensitive ecological, heritage and paleontological areas from construction activities	At construction



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must inform micro siting of all development activities.	
A 60m buffer must be applied around all identified archaeological sites.	Addressed in this report
Pre-construction archaeological monitoring is required. The appointed archaeologist must keep a list documenting all identified farm infrastructure.	Addressed in this report
If concentrations of archaeological heritage material, fossils and human remains are uncovered during construction, all work must cease immediately and be reported to the South African Heritage Resources Agency (SAHRA) so that a systematic and professional investigation /excavation can be undertaken.	During construction
Construction managers/foremen must be informed before construction starts of the possible types of heritage sites and cultural material that may be encountered and the procedures to follow when they find sites.	To be completed
All buffers and no-go areas stipulated in the EIAR must be adhered to for both the facilities and all roads and powerlines	Addressed in this report
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	During construction
All construction and maintenance crew and vehicles (except small vehicles which may use existing farm tracks) must be kept out of the buffer zones.	During construction
The final layout must be shown to the appointed archaeologist before implementation to confirm that all significant heritage resources have been adequately protected.	Addressed in this report
A conservation management plan must be drafted and submitted to SAHRA for review and comment	To be completed



1.2 Description of Property and Affected Environment

The Rietkloof WEF is nearly 18km north of Matjiesfontein on the western side of the R354 that connects Sutherland to Matjiesfontein. This WEF is one of a number of other WEFs that are proposed in the area between Sutherland, Matjiesfontein, the Ceres Karoo and the Moordenaars Karoo. The turbines are mainly located on the top of a series of moderately high ridges and koppies that characterise the study area. The WEF can be accessed from the south via Rietkloof and Volstruisfontein farms or via Fortuin farm in the northeast section of the WEF. Hartjeskraal lies in the centre of the WEF and most of the turbine positions can be access from there as well as from Barendskraal farm towards the northwest end. The southern end of the study area drops down abruptly to a level and wide valley plain that separates the Dwyka tillite ridges overlooking the northern side of Matjiesfontein and continues northwestwards into the Ceres Karoo where another windfarm (Perdekraal) has been built.

The agricultural activities have predominantly consisted of sheep farming with very small scale crop agriculture such as onion seeds accompanied by subsistence farming. Ruins dot the area along the gravel access roads linking up the old farms but the extended drought in the mid 2010s has made a noticeable impact on the vegetation and water levels available. A prolonged water shortage is still in place at Sutherland to the north and much of the farming activities have been scaled back to adapt to the intensely arid conditions experienced here. The vegetation consists of succulent karoo bushes and much of the terrain is broken and rocky. Most of the turbine positions have to be reached on foot as there are only a few connecting jeep tracks, mostly on very steep and unlevel ground, besides the main dirt road linking Barendskraal - Hartjeskraal - Volstruisfontein - Rietkloof and the R354.



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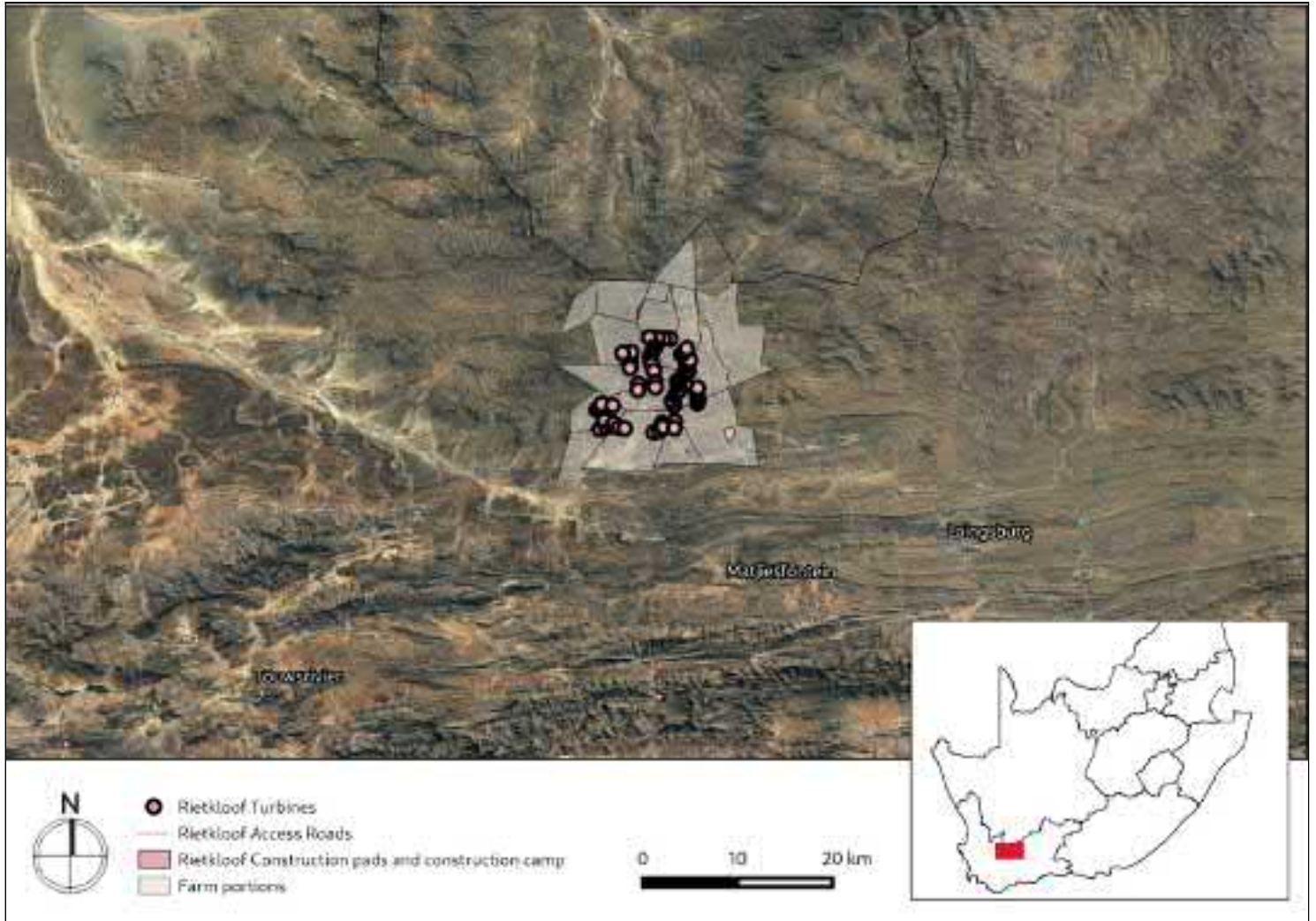


Figure 11: Close up satellite image indicating proposed location of the Rietkloof WEF development

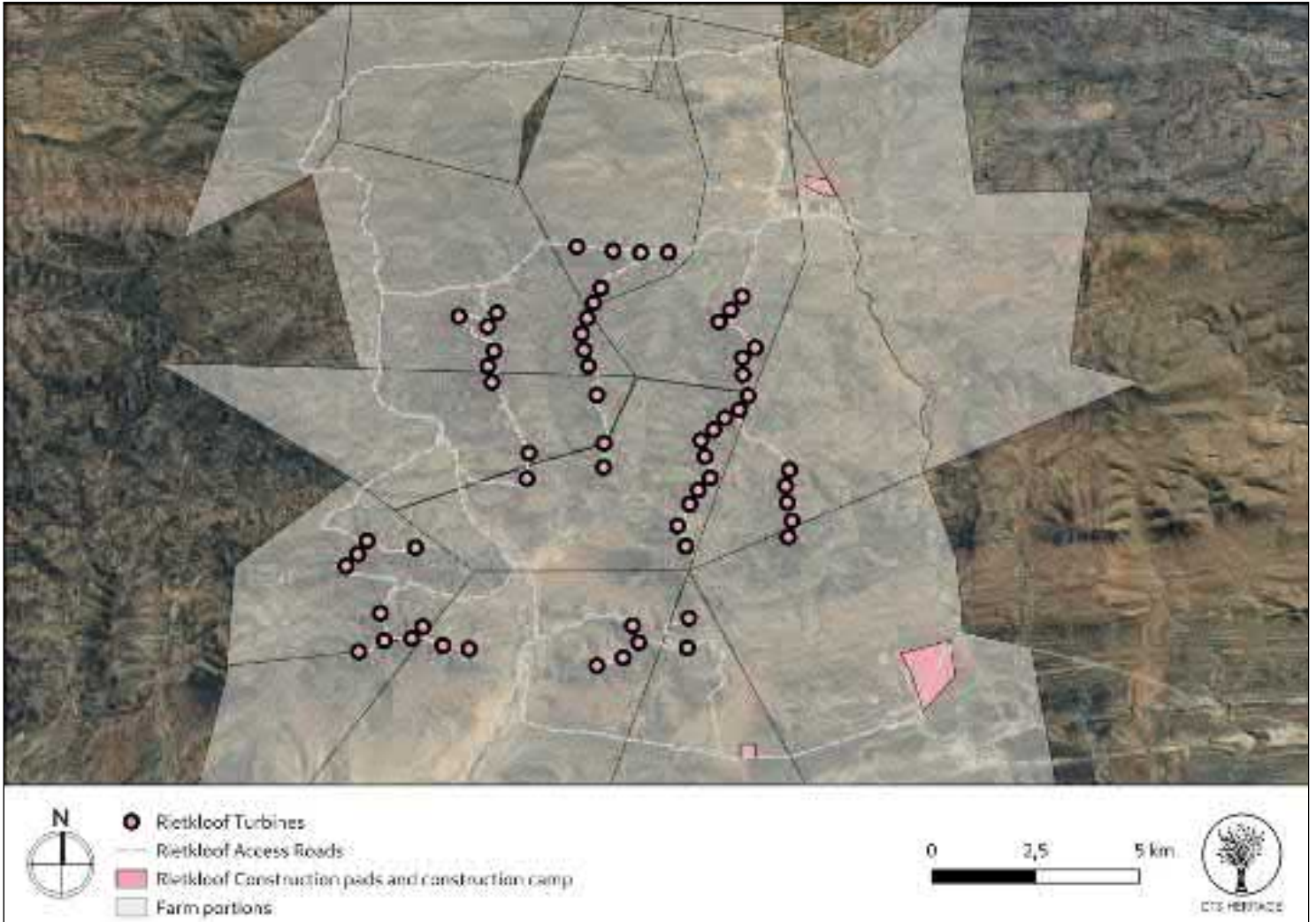


Figure 1.2: Final proposed layout for the Rietkloof WEF development

2. METHODOLOGY

2.1 Purpose of Walkdown

In the conditions of the Environmental Authorisation (2016), it was required that the final layout should be shown to the appointed archaeologist before implementation to confirm that all significant heritage resources have been adequately protected. This was also required by HWC. As the final layout of the Rietkloof WEF has changed, an archaeological walkdown was completed.

2.2 Summary of steps followed

- An archaeologist conducted a full detailed walkdown and micro-siting of the Final development footprint for the Rietkloof WEF between 24 and 28 July 2021 to determine what archaeological resources are likely to be impacted by the approved development.
- 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).



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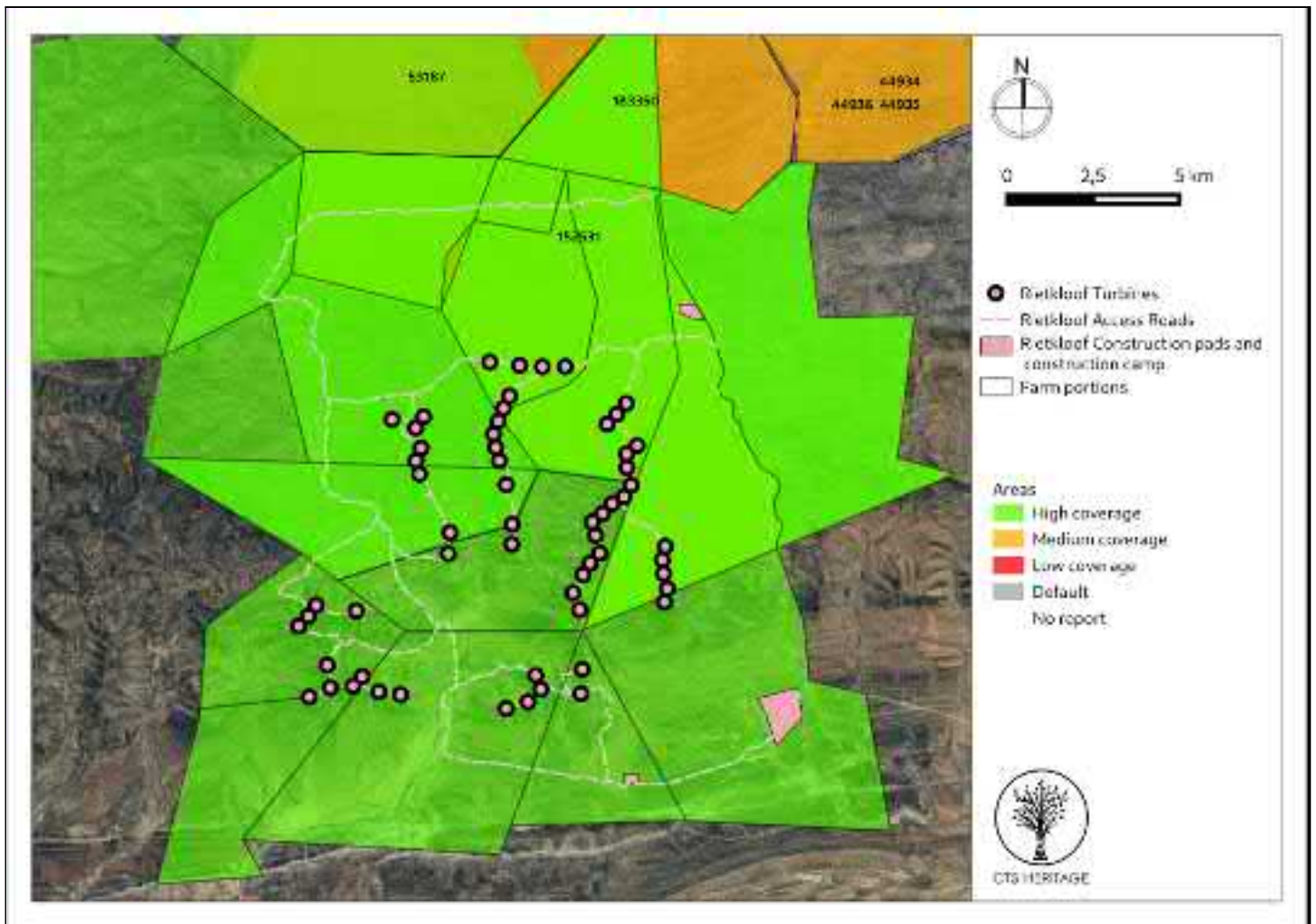


Figure 2: Close up satellite image indicating proposed location of development in relation to heritage studies previously conducted

2.3 Constraints & Limitations

While the overall archaeological visibility was high as the vegetation cover is relatively sparse, movement across this terrain is challenging underfoot as the ridges are covered with eroding sandstone, slates and greywacke. Recording of historical layering of heritage resources such as stock kraals, ruins, windmills and dams was relatively unencumbered as the ridges and access roads provided ample access to identify these structures. Stone Age material was concentrated lower down the valleys, albeit rarely in great densities, while isolated flakes were encountered higher up on the ridges.

3. HISTORY AND EVOLUTION OF THE SITE AND CONTEXT

The area proposed for the Rietkloof WEF is located immediately adjacent to the proposed Brandvalley WEF and is located within a REDZ area. The results of the heritage assessments completed for projects in this area have relevance here.

The area proposed for development is located approximately 30km north of Matjiesfontein and is firmly located within



the southern Roggeveld. This part of the Karoo is prized for its wide-open spaces and expansive vistas. Hart et al. (2016) note that the cultural landscape of this area is agricultural in nature, and consists of mostly stock farming with very occasional agriculture. The area is isolated with natural qualities and semi-desert landscapes. The interaction between the topography, geology, flora and historical remnants of human occupation of the area form a unique cultural landscape.

The Karreebosch HIA (2015) “revealed that the study area is relatively austere in terms of pre-colonial heritage, however valley bottoms contain evidence of early trekboer cultural landscapes – ruins, graves and occasional middens. These consist of collections of ruined stone and mud buildings, threshing floors and kraals located exclusively in the valley areas between the high longitudinal ridges that characterise the study area. There are a number of existing farm houses that contain 19th century fabric, however very few of these have anything more than moderate heritage significance. Parts of the study area enjoy very high aesthetic qualities with the area known by locals as “Gods Window” having grade II aesthetic qualities, hence the significance of the study area lies mainly with its undeveloped wilderness qualities. Interestingly, pre-colonial or stone age heritage and archaeology is extremely scarce in the areas that were searched. Very few archaeological sites of these kinds were recorded despite the fact that overall 9 experienced archaeologists were involved in scouring the landscape.”

The HIA for the Karreebosch WEF notes that “The most important colonial archaeological sites in the study area are associated with Ekkraal Valley, the Rietfontein-Wilgebosch River valley and the Krans Kraal-Karrekraal valley. The valley bottoms are archaeologically sensitive...”. Similar findings were made by ACO in their report (2010, SAHRIS Ref: 53187) for developments in close proximity. According to the ACO reports (2011, 2013 and 2015), parts of the study area enjoy very high aesthetic qualities hence the significance of the study area lies mainly with its undeveloped wilderness qualities which may be negatively impacted by the development of the proposed development.

A Heritage Impact Assessment was completed by Booth (2016) for the Brandvalley WEF. Booth (2016) notes that the area held several historical features (stone walling kraals and cottages) some with associated historical artefacts situated along the access roads in the valleys and associated with the homestead settlements. The area, however, also held evidence of both Middle and Later Stone Age stone artefacts alongside water courses and on the flat floodplains.

However, it must be noted that the proposed development is located within a Renewable Energy Development Zone which has been identified for this kind of development. In REDZ areas, there is a reasonable expectation that the cultural landscape of an area will be changed to be dominated, or at least heavily altered, by renewable energy development and its associated infrastructure. In fact, this is the intention of the REDZ areas.



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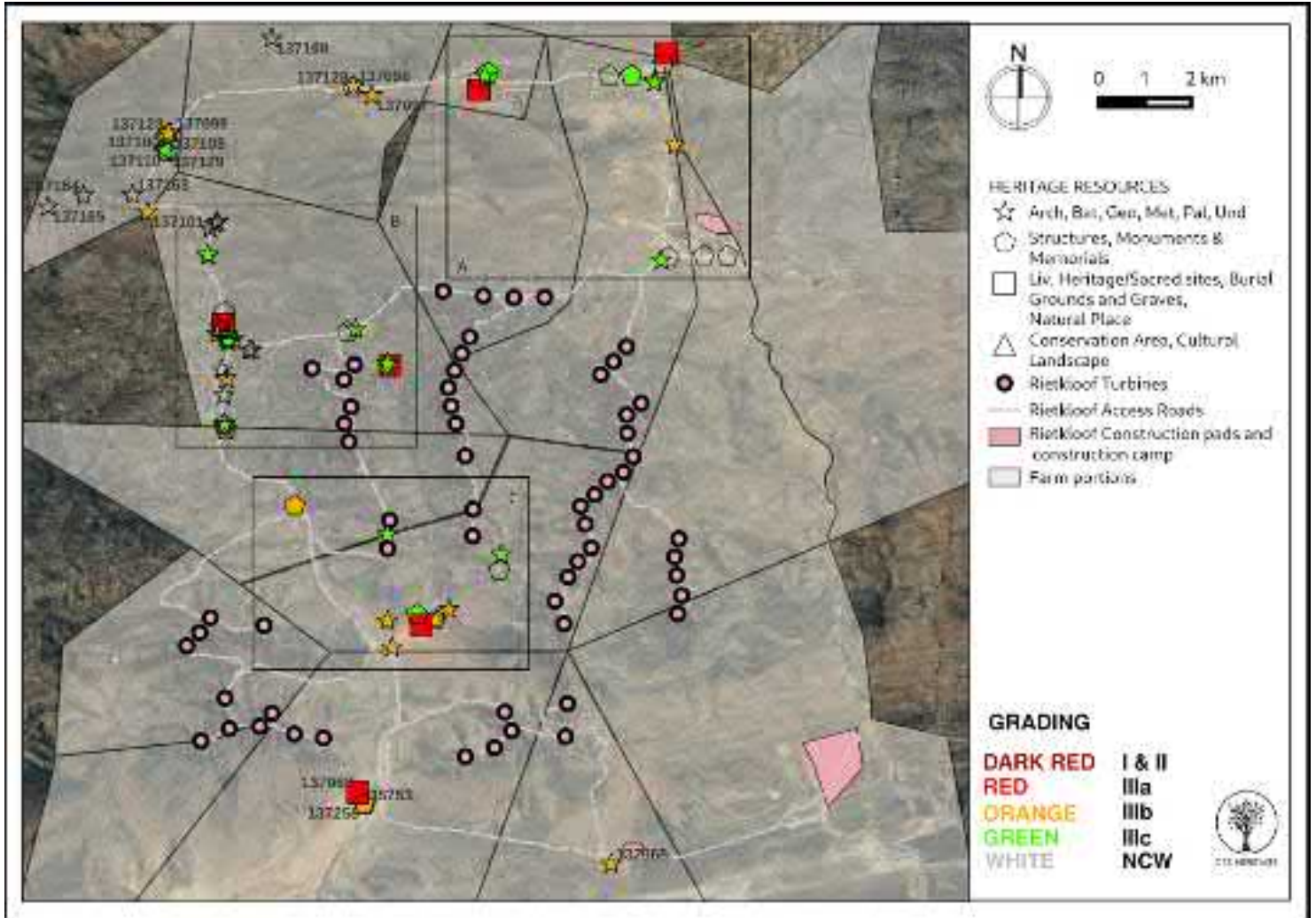


Figure 3. Heritage Resources Map. Heritage Resources previously identified in and near the study area from SAHRIS



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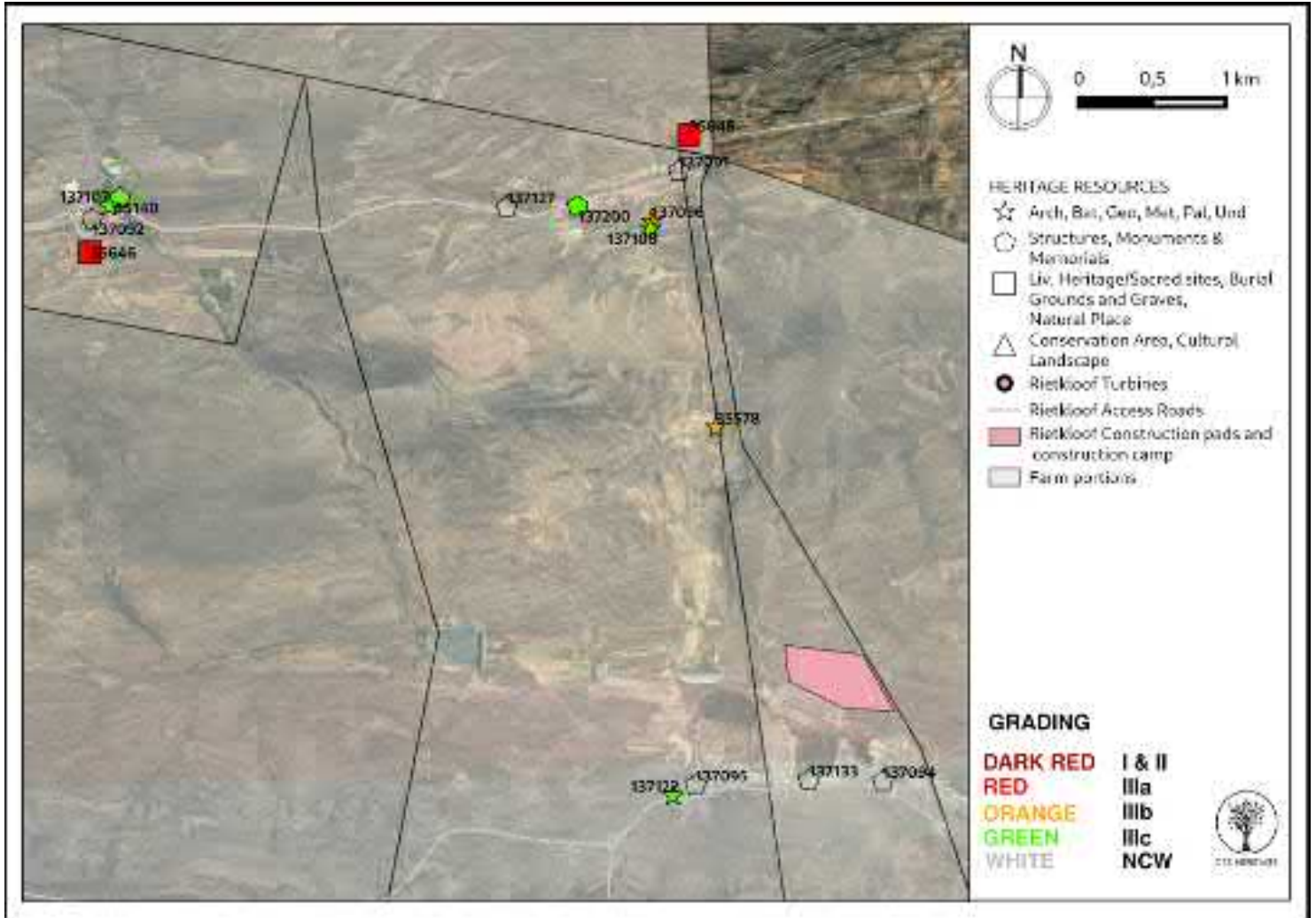


Figure 3.1. Heritage Resources Map. Inset A



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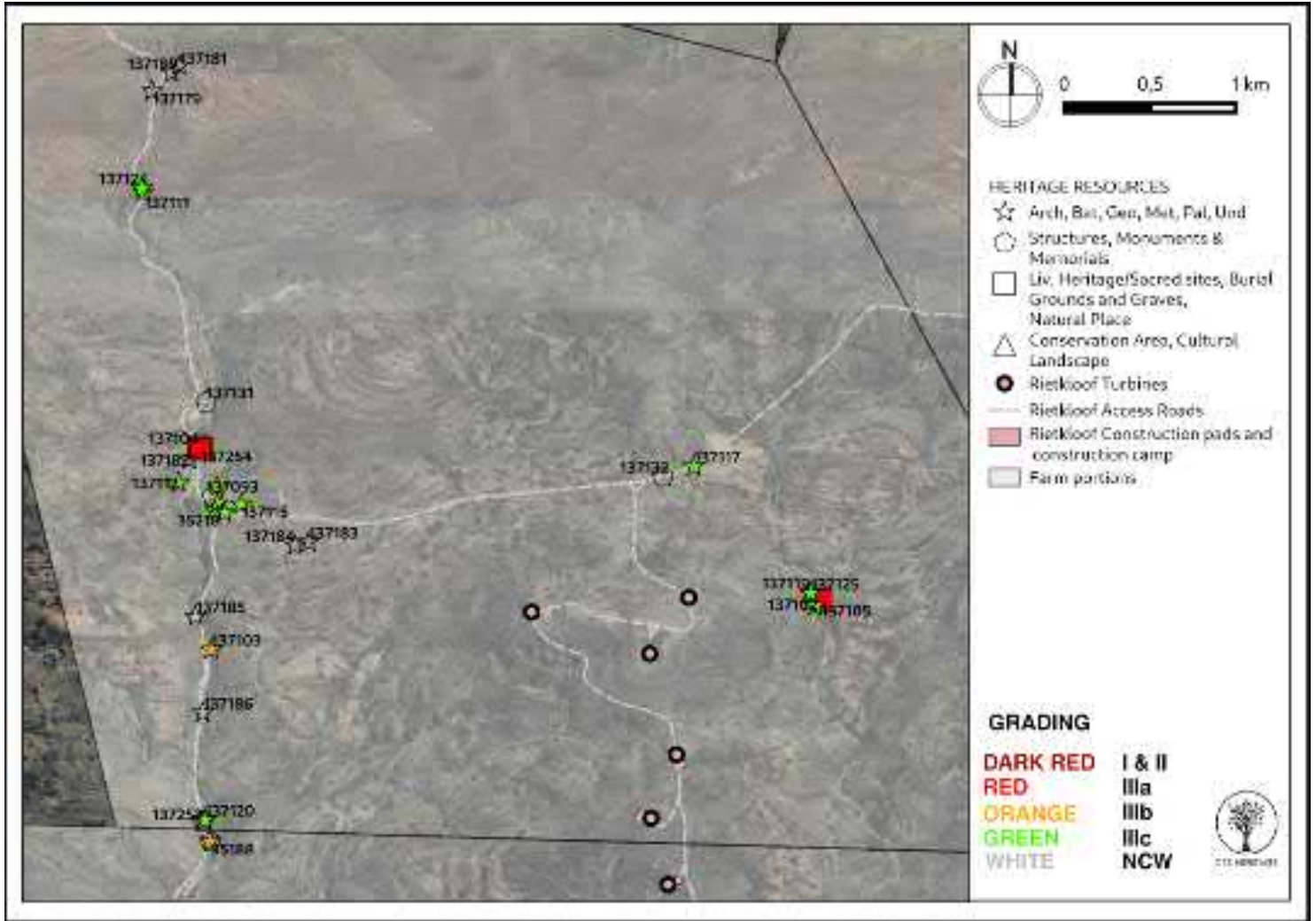


Figure 3.2. Heritage Resources Map. Inset B



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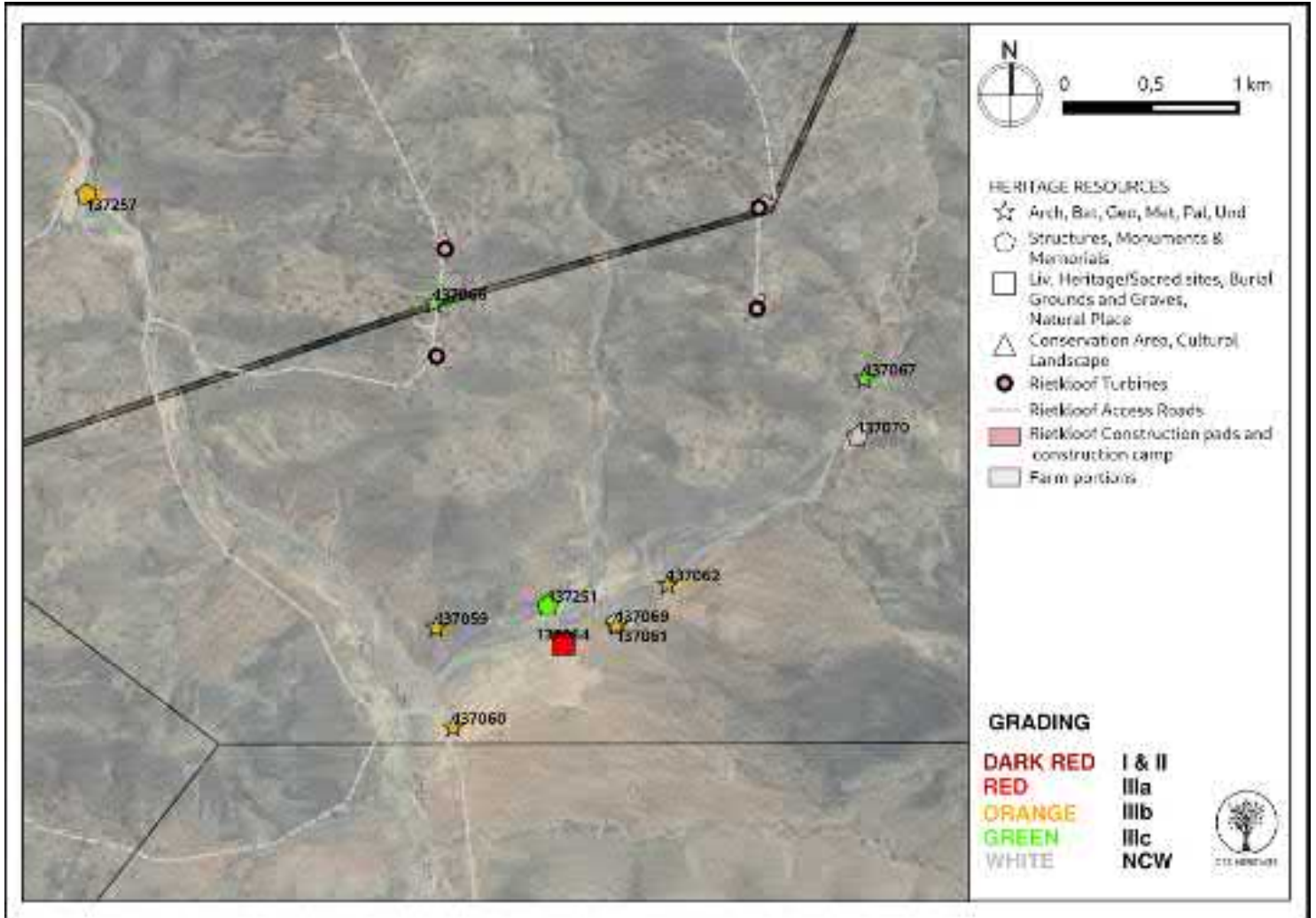


Figure 3.3. Heritage Resources Map. Inset C

4. IDENTIFICATION OF HERITAGE RESOURCES

4.1 Findings of previous assessments

Archaeology, Graves and the Built Environment

Similar findings to those made for the Brandvalley WEF and the Karreebosch WEF were made by Booth in HIA completed for the Rietkloof WEF HIA (2016). Booth (2016) notes that the Rietkloof WEF area “held several historical features (stone walling kraals and cottages) some with associated historical artefacts situated along the access roads in the valleys and associated with the homestead settlements. The area, however, also held evidence of both Middle and Later Stone Age stone artefacts alongside water courses and on the flat floodplains.”

All of the heritage resources identified by Booth (2016) have been recorded on SAHRIS and mapped relative to the final proposed layout. The previously identified heritage resources located in close proximity to the development area have been listed in Table 2 and mapped in Figure 3.

Table 2: Archaeological, palaeontological and built environment observations noted during the HIA (2016) completed for the Rietkloof WEF and associated infrastructure, and from other relevant heritage assessments (Mapped in Figure 3)

Site ID	Site no	Full Site Name	Site Type	Grading
35140	ROG009	Roggeveld 009	Building	Grade IIIc
35141	ROG010	Roggeveld 010	Building	Grade IIIc
35578	GK056	Gamma Kappa 056	Artefacts	Grade IIIb
35188	ROG024	Roggeveld 024	Ruin > 100 years	Grade IIIb
35214	ROG032	Roggeveld 032	Building	Grade IIIb
35216	ROG034	Roggeveld 034	Building	Grade IIIc
35217	ROG035	Roggeveld 035	Ruin > 100 years	Grade IIIc
35218	ROG036	Roggeveld 036	Stone walling	Grade IIIc
35753	ROG050	Roggeveld 050	Building	Grade IIIb
35185	ROG023	Roggeveld 023	Burial Grounds & Graves	Grade IIIa
35645	GK122	Gamma Kappa 122	Burial Grounds & Graves	Grade IIIa
35646	GK123	Gamma Kappa 123	Burial Grounds & Graves	Grade IIIa
137160	BWE-052	Brandvalley Wind Energy	Deposit	
137163	BWE-055	Brandvalley Wind Energy	Deposit	
137164	BWE-056	Brandvalley Wind Energy	Deposit	
137165	BWE-057	Brandvalley Wind Energy	Deposit	
137179	BWE-071	Brandvalley Wind Energy	Deposit	
137180	BWE-072	Brandvalley Wind Energy	Deposit	
137181	BWE-073	Brandvalley Wind Energy	Deposit	



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137182	BWE-074	Brandvalley Wind Energy	Deposit	
137183	BWE-075	Brandvalley Wind Energy	Deposit	
137184	BWE-076	Brandvalley Wind Energy	Deposit	
137185	BWE-077	Brandvalley Wind Energy	Deposit	
137186	BWE-078	Brandvalley Wind Energy	Deposit	
137199	KWF-014	KAREEBOSCH WIND FARM	Building	
137200	KWF-015	KAREEBOSCH WIND FARM	Building	
137251	KWF-039	KAREEBOSCH WIND FARM	Structures	
137252	KWF-040	KAREEBOSCH WIND FARM	Structures	
137253	KWF-041	KAREEBOSCH WIND FARM	Stone walling	
137254	KWF-042	KAREEBOSCH WIND FARM	Burial Grounds & Graves	
137255	KWF-043	KAREEBOSCH WIND FARM	Structures	
137257	KWF-044	KAREEBOSCH WIND FARM	Building	
137258	KWF-045	KAREEBOSCH WIND FARM	Building	
137059	RFWE-001	RIETKLOOF WIND ENERGY	Artefacts	Grade IIIb
137060	RFWE-002	RIETKLOOF WIND ENERGY	Artefacts	Grade IIIb
137061	RFWE-003	RIETKLOOF WIND ENERGY	Artefacts	Grade IIIb
137062	RFWE-004	RIETKLOOF WIND ENERGY	Artefacts	Grade IIIb
137063	RFWE-005	RIETKLOOF WIND ENERGY	Burial Grounds & Graves	Grade IIIa
137064	RFWE-006	RIETKLOOF WIND ENERGY	Burial Grounds & Graves	Grade IIIa
137065	RFWE-007	RIETKLOOF WIND ENERGY	Stone walling	Grade IIIc
137066	RFWE-008	RIETKLOOF WIND ENERGY	Stone walling	Grade IIIc
137067	RFWE-009	RIETKLOOF WIND ENERGY	Stone walling	Grade IIIc
137068	RFWE-010	RIETKLOOF WIND ENERGY	Artefacts	Grade IIIb
137069	RFWE-011	RIETKLOOF WIND ENERGY	Structures	
137070	RFWE-012	RIETKLOOF WIND ENERGY	Structures	
137091	BWE-001	Brandvalley Wind Energy	Building	
137092	BWE-002	Brandvalley Wind Energy	Building	
137093	BWE-003	Brandvalley Wind Energy	Building	
137094	BWE-004	Brandvalley Wind Energy	Building	
137095	BWE-005	Brandvalley Wind Energy	Building	



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137096	BWE-006	Brandvalley Wind Energy	Artefacts	Grade IIIb
137097	BWE-007	Brandvalley Wind Energy	Artefacts	Grade IIIb
137098	BWE-008	Brandvalley Wind Energy	Artefacts	Grade IIIb
137099	BWE-009	Brandvalley Wind Energy	Artefacts	Grade IIIb
137100	BWE-010	Brandvalley Wind Energy	Artefacts	Grade IIIb
137101	BWE-011	Brandvalley Wind Energy	Artefacts	Grade IIIb
137102	BWE-012	Brandvalley Wind Energy	Artefacts	Grade IIIb
137103	BWE-013	Brandvalley Wind Energy	Artefacts	Grade IIIb
137104	BWE-014	Brandvalley Wind Energy	Burial Grounds & Graves	Grade IIIa
137105	BWE-015	Brandvalley Wind Energy	Burial Grounds & Graves	Grade IIIa
137106	BWE-016	Brandvalley Wind Energy	Stone walling	Grade IIIc
137107	BWE-017	Brandvalley Wind Energy	Stone walling	Grade IIIc
137108	BWE-018	Brandvalley Wind Energy	Stone walling	Grade IIIc
137109	BWE-019	Brandvalley Wind Energy	Stone walling	Grade IIIc
137110	BWE-020	Brandvalley Wind Energy	Stone walling	Grade IIIc
137111	BWE-021	Brandvalley Wind Energy	Stone walling	Grade IIIc
137112	BWE-022	Brandvalley Wind Energy	Stone walling	Grade IIIc
137113	BWE-023	Brandvalley Wind Energy	Stone walling	Grade IIIc
137114	BWE-024	Brandvalley Wind Energy	Stone walling	Grade IIIc
137115	BWE-025	Brandvalley Wind Energy	Stone walling	Grade IIIc
137116	BWE-026	Brandvalley Wind Energy	Stone walling	Grade IIIc
137117	BWE-027	Brandvalley Wind Energy	Stone walling	Grade IIIc
137118	BWE-028	Brandvalley Wind Energy	Stone walling	Grade IIIc
137119	BWE-029	Brandvalley Wind Energy	Stone walling	Grade IIIc
137120	BWE-030	Brandvalley Wind Energy	Stone walling	Grade IIIc
137122	BWE-032	Brandvalley Wind Energy	Stone walling	Grade IIIc
137123	BWE-033	Brandvalley Wind Energy	Artefacts	Grade IIIb
137124	BWE-034	Brandvalley Wind Energy	Artefacts	Grade IIIc
137125	BWE-035	Brandvalley Wind Energy	Artefacts	Grade IIIc
137127	BWE-037	Brandvalley Wind Energy	Structures	
137128	BWE-039	Brandvalley Wind Energy	Structures	
137129	BWE-040	Brandvalley Wind Energy	Structures	

137131	BWE-042	Brandvalley Wind Energy	Structures	
137132	BWE-043	Brandvalley Wind Energy	Structures	
137133	BWE-044	Brandvalley Wind Energy	Structures	

Palaeontology

According to the SAHRIS Palaeosensitivity Map, the area proposed for development is underlain by sediments that are of moderate, high and very high palaeontological sensitivity (Figure 4.1).

The Palaeontological assessment completed for the Rietkloof WEF by Almond (2016) notes that “The Rietkloof WEF study area lies in the mountainous Klein-Roggeveldberge region and is underlain by around twelve formations of potentially fossil-bearing sedimentary rocks. The majority of the bedrocks are of Palaeozoic age (Early to Middle Permian) and belong to the Karoo Supergroup which is internationally famous for its rich fossil record. Palaeontological field assessment of the Rietkloof WEF study area shows that in this portion of the south-western Karoo:

- Dwyka Group and Lower to Middle Ecca Group bedrocks in the low-lying, southern portion of the area are tectonically deformed and weathered, with low-diversity trace fossil assemblages of limited scientific interest. This also applies to the Whitehill Formation that elsewhere, outside the study area, may be of high palaeontological sensitivity.
- Waterford Formation (Upper Ecca Group) deltaic bedrocks underlying the mountainous southern portion of the main development footprint are generally fossil-poor, apart from low-diversity trace fossil assemblages. However, isolated blocks and rare logs of well-preserved petrified wood found within the eastern portion of the study area are of high scientific and conservation value.
- Abrahamskraal Formation (Lower Beaufort Group) fluvial bedrocks underlying the high-lying northern portion of the study area are generally considered to be of high palaeontological sensitivity. However, in this area of the SW Karoo they are fossil-poor, apart from occasional horizons with plant debris or low-diversity trace fossils, including unconfirmed large tetrapod (terrestrial vertebrate) burrows. Fossil vertebrate skeletal remains (bones, teeth) are very rare indeed in these lowermost Beaufort Group rocks. None have been recorded as yet within the Rietkloof WEF study area, but isolated occurrences of probable small dicynodonts have recently been found just to the north (Brandvalley WEF project area).
- Late Cenozoic superficial sediments (alluvium, colluvium, calcretes, soils, surface gravels etc) overlying the Palaeozoic bedrocks are of low palaeontological sensitivity. Pediment and surface gravels along the foot of the Klein-Roggeveld Escarpment locally contain numerous clasts of petrified wood reworked from the Karoo Supergroup outcrop area to the north.

The overall impact significance of the construction phase of the proposed wind energy project is assessed as MODERATE(negative) in terms of palaeontological heritage resources. This is a consequence of (1) the paucity of irreplaceable, unique or rare fossil remains within the development footprint, (2) the high levels of bedrock weathering and tectonic deformation in the southern part of the study area, as well as (3) the extensive superficial sediment cover

overlying most potentially-fossiliferous bedrocks within the Rietkloof WEF study area... No significant further impacts on fossil heritage are anticipated during the planning, operational and decommissioning phases of the WEF.”

Almond (2016) also notes that “The great majority of the Rietkloof WEF study area is assessed as being of low palaeontological sensitivity due to the scarcity of significant fossil vertebrate, plant and other remains here. Sensitive no-go areas within the proposed development footprint itself have not been identified in this study. The concentration of blocks and logs of well-preserved petrified wood from the Waterford Formation that are exposed on the slopes of Kranskop, Wilgehout Fontein 87 constitute a notable exception. This highly sensitive area, which in fact lies outside the proposed WEF development footprint, should not be disturbed. Pending the potential discovery of substantial new fossil remains during construction, specialist palaeontological mitigation is only recommended within two narrow upland areas of Waterford Formation outcrop close to Kranskop.”

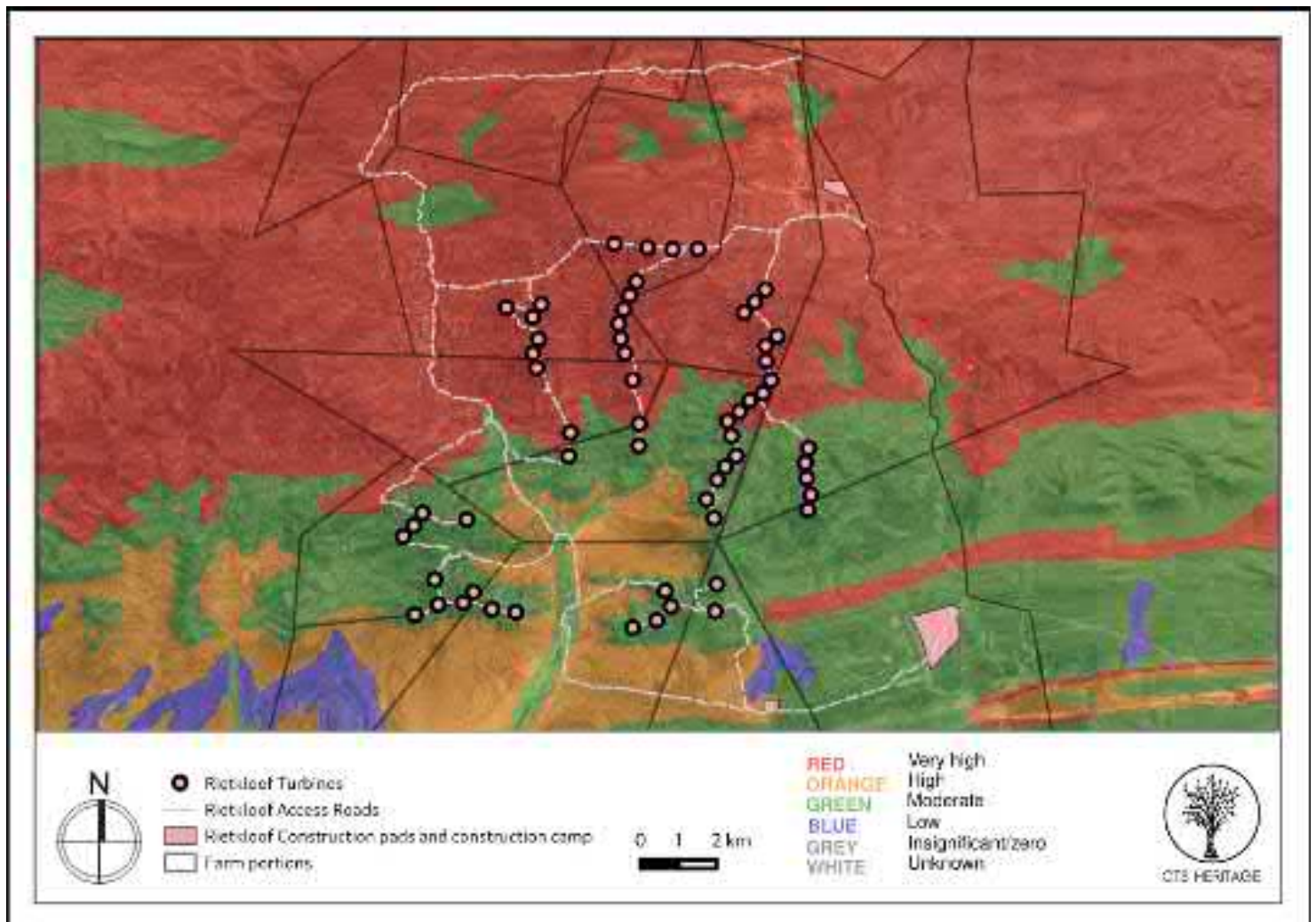


Figure 4.1: Palaeosensitivity Map. Indicating fossil sensitivity underlying the study area



Summary of heritage recommendations from the completed reports:

The overall area is considered as having a medium - high cultural heritage significance. The proposed development of the Rietkloof WEF may proceed, however, the following recommendations must be considered prior to the development activities:

- This report must be submitted to Heritage Western Cape (HWC), the heritage authority for any Western Cape developments, and as a commenting authority in terms of the National Heritage Resources Act 25 of 1999, Section 38, if the comment issued for the exact same layout is not considered relevant by HWC.
- No turbines are to be constructed on Tafelkop, situated at the meeting of farm boundaries: Hartjieskraal 77, Vogelstruisfontein 81, Annex Hartjieskraal 82 and Rietkloof 88. This recommendation was according to the HWC Final Comment (23/01/2013; Case No. 111020JB18) for the proposed Roggeveld Wind Farm. The current 51 turbine layout respects this mitigation measure.
- If any of the old farm buildings are intended for rehabilitation or re-use or demolition a qualified and experienced professional (historical archaeologist / historical architect) must be consulted.
- Substations: The recommendation included in the EIA report to exclude Substation 7 (SS7) situated on the Farm Hartjieskraal 77 was implemented by the developer. Both substation positions 5 and 6 are acceptable.
- Construction Camps: Construction camp 13 that has been grouped in Area 6 (Figure 16) would be the preferred option for the establishment of the construction camp. The proposed area is suitably situated close to the main road (R354) and does not impede upon the landscape along the valleys. Stone artefact scatters have been observed along this internal access road stretching further towards the foothills of the mountains across the floodplains to the north and south of this internal farm road.
- The existing internal access roads be upgraded up to the 9 m wide proposed expansion except in the cases that heritage resources (including archaeological, historical and palaeontological) as well as the other studies conducted may be negatively impacted and recommend differently. Recommendations for the establishment of 20 m - 30 m buffer zones that are clearly demarcated and, in some instances, the possible rerouting of the proposed road to avoid negative impact and promote the implementation of precautionary measures be adopted for heritage resources occurring along the route (stone and historical artefact scatters, stone walling features, graveyards, etc.) have been detailed in the report and repeated below
 - Stone Artefact Occurrences, Scatters and Sites: The upgrading of the road be limited to the existing internal road. It is expected that scatters of stone artefacts would be uncovered during the upgrade and construction of the access road. This has been established by observance and recording the extent of stone artefacts occurring along this route.
 - It is also recommended that a detailed survey focusing on the floodplains should be conducted to establish the real extent of the artefact occurrences prior to development. Consultation with local Western Cape archaeological repositories (generally museums and universities) can be made to determine whether it would be necessary for to make a collection of artefacts.
 - RK_HS1 (Rietkloof 88): The existing road only measures 3 m with not much space to widen the road without affecting the built environment structures. It is proposed that the road preferably be diverted to the north of the demarcated 84 Rietkloof homestead through flat floodplains to avoid having to go past

the graveyard. However, if this not possible owing to input from other specialist studies, a buffer to the north of 20 m – 30 m from the farmhouse be established for the diversion of the access road. It is suggested that the existing internal road passing through the homestead (RK_HS1) not be used during the development activities as an access route to avoid negative impact. It is suggested that the existing internal road passing through the homestead (RK_HS1) not be used during the development activities as an access route.

- RK_SW2 (Rietkloof 88): A 30 m buffer be establishment around the kraal and clearly demarcated to avoid any negative impact during construction of the access road and the proposed access roads to Turbines at the top the hill preferably be constructed 30 m to the west of the stone walling kraal situated on the slope within the proposed access road and 200 m buffer.
- RK_HS2 (Vogelstruisfontein 81): A 30 m buffer be established around the end portion of this wall and clearly demarcated as to avoid any negative impact. The graveyard area (RK_G2) be fenced off to avoid any possible damage to the graves and informal burials.
- RK_SW8 (Hartjieskraal 77): A 20 m – 30 m buffer be established and clearly demarcated to avoid any negative impact to the feature.
- An archaeological heritage walk-through survey must be conducted if any changes to the positions of the wind turbines, associated infrastructure and roads outside the scope of this study are made for the final layout and further recommendations and mitigation measures be suggested if necessary.
- If concentrations of historical and pre-colonial archaeological heritage material and/or human remains (including burials and graves) are uncovered during construction, all work within close vicinity of the find must cease immediately and be reported the South African Heritage Resources Agency (SAHRA) (021 462 4502) or Heritage Western Cape (HWC) (021 483 5959) so that systematic and professional investigation/excavation can be undertaken. Phase 2 mitigation in the form of testpitting/sampling or systematic excavations and collections of the pre-colonial shell middens and associated artefacts will then be conducted to establish the contextual status of the sites and possibly remove the archaeological deposit before development activities within the specific area can continue.
- Construction managers/foremen and/or the Environmental Control Officer (ECO) should be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites

Palaeontology Recommendations

- The area marked in RED in Figure 4.2 and 4.3 has very high levels of palaeontological sensitivity and no impact here is permitted.
- The area marked in Orange in Figure 4.2 and 4.3 has high levels of palaeontological sensitivity and as such, these two areas should be inspected for fossil wood occurrences by a professional palaeontologist. Mitigation would normally involve the scientific recording and judicious sampling or collection of fossil material as well as associated geological data (e.g. stratigraphy, sedimentology, taphonomy). Where practicable, fossils remaining on site should be safeguarded, for example by moving them away from the development footprint.



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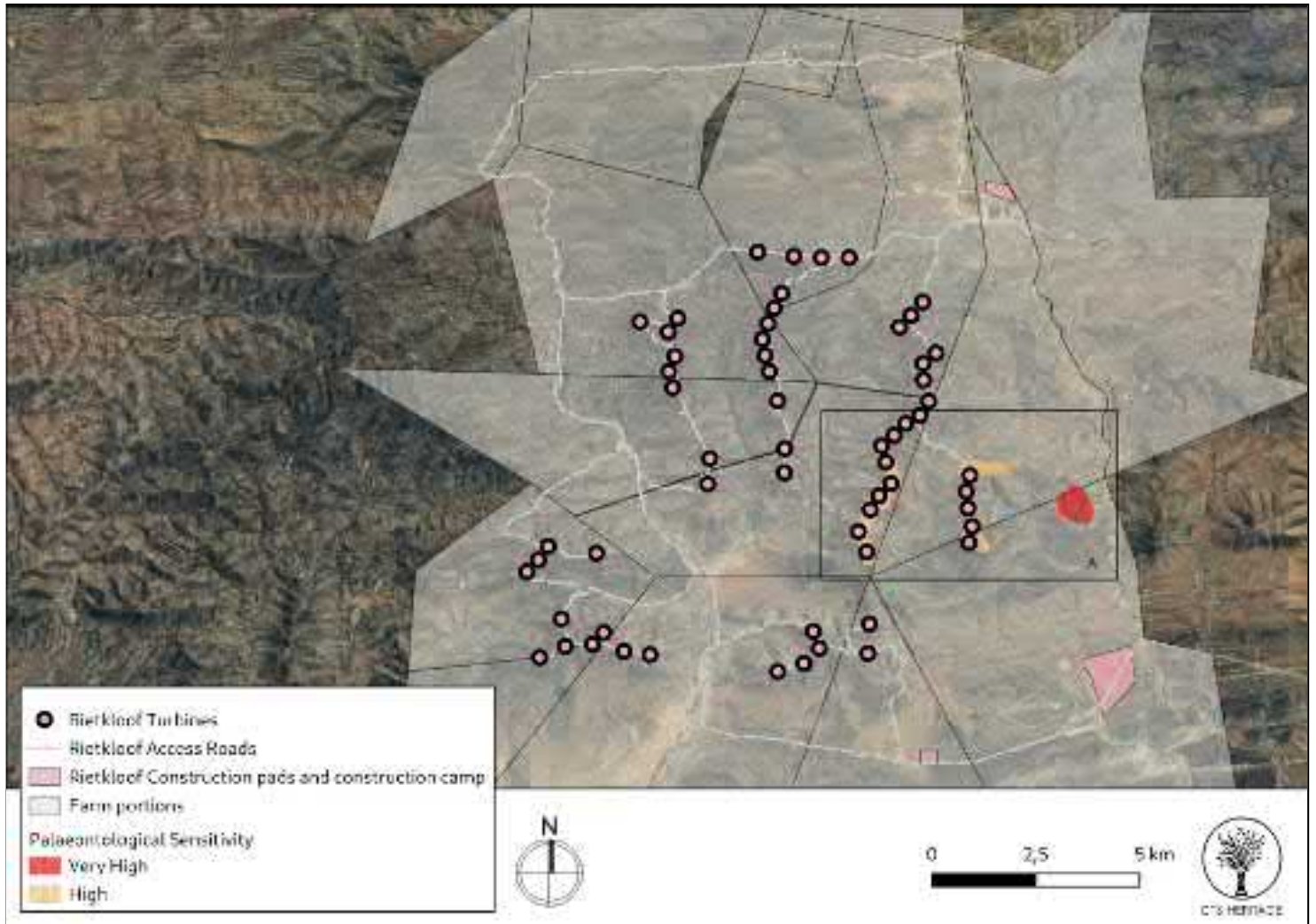


Figure 4.2: Palaeosensitivity Map. Indicating fossil sensitivity underlying the study area



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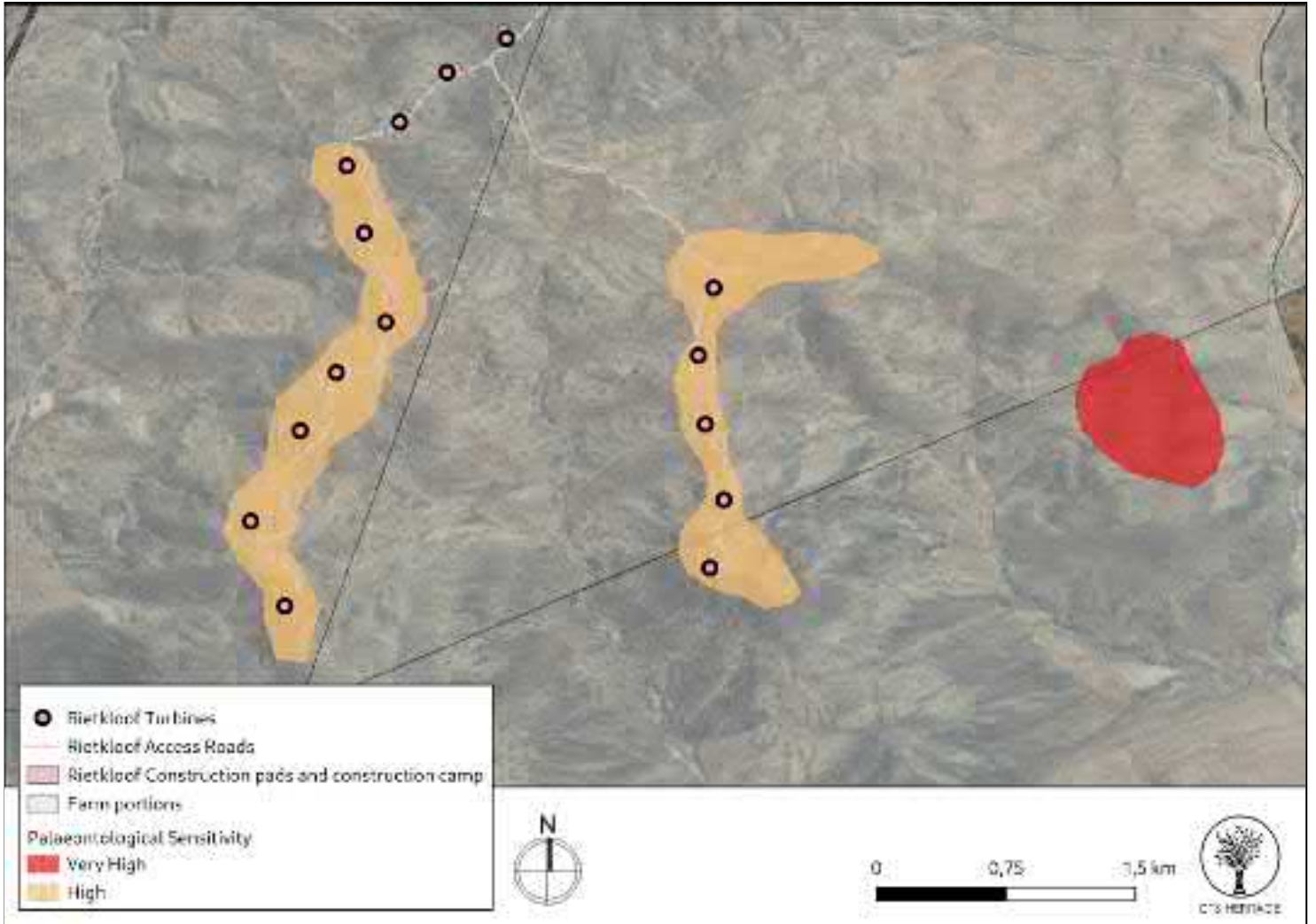


Figure 4.3: Palaeosensitivity Map. Indicating fossil sensitivity underlying the study area



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Figure 5.1: Contextual Image of development area



Figure 5.2: Contextual Image of development area



Figure 5.3: Contextual Image of development area



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Figure 5.4: Contextual Images of Development Area



Figure 5.5: Contextual Images of Development Area



Figure 5.6: Contextual Images of Development Area



Figure 5.7: Contextual Images of Development Area



Figure 5.8: Contextual Images of Development Area



Figure 5.9: Contextual Images of Development Area



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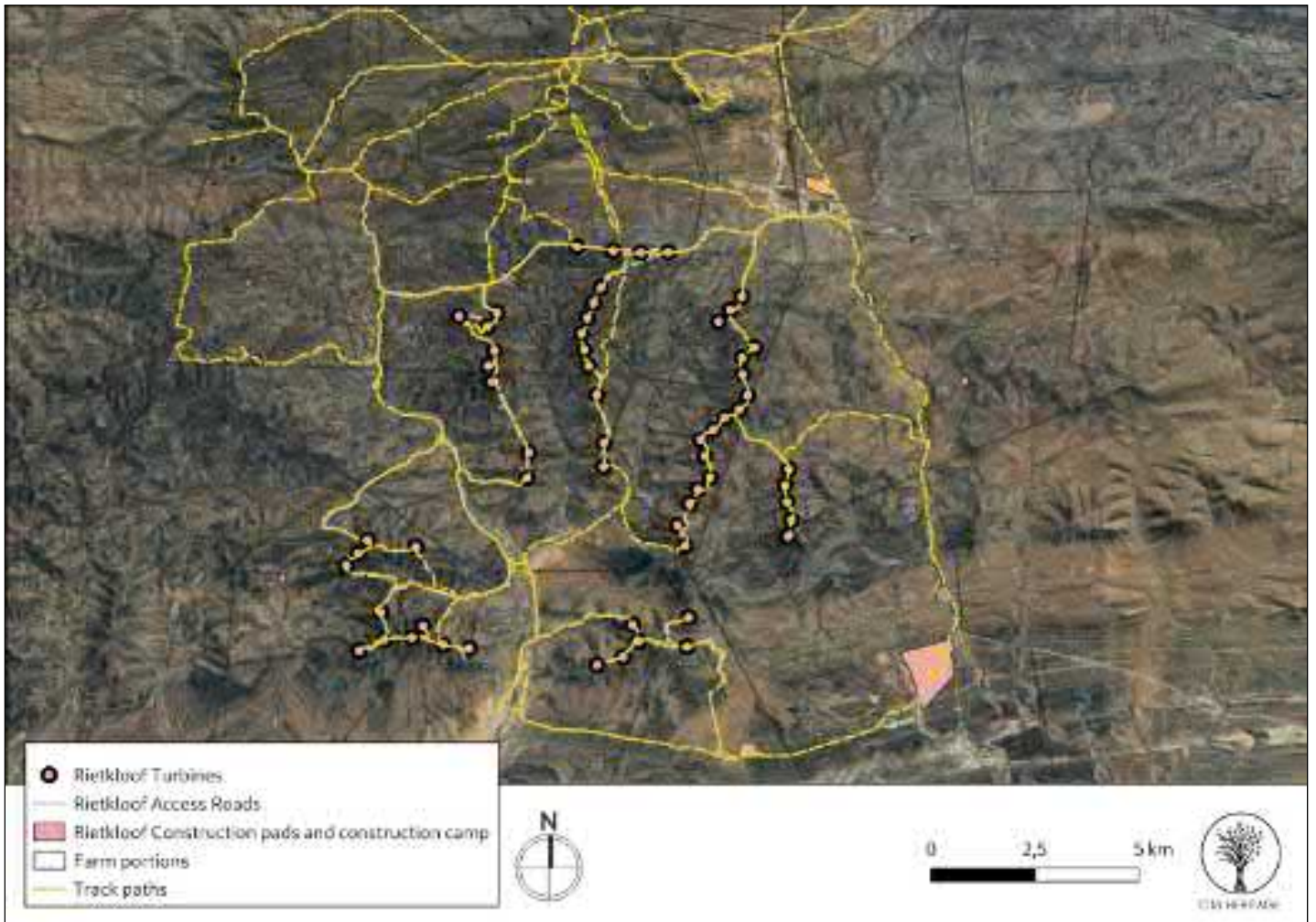


Figure 6.: Overall track paths of foot survey

4.2 Heritage Resources identified in the Walkdown

The locations of recordings made during the previous studies were included in the planning of the walkdown to ensure that additional ruins and historical infrastructure wasn't overlooked due to potential changes in the layout of the final design of the WEF and access roads. Only one fairly large stone walled kraal (RK006) was found that had been missed during the previous surveys and it isn't clear whether the layouts provided then were drawn in the vicinity of this site. However, besides this site, no obvious omissions were found during the survey of the Rietkloof WEF and the coverage along existing jeep tracks and gravel farm roads was therefore deemed to have adequately recorded the historical archaeology and built environment heritage of the area.

Stone Age sites were expected to be very scarce and this was borne out yet again in the foot survey of the ridges where the WEF roads and turbine positions have been planned. Only a few isolated Later and Middle Stone Age sites were located and the artefacts showed signs of retouch, especially on flakes derived from chert. These locations have therefore been interpreted as representing temporary hunting and foraging locales taking advantage of the wide views down onto the valleys either side of the ridges. Less than 1% of the overall archaeological material found in the area is therefore located on the ridges that are windswept, highly rocky and difficult to move through on foot. No overhangs or even substantial outcrops of boulders providing natural shelter were found on the ridges.

Table 3: Archaeological and built environment observations noted during the walk down for the WEF and associated infrastructure

Obs #	Site Name	Description	Period	Co-ordinates		Grading
RK001	Rietkloof 001	Chert core, patinated hornfels flakes, Artefacts on level ground, small pans but quite rocky	MSA	-33.08508	20.59137	NCW
RK002	Rietkloof 002	Patinated hornfels flakes in pan	MSA	-33.08766	20.58939	NCW
RK003	Rietkloof 003	Chert and hornfels cores	MSA	-33.08808	20.58759	NCW
RK004	Rietkloof 004	Hornfels biface	MSA	-33.0875	20.58678	NCW
RK005	Rietkloof 005	Hornfels flake	MSA	-33.08242	20.58963	NCW
RK006	Rietkloof 006	Stone walled kraal 50x25m	Historic	-33.08555	20.53359	IIIB
RK007	Rietkloof 007	Matjiesfontein chert formal retouched flake. Chert flakes dropped on slopes of large valley below	MSA	-33.08518	20.53314	NCW
RK008	Rietkloof 008	Chert bladelet and flake	MSA	-33.08461	20.53302	NCW
RK009	Rietkloof 009	Hornfels flake. Artefacts dropping off on ridges considerably	MSA	-33.08148	20.53103	NCW
RK010	Rietkloof 010	Chert flake. Isolated flake on top of ridge which was unusual, not part of larger site	LSA	-33.08025	20.51256	NCW
RK011	Rietkloof 011	Chert flake	LSA	-33.07075	20.46493	NCW
RK012	Rietkloof 012	Chert, hornfels, quartzite flakes	LSA, MSA	-32.99232	20.5421	NCW
RK013	Rietkloof 013	Isolated chert flake	LSA	-33.03938	20.52984	NCW
RK014	Rietkloof 014	Farmers trap, corrugated sheet, wire, wooden post	Modern	-33.02031	20.41447	NCW



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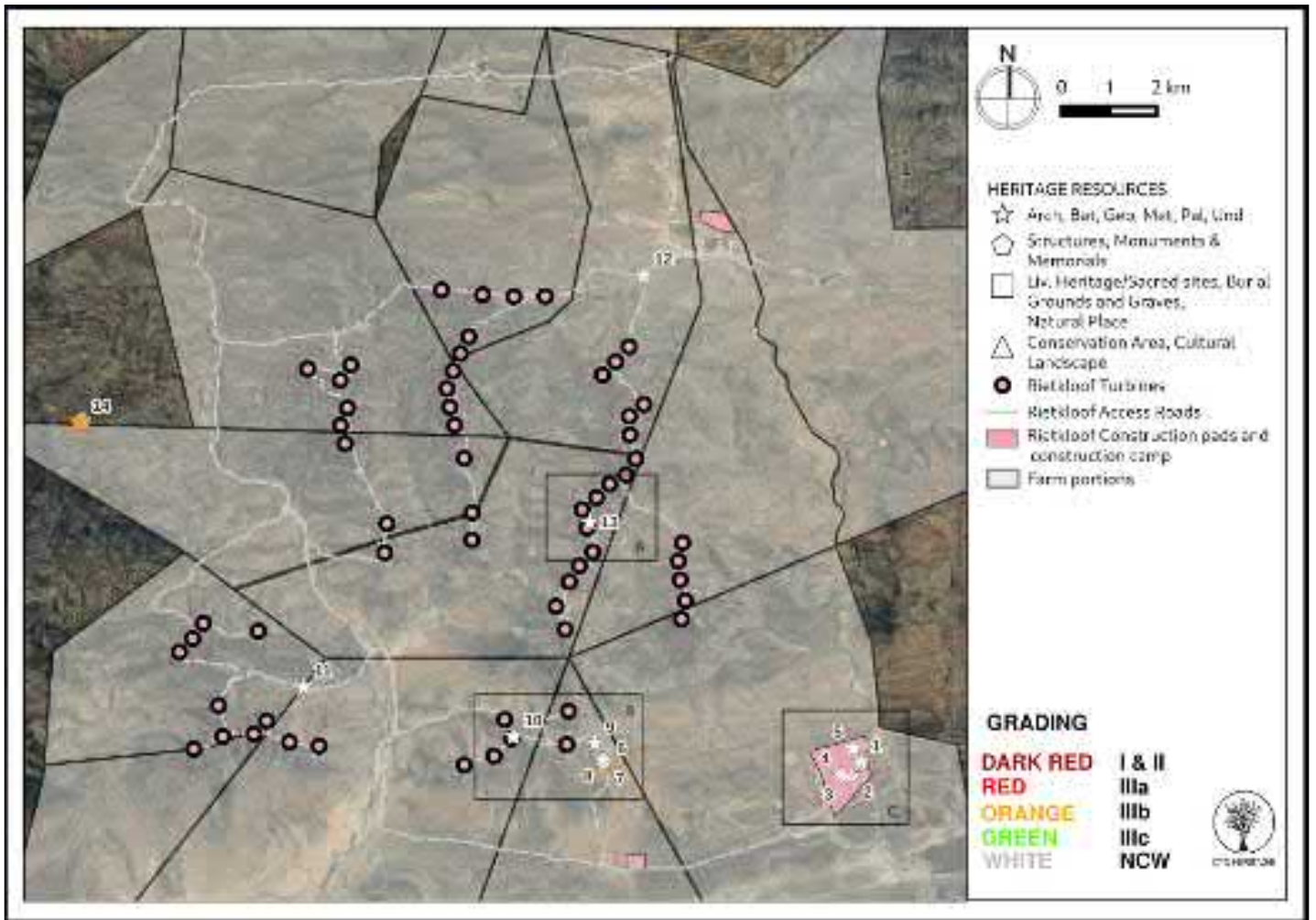


Figure 7.: Location of observations recorded during the walkdown



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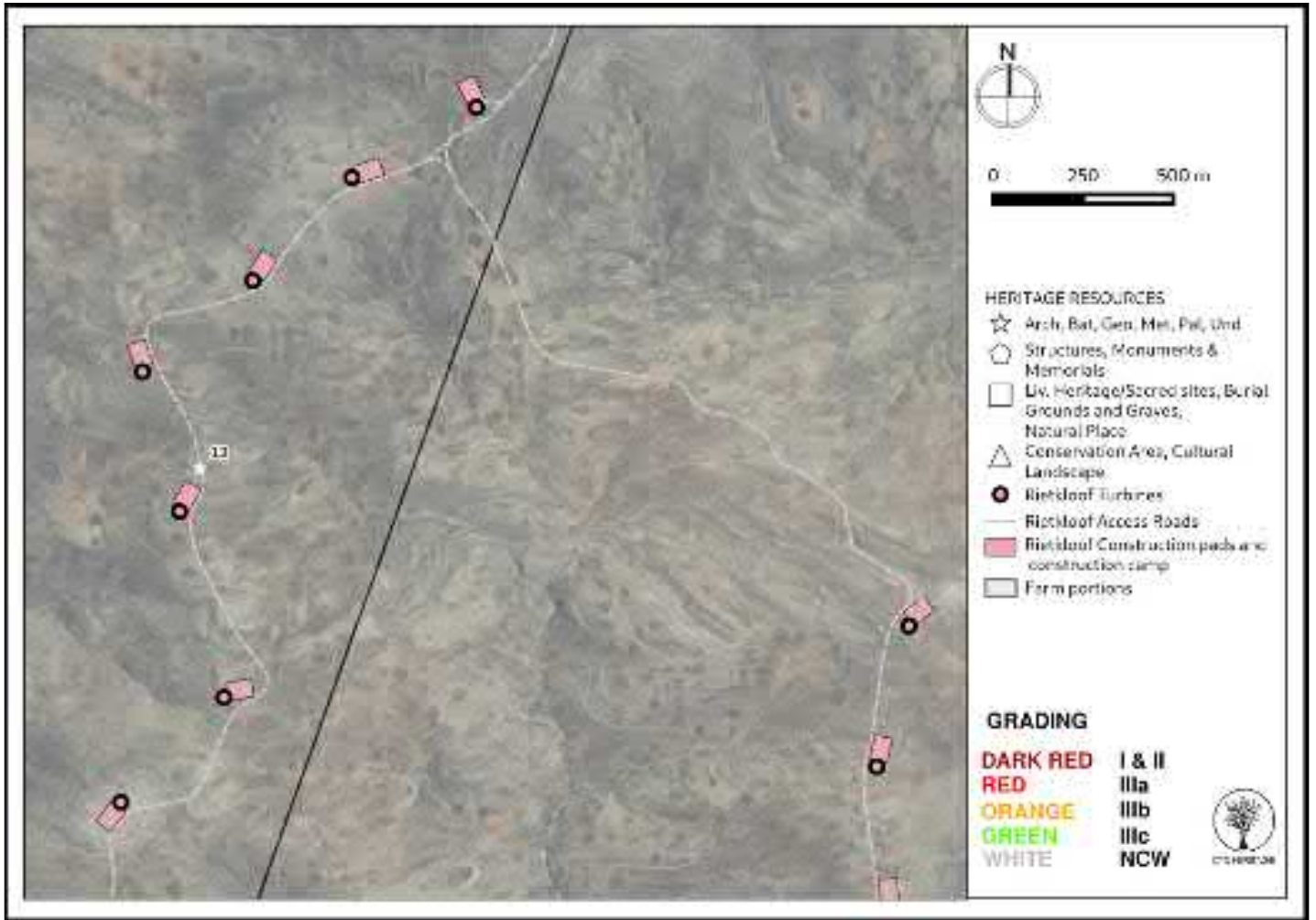


Figure 71: Location of observations recorded during the walkdown inset A



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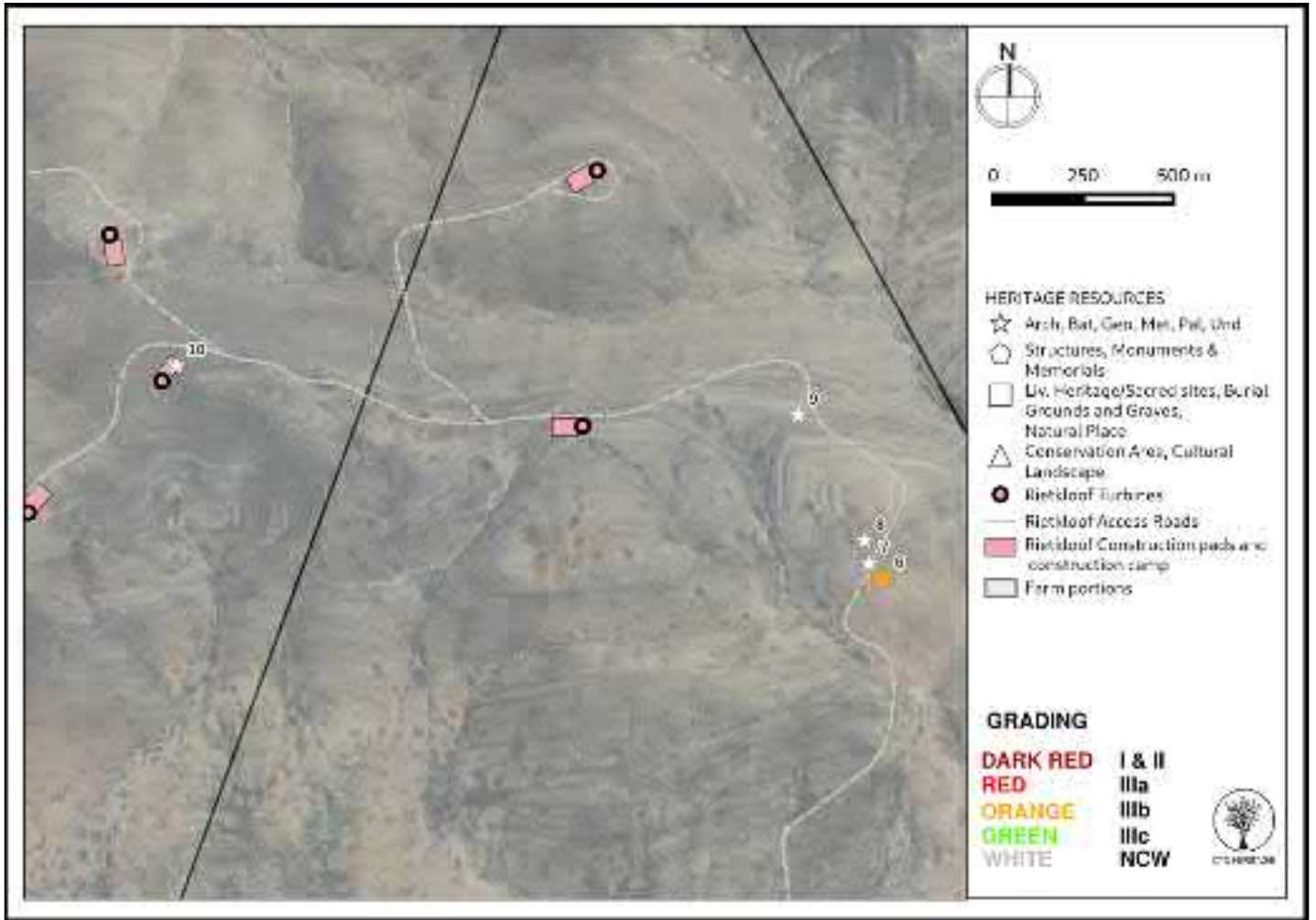


Figure 7.2: Location of observations recorded during the walkdown inset B



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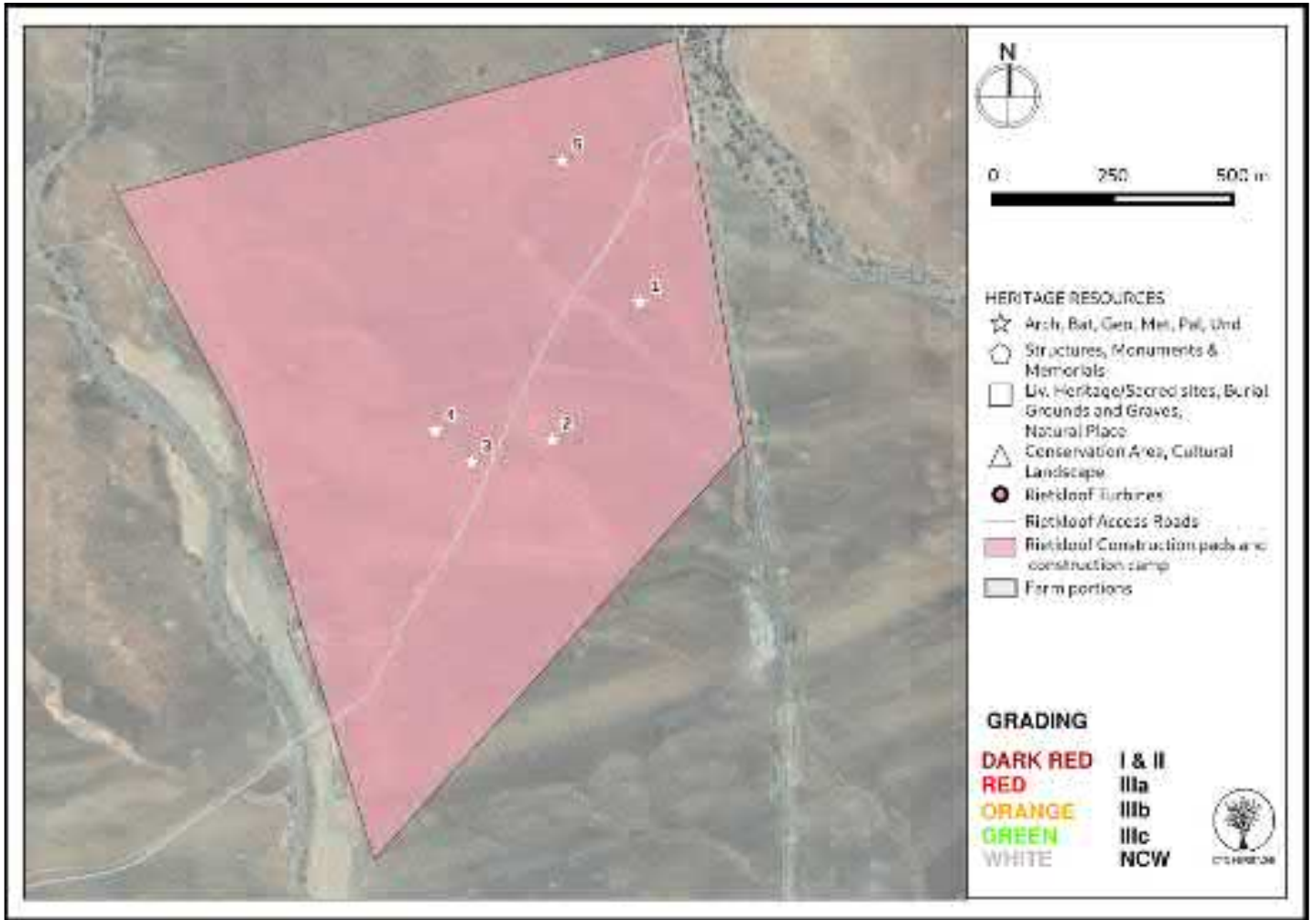


Figure 7.3: Location of observations recorded during the walkdown inset C

4.3 Selected photographic record

(a full photographic record is available upon request)



Figure 8.1: Observation 001



Figure 8.1: Observation 002



Figure 8.1: Observation 003



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Figure 8.1: Observation 004



Figure 8.1: Observation 005



Figure 8.1: Observation 006



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Figure 8.1: Observation 006



Figure 8.1: Observation 007



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Figure 8.1: Observation 008



Figure 8.1: Observation 009



Figure 8.1: Observation 010



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Figure 8.1: Observation 011



Figure 8.1: Observation 012



Figure 8.1: Observation 013



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Figure 8.2: Observation 014



Figure 8.4: Observation 014

5. ASSESSMENT OF THE IMPACT OF THE DEVELOPMENT

5.1 Assessment of impact to Archaeological Resources

The survey provided a very good account of the generally ubiquitous MSA material spread across the study area in low densities. No impacts on significant heritage resources are anticipated as the layout of the WEF has been drawn up to avoid the previously recorded sites of significance by Booth in 2016.

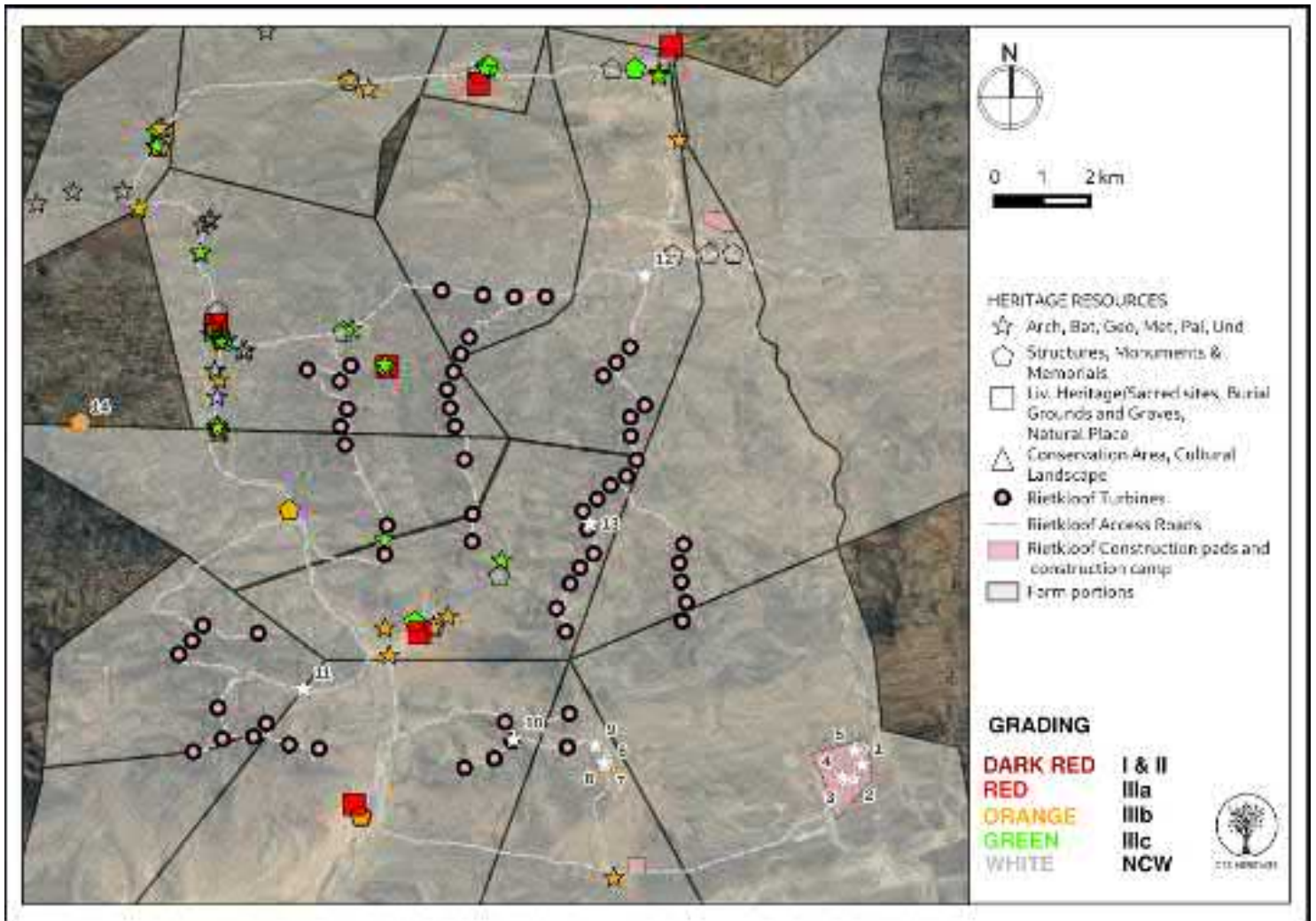


Figure 9: Map of all known heritage resources relative to the final proposed development footprint

6. CONCLUSION AND RECOMMENDATIONS

In response to the original Heritage Impact Assessment completed by Booth in 2016, it was recommended by HWC that a targeted walk down of the final layout must be conducted by an archaeologist. This recommendation was reiterated as a condition of authorisation in the original EA granted for the Rietkloof WEF project in 2019.

The final layout for the Rietkloof WEF avoids impact to all known significant heritage resources present within the development area. The walkdown of the final layout revealed no new significant heritage resources that are likely to be impacted. It is therefore recommended that this report is accepted as satisfying the following conditions of the Environmental Authorisation issued for the Rietkloof WEF project:

- All wind turbines must avoid all areas designated as "no-go" areas as well as their buffers
- The final placement of turbines must follow a micro siting procedure involving a walk-through and identification of any sensitive areas by ecological, avifaunal, bat, surface water and heritage specialists
- A 60m buffer must be applied around all identified archaeological sites.
- Pre-construction archaeological monitoring is required. The appointed archaeologist must keep a list documenting all identified farm infrastructure.
- All buffers and no-go areas stipulated in the EIAR must be adhered to for both the facilities and all roads and powerlines
- The final layout must be shown to the appointed archaeologist before implementation to confirm that all significant heritage resources have been adequately protected.

Although the EA did not make any specific conditions pertaining to the conservation of palaeontological heritage, the PIA completed for the Rietkloof WEF recommended that the area marked in Orange in Figure 4.2 and 4.3 should be inspected for fossil wood occurrences by a professional palaeontologist prior to construction. It is recommended that this mitigation step be completed prior to the construction of the turbines in this area.

Once the above step is complete, all conditions of authorisation have been satisfied for this project in terms of impacts to heritage resources.



7. REFERENCES

Heritage Impact Assessments				
Nid	Report Type	Author/s	Date	Title
359488	Heritage Screener	Mariagrazia Galimberti, Kyla Bluff, Nicholas Wiltshire	09/03/2016	Brandvalley Wind Energy Facility
53187	HIA Phase 1	Timothy Hart, Lita Webley	01/03/2011	HERITAGE IMPACT ASSESSMENT PROPOSED WIND ENERGY FACILITY
337370	PIA Phase 1	Duncan Miller	01/03/2011	Palaeontological Impact Assessment Proposed Roggeveld Wind Energy Facility
356316	Heritage Screener	Mariagrazia Galimberti, Kyla Bluff, Nicholas Wiltshire	02/02/2016	Heritage Screener CTS15_015b EOH Brandvalley Wind Energy Facility
356318	Heritage Screener	Mariagrazia Galimberti, Kyla Bluff, Nicholas Wiltshire	01/02/2016	Heritage Screener CTS15_015a EOH Rietkloof Wind Energy Facility
364162	PIA Phase 1	John E Almond	01/04/2016	PALAEONTOLOGICAL HERITAGE ASSESSMENT: COMBINED DESKTOP & FIELD-BASED STUDY - PROPOSED BRANDVALLEY WIND ENERGY FACILITY LAINGSBURG, WESTERN & NORTHERN CAPE PROVINCES
364163	AIA Phase 1	Celeste Booth	01/04/2016	A PHASE 1 ARCHAEOLOGICAL IMPACT ASSESSMENT (AIA) FOR THE PROPOSED BRANDVALLEY WIND ENERGY FACILITY (WEF) SITUATED IN THE KAROO HOOGLAND LOCAL MUNICIPALITY (NAMAKWA DISTRICT MUNICIPALITY), THE WITZENBURG LOCAL MUNICIPALITY (CAPE WINELANDS DISTRICT MUNICIPALITY) AND LAINGSBURG LOCAL MUNICIPALITY (CENTRAL KAROO DISTRICT MUNICIPALITY).
4843	AIA Phase 1	Hilary Deacon	28/03/2008	Archaeological Impact Assessment: Proposed Breede Valley De Doorns Housing Project
	HIA	Dave Halkett, Lita Webley	11/04/2011	HERITAGE IMPACT ASSESSMENT: PROPOSED PERDEKRAAL WIND AND SOLAR ENERGY FACILITY , WESTERN 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 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.

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& 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