

HERITAGE SCREENER

CTS Reference Number:	CTS20_182	
HWC Reference:	20103006	
SAHRIS Case No.	15709	
Client:	SiVEST	
Date:	October 2020	
Title:	Proposed development of an overhead powerline for the approved Oya PV Facility, Western and Northern Cape	Image: constraint of the proposed development in the Western Cape
CTS Heritage	RECOMMENDATION	
Recommendation		information, it is likely that the proposed development will negatively impact on significant archaeological resources. As such, it is recommended that an HIA is required that assesses these impacts and proposes mitig



1. Proposed Development Summary

Oya Energy (Pty) Ltd (hereafter referred to as "Oya Energy") is proposing to construct a 132kV overhead power line near Matjiesfontein in the Western and Northern Cape Provinces (hereafter referred to as the "proposed development"). The overall objective of the proposed development is to feed the electricity generated by the proposed 750MW Oya Energy Facility (part of separate on-going EIA process with DEFF Ref No.: 14/12/16/3/3/2/2009) as well as potentially the nearby developments into the national grid. The grid connection and substation (this application) will requires a separate EA, in order to allow the EA to be handed over to Eskom. The proposed power line is located in the Witzenberg and Karoo Hoogland Local Municipalities respectively, which fall within the Cape Winelands and Namakwa District Municipalities.

The entire extent of the proposed overhead power line is located within one (1) of the Strategic Transmission Corridors as defined and in terms of the procedures laid out in GN No. 1131, namely the Central Corridor. The proposed overhead power line project will therefore be subject to a BA process in terms of the NEMA (as amended) and Appendix 1 of the EIA Regulations, 2014 promulgated in Government Gazette 40772 and GN R326, R327, R325 and R324 on 7 April 2017. The competent authority for this BA is the DEFF.

At this stage, it is anticipated that the proposed development will include a 132kV power line and a 33/132kV substation to feed electricity generated by the renewable energy facilities owned by the applicant into the national gird at the Kappa substation.

The type of power line towers being considered at this stage include both lattice and monopole towers and it is assumed that these towers will be located approximately 200m to 250m apart. The towers will be up to 45m in height, depending on the terrain, but will ensure minimum overhead line clearances from buildings and surrounding infrastructure. The exact location of the towers will be determined during the final design stages of the power line design process and will be submitted along with the Final Basic Assessment report.

300m wide power line corridors (i.e. 150m on either side) are being assessed to allow flexibility when determining the final route alignment. The proposed power line however only requires a 31m wide servitude and as such, this servitude would be positioned within the assessed corridor.

The size of the proposed Oya and Kudusberg on-site Eskom substation and O&M building site will be approximately 200m x 200m [i.e. 2 hectare (ha)] each. It should be noted that only one (1) route is possible for the section of the proposed power line which connects the Kudusberg WEF on-site substation (authorised under 14/12/16/3/3/1/1976/AM1) to the Oya Energy Facility on-site substation. No alternatives can therefore be provided for this section of the power line. The Kudusberg to Oya power line corridor route is approximately 16.6km in length and runs from the Kudusberg on-site substation along the RE/194, 1/158, RE/159, RE/156, 1/156 and RE/155 properties to the Oya on-site substation. This power line corridor route is to be assessed with each alternative mentioned below (i.e. Alternative 1-5) as these cannot be developed without this power line corridor (i.e. cannot have alternatives mentioned below without this power line corridor).

Five (5) power line corridor route alternatives have however been provided for the section of the proposed overhead power line which connects the Oya Energy Facility on-site substation to the Kappa substation. The power line corridor route alternatives provide different route alignments contained within an assessment corridor of up to approximately 300m wide. This is to allow for flexibility to route the power line within the authorised corridor. The above-mentioned alternatives are described below:

- Power Line Corridor Alternative 1 (Oya to Kappa): Approximately 34.14km in length and runs along the RE/155, RE/152, 2/152, RE/169, RE/243, 241, 240 and RE/244 properties to the Kappa substation
- Power Line Corridor Alternative 2 (Oya to Kappa): Approximately 32.43km in length and runs along the RE/155, 3/155, RE/152, 2/152, RE/169, 13/168, 5/168, 1/243, RE/243, 241 and 240 properties to the Kappa substation
- Power Line Corridor Alternative 3 (Oya to Kappa): Approximately 30.56km in length and runs along the RE/155, 4/168, 13/168, 5/168, 1/243, 240 and RE/244 properties to the Kappa substation



- Power Line Corridor Alternative 4 (Oya to Kappa): Approximately 32.94km in length and runs along the RE/155, 4/168, 13/168, RE/169, RE/243, 241 and 240 properties to the Kappa substation
- Power Line Corridor Alternative 5 (Oya to Kappa): Approximately 32.26km in length and runs along the RE/155, RE/152, 2/152, RE/169, 5/168, 1/243 and 240 properties to the Kappa substation
- 'No-go' alternative: The 'no-go' alternative is the option of not fulfilling the proposed project as well as prevent the connection of the energy development in the area to feed electricity into the national grid. This alternative would result in no environmental impacts from the proposed project on the site or surrounding local area. It provides the baseline against which other alternatives are compared and will be considered throughout the report. Implementing the 'no-go' option would entail no development. The affected properties are currently not used for agricultural activities, although they are suitable for very low-level grazing.

The 'no-go' option is a feasible option, however, this would prevent the proposed development from contributing to the environmental, social and economic benefits associated with the development of the renewables sector.

2. Application References

Name of relevant heritage authority(s)	HWC and NBKB
Name of decision making authority(s)	DEFF

3. Property Information

Latitude / Longitude	Centre Point: -33.0218 S 20.1050 E
Erf number / Farm number	Portion 2 of the Farm Bakovens Kloof No 152 (2/152): C0190000000015200002 Remainder of the Farm Bakovens Kloof No 152 (RE/152): C0190000000015200000 Portion 3 of the Farm Baakens Rivier No 155 (3/155): C0190000000015500003 Remainder of the Farm Baakens Rivier No 155 (RE/155): C0190000000015500000 Portion 1 of the Farm Gats Rivier No 156 (1/156): C0190000000015600001 Remainder of the Farm Gats Rivier No 156 (RE/156): C0190000000015600000 Portion 1 of the Farm Gats Rivier No 156 (RE/156): C0190000000015600000 Portion 1 of the Farm Amandelboom No 158 (1/158): C0190000000015800001 Remainder of the Farm Oliviers Berg No 159 (RE/159): C0190000000015900000 Portion 2 of the Farm Bantamsfontein No 168 (2/168): C0190000000016800002 Portion 4 of the Farm Bantamsfontein No 168 (4/168): C0190000000016800004 Portion 5 of the Farm Bantamsfontein No 168 (5/168): C0190000000016800005



	Portion 7 of the Farm Bantamsfontein No 168 (7/168): C0190000000016800007
	Portion 13 of the Farm Bantamsfontein No 168 (13/168): C0190000000016800013
	Remainder of the Farm Bantamsfontein No 168 (RE/168): C0190000000016800000
	Remainder of the Farm Lower Roodewal No 169 (RE/169): C01900000000016900000
	Remainder of the Farm Matjes Fontein No 194 (RE/194): C0720000000019400000
	The Farm Platfontein No 240 (240): C019000000024000000
	The Farm Die Brak No 241 (241): C0190000000024100000
	Portion 1 of the Farm Rietpoort No 243 (1/243): C019000000024300001
	Remainder of the Farm Rietpoort No 243 (RE/243): C019000000024300000
	Remainder of the Farm Toover berg No 244 (RE/244): C0190000000024400000
Local Municipality	Witzenberg Local Municipality and Karoo Hooglands Local Municipality
District Municipality	Cape Winelands District Municipality and Namakwa District Multiplicity
Province	Western Cape and Northern Cape
Current Zoning	Agriculture

4. Nature of the Proposed Development

Total Area	Maximum 35km x 300m assessment corridor and 16km x 300m assessment corridor
Depth of excavation (m)	up to 5m (will confirm ASAP)
Height of development (m)	45m (pylons will be 200-250m apart)

5. Category of Development

x	Triggers: Section 38(8) of the National Heritage Resources Act
	Triggers: Section 38(1) of the National Heritage Resources Act
x	1. Construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier over 300m in length.
	2. Construction of a bridge or similar structure exceeding 50m in length.
	3. Any development or activity that will change the character of a site-



a) exce	eeding 5 000m ² in extent
b) invol	lving three or more existing erven or subdivisions thereof
c) invol	lving three or more erven or divisions thereof which have been consolidated within the past five years
4. Rezoni	ing of a site exceeding 10 000m ²
5. Other ((state):

6. Additional Infrastructure Required for this Development

The substations will expand on either side of Kudusberg and Oya Energy Facility when approved



7. Mapping (please see Appendix 3 and 4 for a full description of our methodology and map legends)

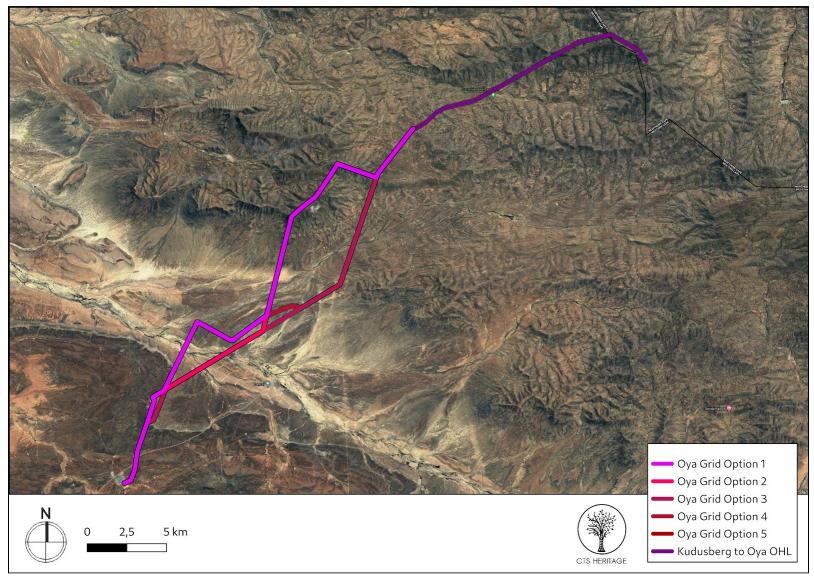


Figure 1b. Overview Map. Satellite image (2020) indicating the proposed development area



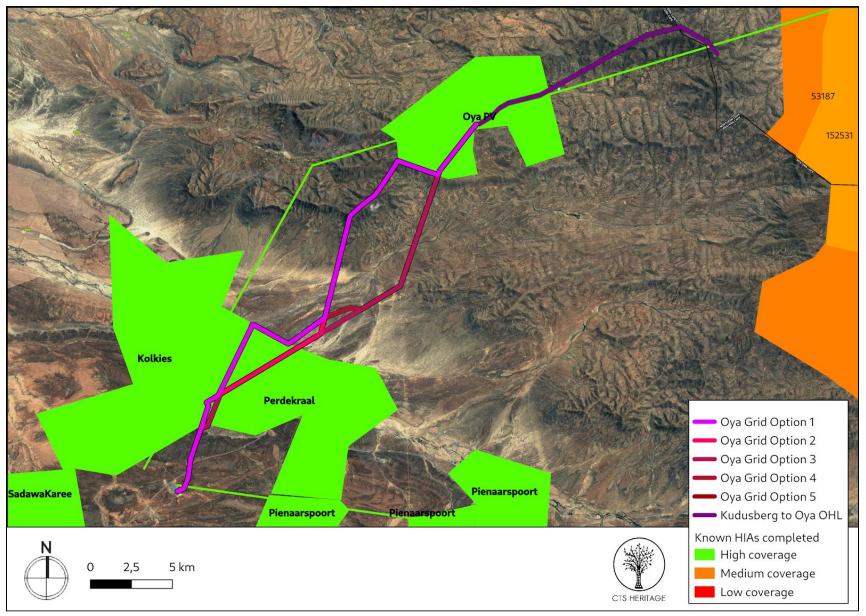


Figure 2. Previous HIAs Map. Previous Heritage Impact Assessments covering the proposed development area. Please see Appendix 2 for a full reference list.



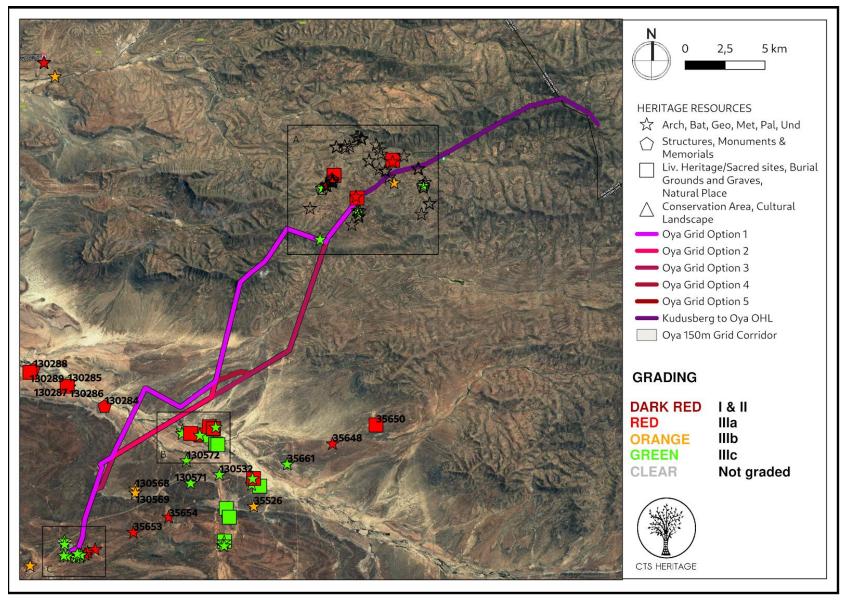


Figure 3. Heritage Resources Map. Heritage Resources previously identified within the study area, with SAHRIS Site IDs indicated in the insets below. Please See Appendix 4 for a full description of heritage resource types.



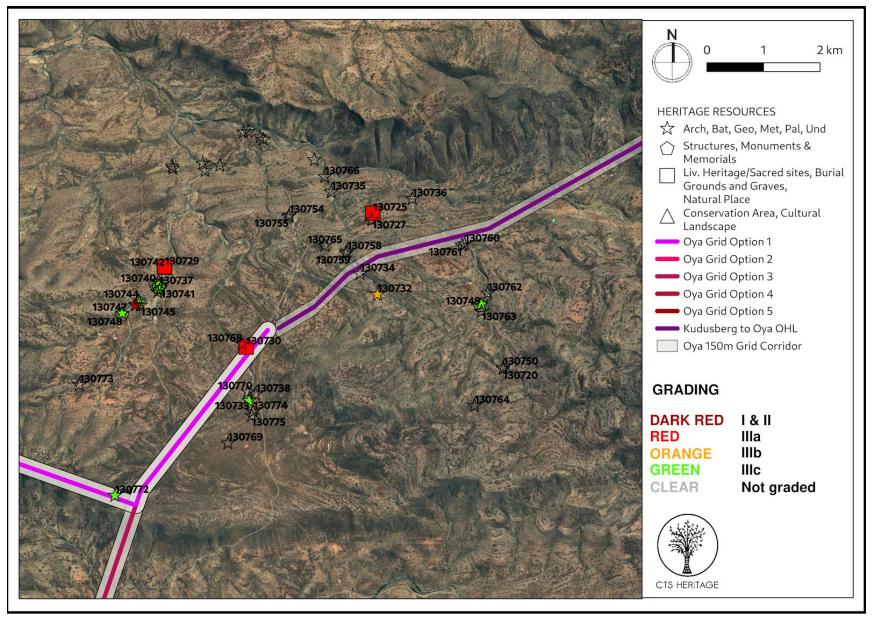


Figure 3a. Heritage Resources Map Inset A



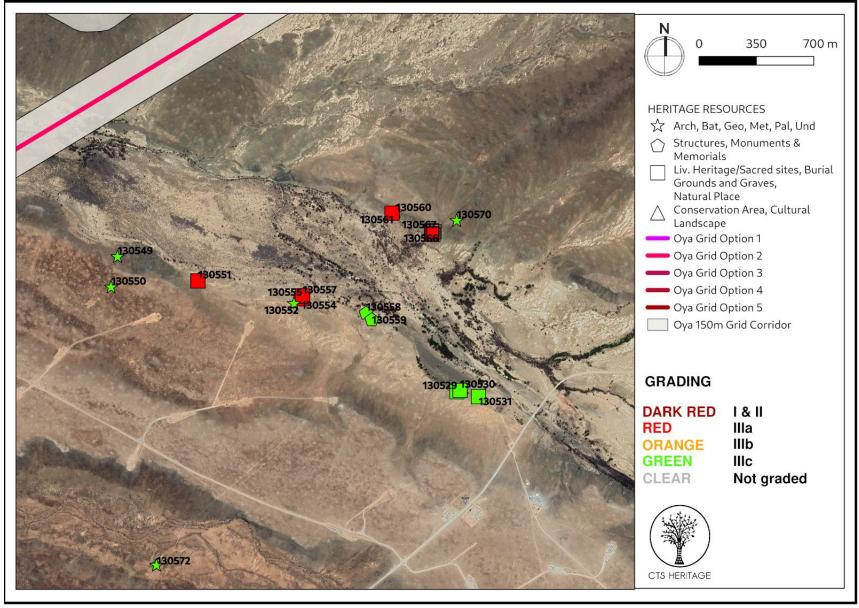


Figure 3b. Heritage Resources Map Inset B



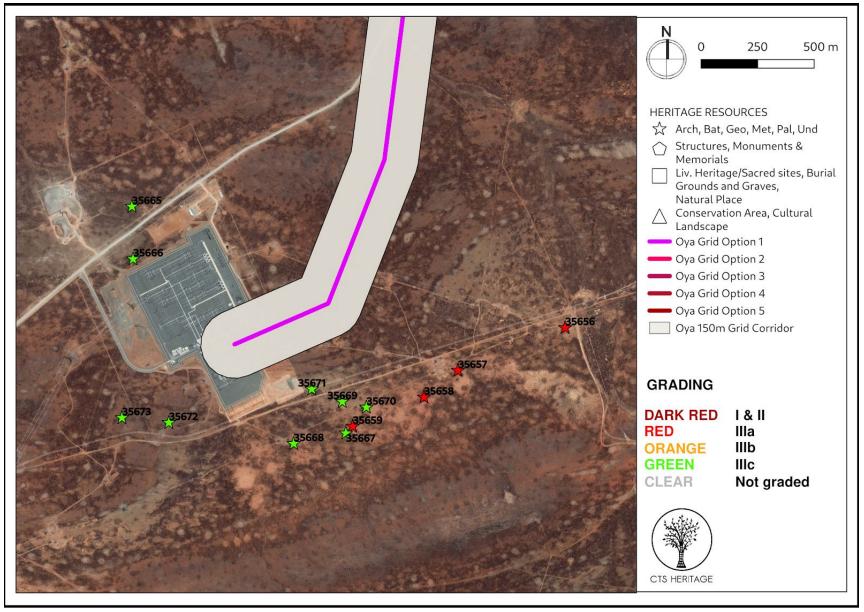


Figure 3c. Heritage Resources Map Inset C



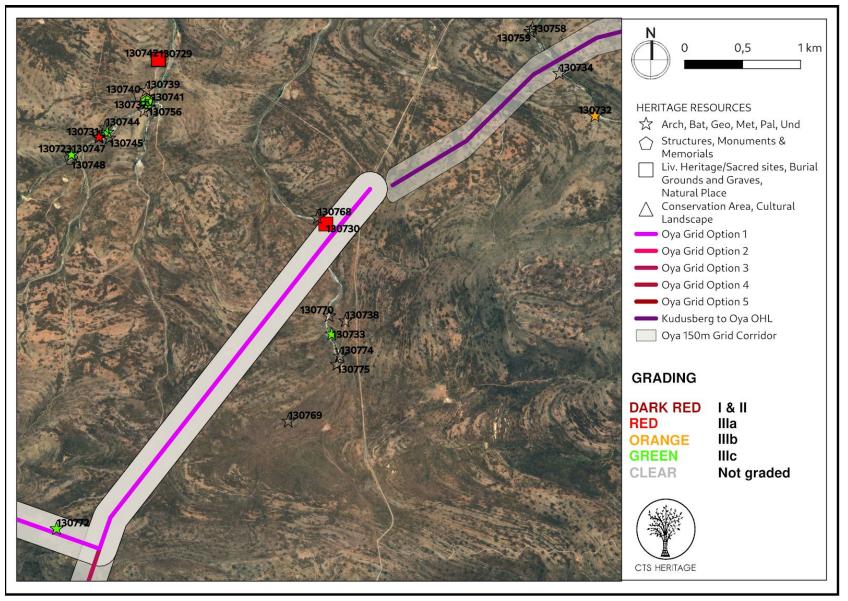


Figure 3d. Heritage Resources Map Map highlighting the known heritage resources of significance that fall within the proposed grid corridor - Sites 130772 (Grade IIIC) and 130730 (Grade IIIA)



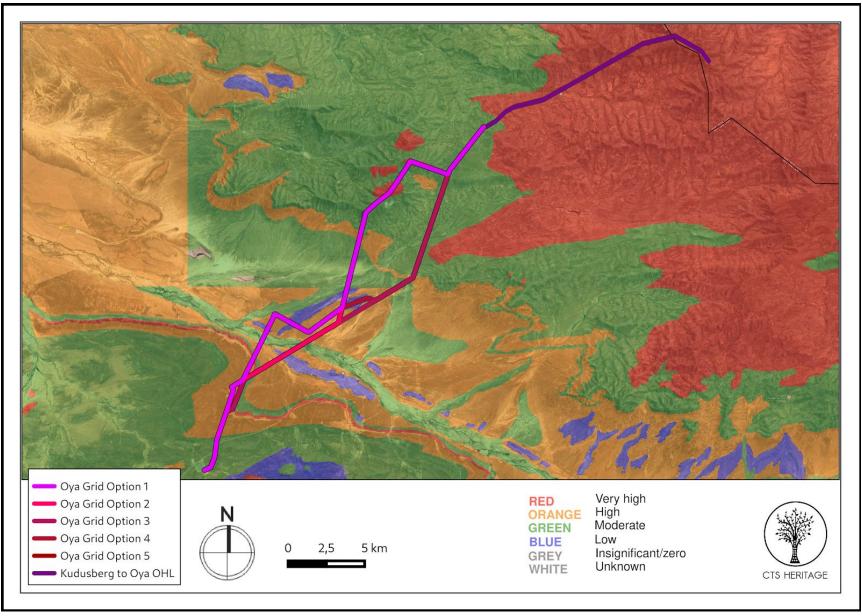


Figure 4a. Palaeosensitivity Map. Indicating fossil sensitivity underlying the study area. Please See Appendix 3 for a full guide to the legend.



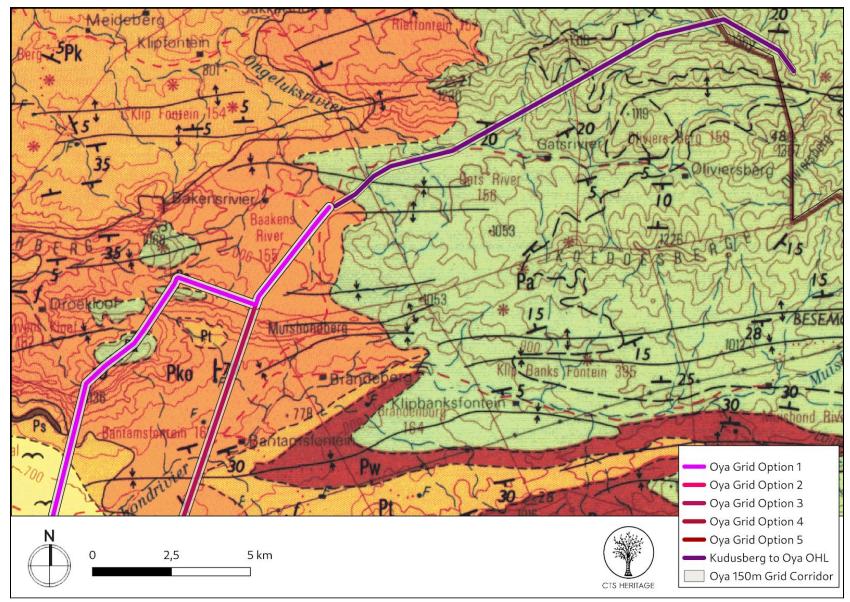


Figure 5a. Geology Map. Extract from the CGS 3220 Sutherland Map indicating that the northern portion of the development area is underlain by sediments of the Karoo Supergroup assigned to the Tierberg (Pt) and Koedoesberg (Pko) formations of the Ecca Group, as well as the Abrahamskraal Formation (Pa) of the Beaufort Group and Quaternary Sands



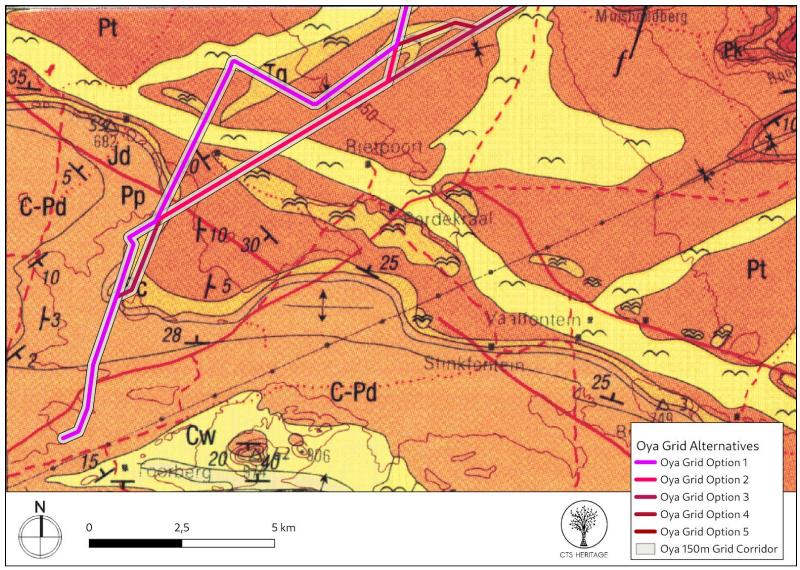


Figure 5b. Geology Map. Extract from the CGS 3320 Ladismith Map indicating that the development area is underlain by sediments of the Karoo Supergroup assigned to the Dwyka group (C-Pd), as well as the Prince Albert (Pp), Tierberg (Pt) and Collingwood (Pc) formations of the Ecca Group, as well as the Waaipoort (Cw) formation of the Witteberg Group and Quaternary Sands (Tg)



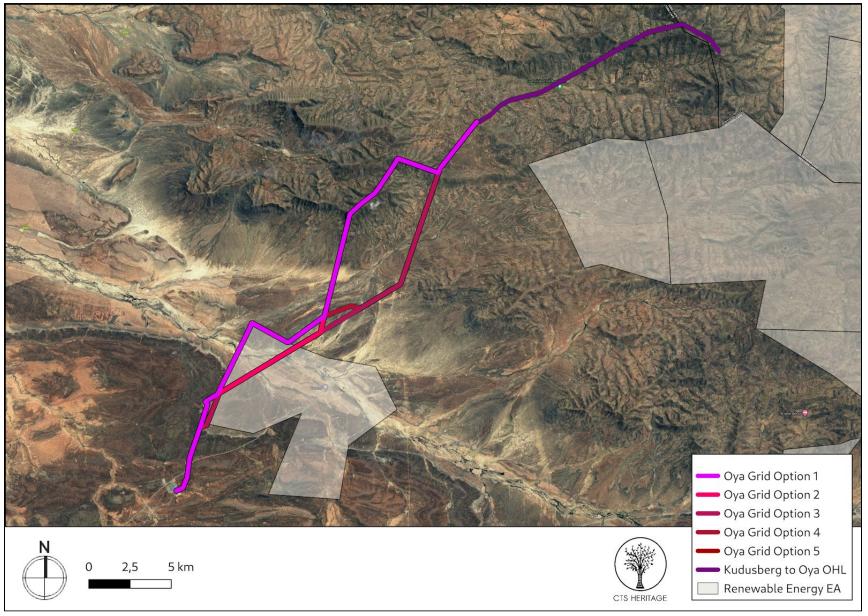


Figure 6. Cumulative Impact Map. Indicating other Renewable Energy Facilities that have been granted Environmental Authorisation (EA).



8. Heritage Assessment

Background

Oya Energy (Pty) Ltd (hereafter referred to as "Oya Energy") is proposing to construct a 132kV overhead power line near Matjiesfontein in the Western and Northern Cape Provinces (hereafter referred to as the "proposed development"). The overall objective of the proposed development is to feed the electricity generated by the proposed 750MW Oya Energy Facility (hereafter referred to as Oya)(part of separate on-going EIA process with DEFF Ref No.: 14/12/16/3/3/2/2009) as well as potentially the nearby developments into the national grid. The grid connection and substation (this application) will require a separate EA, in order to allow the EA to be handed over to Eskom.

Cultural Landscape

The proposed power line is located in the Witzenberg and Karoo Hoogland Local Municipalities respectively, which fall within the Cape Winelands and Namakwa District Municipalities. The area proposed for development is located within a REDZ area and is firmly located within the Tanqua and Ceres Karoo. 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. Many of the farm werfs in the broader area include historic structures. These are usually a modest size farm dwelling made from local rocks, and painted white with an outbuilding. Some of these structures are no longer in use, or are converted into farm sheds, housing animals, or any other use that supports farming activities. Other infrastructure typically found in the karoo is a round concrete dam, with a wind pump. The broader cultural landscape associated with the Baakens River Cultural Landscape has been previously thoroughly assessed by Bailey (2020) for the Oya HIA.

The interaction between the topography, geology, flora and historical remnants of human occupation of the area form a unique cultural landscape that may be negatively impacted by the proposed development. However, it must be noted that there are a number of approved Renewable Energy Facilities in the area, furthermore, the proposed OHL alignment falls within a Strategic Transmission Corridor which already contains existing powerline infrastructure (Figure 6). As noted in the Cultural Landscape Assessment for Oya (Bailey 2020), the negative impact of the development of such infrastructure on the Cultural Landscape is unavoidably high and are inevitable. The only mitigation option available is to develop this infrastructure in clusters, such as within the Komsberg REDZ (as with this project). As the cultural landscape for this area has already been assessed by Bailey (2020) as well as Jansen (2020), it is recommended that no additional Cultural Landscape assessment is necessary for this project.

Archaeology and the Built Environment

Heritage Impact Assessments have been completed within 20km of the area proposed for development and are recorded on SAHRIS, the South African Heritage Resources Information System, or have been sourced for this desktop screening assessment. It is noted that wherever an assessment has been completed, heritage resources of significance have been identified. According to Deacon (2008, SAHRIS ID 4843), this area "is well known for its rock art. However this is restricted to the kloofs and higher lying areas. There is the possibility that stone artefacts of different ages may occur in well-watered lowlands and valley margins." In addition, according to Pinto and Smuts (2011, SAHRIS ID 375379), "Agriculture since colonial times has been, to a large extent, marginal and has had a low impact on the archaeological evidence for these early communities. Prehistoric sites in the area, consisting predominantly of surface and sub-surface stone artefact scatters in the open landscape together with overhangs and recesses in the sandstone hills used as shelters, are likely to be well preserved with little disturbance from later historic periods." According to Smuts et al. (2018, SAHRIS NID 514990), studies completed in the broader area identified surprisingly little pre-colonial or stone age archaeology, and distinct spatial patterning to the little that was found. Almost all archaeological material, predominantly in the form of scatters, has been identified on the flat floodplains up to the foothills of the mountains, and within river valleys along watercourses... The area is known to have been inhabited significant LSA cultural material" Furthermore, Smuts et al (2018) notes that rock art and archaeological resources associated with the trek boers and historical occupation of the area are known from the region. In addition, it has been noted that there is often a more dense accumulation of archaeological artefactual material along an exposure of the Collingwood Formation (Pc) as this formation provides an excellent raw mater



In 2016 a Draft HIA (Hart et al.) for the proposed Kolkies and Karee WEFs on neighbouring properties was not completed as the project was cancelled. Hart et al. (2016) note that in terms of impacts to archaeology, sites tend to be found on the banks of river beds. Discrete scatters of Middle Stone Age artefacts are often identified in sheet washed locations at several farms in the area but they are not considered to be of high significance. In general, Hart et al. (2016) found that Late and Early Stone Age Archaeology is sparse. Hart et al. (2016) also found that the built environment is sparse. Hart et al. (2016) note that previous heritage work has shown there are numerous stone cairns along the dry river beds which may represent graves. Similarly, in the archaeological assessment completed for the Oya PV facility by Fourie (2020), burial grounds and graves, some old farmsteads and kraals. Lavin and Wiltshire (2020) identified diffuse scatters of Middle and Later Stone Age artefacts in the neighbouring Pienaarspoort REF area.

As such, it is likely that the proposed OHL development will impact on significant archaeological and other heritage resources and as such, an assessment that identifies this impact is recommended. However, much of the OHL alternative alignments have been covered by existing completed heritage assessments (Figure 2). It is therefore recommended that only the portions of the alternatives that have not yet been assessed are surveyed for impacts to archaeological heritage.

Palaeontology

According to the SAHRIS Palaeosensitivity Map, the area proposed for development is underlain by sediments that are of low, moderate, high and very high palaeontological sensitivity (Figure 4a). According to the extract from the Council for GeoScience Map 3220 for Sutherland (Figure 5a) and Map 3320 for Ladismith (Figure 5b), the area proposed for development is underlain by sediments of the Karoo Supergroup assigned to the Dwyka, Ecca and Witteberg Groups in addition to Quaternary Sands. The Dwyka Group is known to preserve trace fossils, organic-walled microfossils, rare marine invertebrates (*eg* molluscs), fish, vascular plants, predominantly interglacial and post-glacial trace fossil assemblages, possibility of body fossils (*eg* molluscs, fish, plants). The Ecca Group is known to conserve non-marine trace fossils, vascular plants (including petrified wood) and palynomorphs of *Glossopteris* flora, mesosaurid reptiles, fish (including microvertebrate remains, coprolites), crustaceans, sparse marine shelly invertebrates (molluscs, brachiopods), microfossils (radiolarians *etc*) and insects. The Witteberg Group is very palaeontologically sensitive and is known to conserve trace fossils, vascular plants, sparse shelly invertebrates and fish (brachiopods, bivalves *etc*). In the palaeontological assessment completed for the Oya Energy Facility, Almond (2020) concluded that the Oya project area has low paleontological sensitivity overall, but with small unpredictable areas of high to very high sensitivity. It is therefore likely that the proposed OHL alternatives that have not been previously assessed.

Known Resources

Four known heritage resources fall within the 300m buffer area proposed for the Oya OHL. These are SAHRIS Site ID 130730, 130734, 130768 and 130772. Site 130730 is graded IIIA and is described by Fourie (2020) as "Three grave features including a medium-density scatter of MSA and LSA stone tools... The site is located on the eastern bank of a river and has evidence of flooding. Three possible stone grave features were identified. The first grave (OYPV-10a) consists of packed stones in a semi-rectangular shape. The second grave (OYPV- 10b) has two sharp rectangular stones placed in one corner, most likely forming part of a grave marker that has been washed away or covered by sand from the river. The third grave feature (OYPV-10c) contains two stones placed on the eastern and western end, marking the feature as a grave. A medium-density scatter of MSA and LSA tools were found around the site. The stone tools mostly consist of cores, flakes, blades and chunks, and formal tools such as scrapers. The tools were made from chert, shale, and hornfels. Burial grounds and graves are protected under Section 36 of the NHRA 25 of 1999. Thus, the site is provisionally rated as having a high heritage significance with a heritage rating of IIIA. All graves have high levels of emotional, religious and in some cases historical significance. It is also important to understand that the identified graves could have significant heritage value to the relevant families."

Site 130734 is not graded as significant and is described by Fourie (2020) as consisting of "Several LSA stone tools were found scattered over an area of 107,23m 2 near the river on the farm Gats Rivier 156. The flakes were made from chert and shale." Site 130768 is also graded IIIA for its palaeontological research potential and is described by Almond (2020) as



"Good riverbed and bank exposures of tabular, greyish wackes with undulose or wave-rippled tops. Thin, fissile, medium-grained, laminated, greyish sandy interbeds, locally ferruginised, towards base of package of medium- to thick-bedded wackes (horizontally to current ripple cross-laminated) containing dense hash of transported plant debris – mainly stems, including probable sphenophytes - preserved as moulds where weathered and carbonaceous compressions in fresher material. Some possible axes up to 10 cm across". Site 130772 is graded IIIC by Almond (2020) and is described as an exposure of the Waterford Formation. It includes "Hillslope exposure of grey-green mudrocks with large ferruginous carbonate diagenetic concretions and package of tabular, thin-bedded wackes. Small float block of silicified wood."

RECOMMENDATION

Based on the available information, it is likely that the proposed development will negatively impact on significant archaeological and palaeontological heritage resources. As such, it is recommended that an HIA is required that assesses these impacts and proposes mitigation measures.



APPENDIX 1

List of known heritage resources within proximity to the development area

Site ID	Site no	Full Site Name	Site Type	Grading
35526	GK078	Gamma Kappa 078	Artefacts	Grade IIIb
35648	GK125	Gamma Kappa 125	Artefacts	Grade IIIa
35653	GK128	Gamma Kappa 128	Artefacts	Grade IIIa
35654	GK127	Gamma Kappa 127	Artefacts	Grade IIIa
35656	GK129	Gamma Kappa 129	Artefacts	Grade IIIa
35657	GK130	Gamma Kappa 130	Artefacts	Grade IIIa
35658	GK131	Gamma Kappa 131	Artefacts	Grade IIIa
35659	GK132	Gamma Kappa 132	Artefacts	Grade IIIa
35661	GK126	Gamma Kappa 126	Artefacts	Grade IIIc
35665	GK133	Gamma Kappa 133	Artefacts	Grade IIIc
35666	GK134	Gamma Kappa 134	Artefacts	Grade IIIc
35667	GK135	Gamma Kappa 135	Artefacts	Grade IIIc
35668	GK136	Gamma Kappa 136	Artefacts	Grade IIIc
35669	GK137	Gamma Kappa 137	Artefacts	Grade IIIc
35670	GK138	Gamma Kappa 138	Artefacts	Grade IIIc
35671	GK139	Gamma Kappa 139	Artefacts	Grade IIIc
35672	GK140	Gamma Kappa 140	Artefacts	Grade IIIc



35673	GK141	Gamma Kappa 141	Artefacts	Grade IIIc
35650	GK124	Gamma Kappa 124	Burial Grounds & Graves	Grade IIIa
130719	OYPV-01	Matjiesfontein Oya Solar	Stone walling	Grade IIIc
130720	OYPV-02	Matjiesfontein Oya Solar	Stone walling	
130721	OYPV-03	Matjiesfontein Oya Solar	Stone walling, Structures, Building	Grade IIIc
130723	OYPV-04	Matjiesfontein Oya Solar	Stone walling	Grade IIIc
130725	OYPV-05	Matjiesfontein Oya Solar	Stone walling, Burial Grounds & Graves	Grade IIIa
130727	OYPV-06	Matjiesfontein Oya Solar	Artefacts	
130728	OYPV-07	Matjiesfontein Oya Solar	Stone walling	Grade IIIc
130729	OYPV-08	Matjiesfontein Oya Solar	Stone walling, Burial Grounds & Graves	Grade IIIa
130730	OYPV-09	Matjiesfontein Oya Solar	Artefacts, Burial Grounds & Graves	Grade IIIa
130731	OYPV-10	Matjiesfontein Oya Solar	Rock Art, Artefacts	Grade IIIa
130732	OYPV-11	Matjiesfontein Oya Solar	Artefacts	Grade IIIb
130733	OYPV-12	Matjiesfontein Oya Solar	Artefacts	Grade IIIc
130734	OYPV-13	Matjiesfontein Oya Solar	Artefacts	
130735	OYPV-14	Matjiesfontein Oya Solar	Artefacts	
130736	OYPV-15	Matjiesfontein Oya Solar	Artefacts	
130737	BKRN001	Baakens Rivier	Building	
130738	BKRN002	Baakens Rivier	Stone walling	
130739	BKRN003	Baakens Rivier	Stone walling	



130740	BKRN004	Baakens Rivier	Structures	
130741	BKRN005	Baakens Rivier	Stone walling	
130284	KOLK08	Kolkies	Building	Grade IIIa
130742	BKRN006	Baakens Rivier	Burial Grounds & Graves	
130285	KOLK09	Kolkies	Building, Artefacts	Grade IIIc
130286	KOLK10	Kolkies	Stone walling	
130744	BKRN008	Baakens Rivier	Stone walling	
130287	KOLK11	Kolkies	Burial Grounds & Graves	Grade IIIa
130745	BKRN009	Baakens Rivier	Stone walling	
130288	KOLK12	Kolkies	Building	Grade IIIa
130746	BKRN010	Baakens Rivier	Rock Art	
130289	KOLK13	Kolkies	Burial Grounds & Graves	Grade IIIa
130747	BKRN011	Baakens Rivier	Stone walling	
130290	KOLK14	Kolkies	Artefacts	Grade IIIb
130748	BKRN012	Baakens Rivier	Structures	
130749	BKRN012	Baakens Rivier	Structures	
130750	BKRN013	Baakens Rivier	Stone walling	
130754	BKRN017	Baakens Rivier 155	Deposit	
130755	BKRN018	Baakens Rivier 155	Deposit	
130756	BKRN019	Baakens Rivier 155	Deposit	



130757	BKRN020		Rock Art, Artefacts	
130758	BKRN021	Baakens Rivier 155	Deposit	
130759	BKRN022	Baakens Rivier 155	Deposit	
130760	BKRN023	Baakens Rivier 155	Deposit	
130761	BKRN024	Baakens Rivier 155	Palaeontological	
130762	BKRN025	Baakens Rivier 155	Palaeontological	
130763	BKRN026	Baakens Rivier 155	Palaeontological	
130764	BKRN027	Baakens Rivier 155	Deposit	
130765	BKRN028	Baakens Rivier 155	Deposit	
130766	BKRN029	Baakens Rivier 155	Palaeontological	
130768	BKRN031	Baakens Rivier 155	Deposit	
130769	BKRN032	Baakens Rivier 155	Palaeontological	
130770	BKRN033	Baakens Rivier 155	Palaeontological	
130772	BKRN034	Baakens Rivier 155	Palaeontological	Grade IIIc
130773	BKRN035	Baakens Rivier 155	Artefacts	
130774	BKRN036	Baakens Rivier 155	Artefacts	
130775	BKRN037	Baakens Rivier 155	Palaeontological	
130529	PDK01	Perdekraal Farm	Burial Grounds & Graves	Grade IIIc
130530	PDK02	Perdekraal Farm	Burial Grounds & Graves	Grade IIIc
130531	PDK03	Perdekraal Farm	Burial Grounds & Graves	Grade IIIc



130532	PDK04	Perdekraal Farm	Stone walling	Grade IIIc
130533	PDK05	Perdekraal Farm	Burial Grounds & Graves	Grade IIIc
130534	PDK06	Perdekraal Farm	Burial Grounds & Graves	Grade IIIc
130535	PDK07	Perdekraal Farm	Stone walling	Grade IIIc
130536	PDK08	Perdekraal Farm	Stone walling	Grade IIIc
130537	PDK09	Perdekraal Farm	Stone walling	Grade IIIc
130538	PDK10	Perdekraal Farm	Building	Grade IIIc
130539	PDK11	Perdekraal Farm	Deposit	Grade IIIc
130540	PDK12	Perdekraal Farm	Stone walling	Grade IIIc
130541	PDK13	Perdekraal Farm	Structures	Grade IIIc
130542	PDK14	Perdekraal Farm	Burial Grounds & Graves	Grade IIIc
130543	PDK15	Perdekraal Farm	Burial Grounds & Graves	Grade IIIc
130544	PDK16	Perdekraal Farm	Burial Grounds & Graves	Grade IIIc
130545	PDK17	Perdekraal Farm	Burial Grounds & Graves	Grade IIIc
130546	PDK18	Perdekraal Farm	Artefacts	Grade IIIc
130547	PDK19	Perdekraal Farm	Burial Grounds & Graves	Grade IIIa
130548	PDK20	Perdekraal Farm	Artefacts	Grade IIIc
130549	PDK21	Perdekraal Farm	Artefacts	Grade IIIc
130550	PDK22	Perdekraal Farm	Artefacts	Grade IIIc
130551	PDK23	Perdekraal Farm	Burial Grounds & Graves	Grade IIIa



130552	PDK24	Perdekraal Farm	Stone walling	Grade IIIc
130553	PDK25	Perdekraal Farm	Stone walling	Grade IIIc
130554	PDK26	Perdekraal Farm	Burial Grounds & Graves	Grade IIIa
130555	PDK27	Perdekraal Farm	Artefacts	Grade IIIb
130556	PDK28	Perdekraal Farm	Artefacts	Grade IIIb
130557	PDK29	Perdekraal Farm	Burial Grounds & Graves	Grade IIIa
130558	PDK30	Perdekraal Farm	Structures	Grade IIIc
130559	PDK31	Perdekraal Farm	Structures	Grade IIIc
130560	PDK32	Perdekraal Farm	Artefacts	Grade IIIb
130561	PDK33	Perdekraal Farm	Stone walling	Grade IIIb
130562	PDK34	Perdekraal Farm	Structures, Burial Grounds & Graves	Grade IIIa
130563	PDK35	Perdekraal Farm	Burial Grounds & Graves	Grade IIIa
130565	PDK36	Perdekraal Farm	Burial Grounds & Graves	
130566	PDK37	Perdekraal Farm	Burial Grounds & Graves	
130567	PDK38	Perdekraal Farm	Burial Grounds & Graves	
130568	PDK39	Perdekraal Farm	Artefacts	Grade IIIb
130569	PDK40	Perdekraal Farm	Artefacts	Grade IIIb
130570	PDK41	Perdekraal Farm	Artefacts	Grade IIIc
130571	PDK42	Perdekraal Farm	Artefacts	Grade IIIc
130572	PDK43		Stone walling	Grade IIIc



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.

Fourie, W. (2020). HIA for the Proposed Development of the 750MW Oya Energy Facility and Associated infrastructure near Matjiesfontein in the Western Cape. (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.

Fourie, W. (2020). Archaeological Specialist Assessment for the Proposed Development of the 750MW Oya Energy Facility and Associated infrastructure near Matjiesfontein in the Western Cape. (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.

Bailey, E. (2020). Cultural Landscape Specialist Assessment for the Proposed Development of the 750MW Oya Energy Facility and Associated infrastructure near Matjiesfontein in the Western Cape. (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.

Amond, J.. (2020). Palaeontological Specialist Assessment for the Proposed Development of the 750MW Oya Energy Facility and Associated infrastructure near Matjiesfontein in the Western Cape. (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.

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

Lavin and Wiltshire (2020). HIA for the Proposed Development of the Pienaarspoort Wind Energy Facility 1 on Rem Farm Bruwelsfontein 249 near Touws River, Western Cape. (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.



Lavin and Wiltshire (2020). Archaeological Specialist Assessment for the Proposed Development of the Pienaarspoort Wind Energy Facility 1 on Rem Farm Bruwelsfontein 249 near Touws River, Western Cape. (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.

Lavin and Wiltshire (2020). HIA for the Proposed Development of the Pienaarspoort Wind Energy Facility 2 on Farms Drinkwaterskloof 251 (RE) and Melkbosch Kraal 250 portion 1 near Touwsrivier, Western Cape. (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.

Lavin and Wiltshire (2020). Archaeological Specialist Assessment for the Proposed Development of the Pienaarspoort Wind Energy Facility 2 on Farms Drinkwaterskloof 251 (RE) and Melkbosch Kraal 250 portion 1 near Touwsrivier, Western Cape. (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.

Jansen, L. (2020). Cultural Landscape Assessment for the Proposed Development of the Pienaarspoort Wind Energy Facility 1 and 2 near Touws River, Western Cape. (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.

Almond, J. (2020). Palaeontological Specialist Assessment for the Proposed Development of the Pienaarspoort Wind Energy Facility 1 and 2 Touws River, Western Cape. (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.



APPENDIX 2

Reference List with relevant AIAs and PIAs from SAHRIS

	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		
514990	HIA Phase 1	Katie Smuts, Emmylou Bailey, Madelon Tusenius, John Almond	29/10/2018	HERITAGE IMPACT ASSESSMENT Basic Assessment for the Proposed Development of the 325MW Kudusberg Wind Energy Facility and associated infrastructure, between Matjiesfontein and Sutherland in the Western and Northern Cape Provinces: BA REPORT		
375379	AIA Phase 1	Hugo Pinto, Katie Smuts	24/10/2011	Preliminary Archaeological Survey of Karoopoort Farm		



APPENDIX 3 - Keys/Guides

Key/Guide to Acronyms

AIA	Archaeological Impact Assessment			
DARD	Department of Agriculture and Rural Development (KwaZulu-Natal)			
DEFF	Department of Environmental, Forestry and Fisheries (National)			
DEADP	Department of Environmental Affairs and Development Planning (Western Cape)			
DEDEAT	Department of Economic Development, Environmental Affairs and Tourism (Eastern Cape)			
DEDECT	Department of Economic Development, Environment, Conservation and Tourism (North West)			
DEDT	Department of Economic Development and Tourism (Mpumalanga)			
DEDTEA	Department of economic Development, Tourism and Environmental Affairs (Free State)			
DENC	Department of Environment and Nature Conservation (Northern Cape)			
DMR	Department of Mineral Resources (National)			
GDARD	Gauteng Department of Agriculture and Rural Development (Gauteng)			
HIA	Heritage Impact Assessment			
LEDET	Department of Economic Development, Environment and Tourism (Limpopo)			
MPRDA	Mineral and Petroleum Resources Development Act, no 28 of 2002			
NEMA	National Environmental Management Act, no 107 of 1998			
NHRA	National Heritage Resources Act, no 25 of 1999			
PIA	Palaeontological Impact Assessment			
SAHRA	South African Heritage Resources Agency			
SAHRIS	South African Heritage Resources Information System			
VIA	Visual Impact Assessment			

Full guide to Palaeosensitivity Map legend

RED:	VERY HIGH - field assessment and protocol for finds is required	
ORANGE/YELLOW:	ORANGE/YELLOW: HIGH - desktop study is required and based on the outcome of the desktop study, a field assessment is likely	
GREEN:	MODERATE - desktop study is required	
BLUE/PURPLE:	LOW - no palaeontological studies are required however a protocol for chance finds is required	
GREY:	INSIGNIFICANT/ZERO - no palaeontological studies are required	
WHITE/CLEAR:	UNKNOWN - these areas will require a minimum of a desktop study.	



APPENDIX 4 - Methodology

The Heritage Screener summarises the heritage impact assessments and studies previously undertaken within the area of the proposed development and its surroundings. Heritage resources identified in these reports are assessed by our team during the screening process.

The heritage resources will be described both in terms of type:

- Group 1: Archaeological, Underwater, Palaeontological and Geological sites, Meteorites, and Battlefields
- Group 2: Structures, Monuments and Memorials
- Group 3: Burial Grounds and Graves, Living Heritage, Sacred and Natural sites
- Group 4: Cultural Landscapes, Conservation Areas and Scenic routes

and **significance** (Grade I, II, IIIa, b or c, ungraded), as determined by the author of the original heritage impact assessment report or by formal grading and/or protection by the heritage authorities.

Sites identified and mapped during research projects will also be considered.

DETERMINATION OF THE EXTENT OF THE INCLUSION ZONE TO BE TAKEN INTO CONSIDERATION

The extent of the inclusion zone to be considered for the Heritage Screener will be determined by CTS based on:

- the size of the development,
- the number and outcome of previous surveys existing in the area
- the potential cumulative impact of the application.

The inclusion zone will be considered as the region within a maximum distance of 50 km from the boundary of the proposed development.

DETERMINATION OF THE PALAEONTOLOGICAL SENSITIVITY

The possible impact of the proposed development on palaeontological resources is gauged by:

- reviewing the fossil sensitivity maps available on the South African Heritage Resources Information System (SAHRIS)
- considering the nature of the proposed development
- when available, taking information provided by the applicant related to the geological background of the area into account

DETERMINATION OF THE COVERAGE RATING ASCRIBED TO A REPORT POLYGON

Each report assessed for the compilation of the Heritage Screener is colour-coded according to the level of coverage accomplished. The extent of the surveyed coverage is labeled in three categories, namely low, medium and high. In most instances the extent of the map corresponds to the extent of the development for which the specific report was undertaken.



Low coverage will be used for:

- desktop studies where no field assessment of the area was undertaken;
- reports where the sites are listed and described but no GPS coordinates were provided.
- older reports with GPS coordinates with low accuracy ratings;
- reports where the entire property was mapped, but only a small/limited area was surveyed.
- uploads on the National Inventory which are not properly mapped.

Medium coverage will be used for

• reports for which a field survey was undertaken but the area was not extensively covered. This may apply to instances where some impediments did not allow for full coverage such as thick vegetation, etc.

• reports for which the entire property was mapped, but only a specific area was surveyed thoroughly. This is differentiated from low ratings listed above when these surveys cover up to around 50% of the property.

High coverage will be used for

• reports where the area highlighted in the map was extensively surveyed as shown by the GPS track coordinates. This category will also apply to permit reports.

RECOMMENDATION GUIDE

The Heritage Screener includes a set of recommendations to the applicant based on whether an impact on heritage resources is anticipated. One of three possible recommendations is formulated:

(1) The heritage resources in the area proposed for development are sufficiently recorded - The surveys undertaken in the area adequately captured the heritage resources. There are no known sites which require mitigation or management plans. No further heritage work is recommended for the proposed development.

This recommendation is made when:

- enough work has been undertaken in the area
- it is the professional opinion of CTS that the area has already been assessed adequately from a heritage perspective for the type of development proposed

(2) The heritage resources and the area proposed for development are only partially recorded - The surveys undertaken in the area have not adequately captured the heritage resources and/or there are sites which require mitigation or management plans. Further specific heritage work is recommended for the proposed development.

This recommendation is made in instances in which there are already some studies undertaken in the area and/or in the adjacent area for the proposed development. Further studies in a limited HIA may include:

- improvement on some components of the heritage assessments already undertaken, for instance with a renewed field survey and/or with a specific specialist for the type of heritage resources expected in the area
 - compilation of a report for a component of a heritage impact assessment not already undertaken in the area



• undertaking mitigation measures requested in previous assessments/records of decision.

(3) The heritage resources within the area proposed for the development have not been adequately surveyed yet - Few or no surveys have been undertaken in the area proposed for development. A full Heritage Impact Assessment with a detailed field component is recommended for the proposed development.

Note:

The responsibility for generating a response detailing the requirements for the development lies with the heritage authority. However, since the methodology utilised for the compilation of the Heritage Screeners is thorough and consistent, contradictory outcomes to the recommendations made by CTS should rarely occur. Should a discrepancy arise, CTS will immediately take up the matter with the heritage authority to clarify the dispute.

APPENDIX 5 - Summary of Specialist Expertise

Jenna Lavin, an archaeologist with an MSc in Archaeology and Palaeoenvironments, and currently completing an MPhil in Conservation Management , heads up the heritage division of the organisation, and has a wealth of experience in the heritage management sector. Jenna's previous position as the Assistant Director for Policy, Research and Planning at Heritage Western Cape has provided her with an in-depth understanding of national and international heritage legislation. Her 8 years of experience at various heritage authorities in South Africa means that she has dealt extensively with permitting, policy formulation, compliance and heritage management at national and provincial level and has also been heavily involved in rolling out training on SAHRIS to the Provincial Heritage Resources Authorities and local authorities.

Jenna is on the Executive Committee of the Association of Professional Heritage Practitioners (APHP), and is also an active member of the International Committee on Monuments and Sites (ICOMOS) as well as the International Committee on Archaeological Heritage Management (ICAHM). In addition, Jenna has been a member of the Association of Southern African Professional Archaeologists (ASAPA) since 2009. Recently, Jenna has been responsible for conducting training in how to write Wikipedia articles for the Africa Centre's WikiAfrica project.

Since 2016, Jenna has drafted over 50 Heritage Impact Assessments throughout South Africa.