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HERITAGE SCREENER

CTS Reference Number:	CTS23_043
SAHRIS Case	192
Client:	Landscape Dynamics
Date:	February 2023
Title:	Proposed extension of the validity of the EAs of two authorised solar PV facilities on Portion D and Portion E (and now called the Ukuqala Solar PV facility) within the Vetlaagte Farm near De Aar

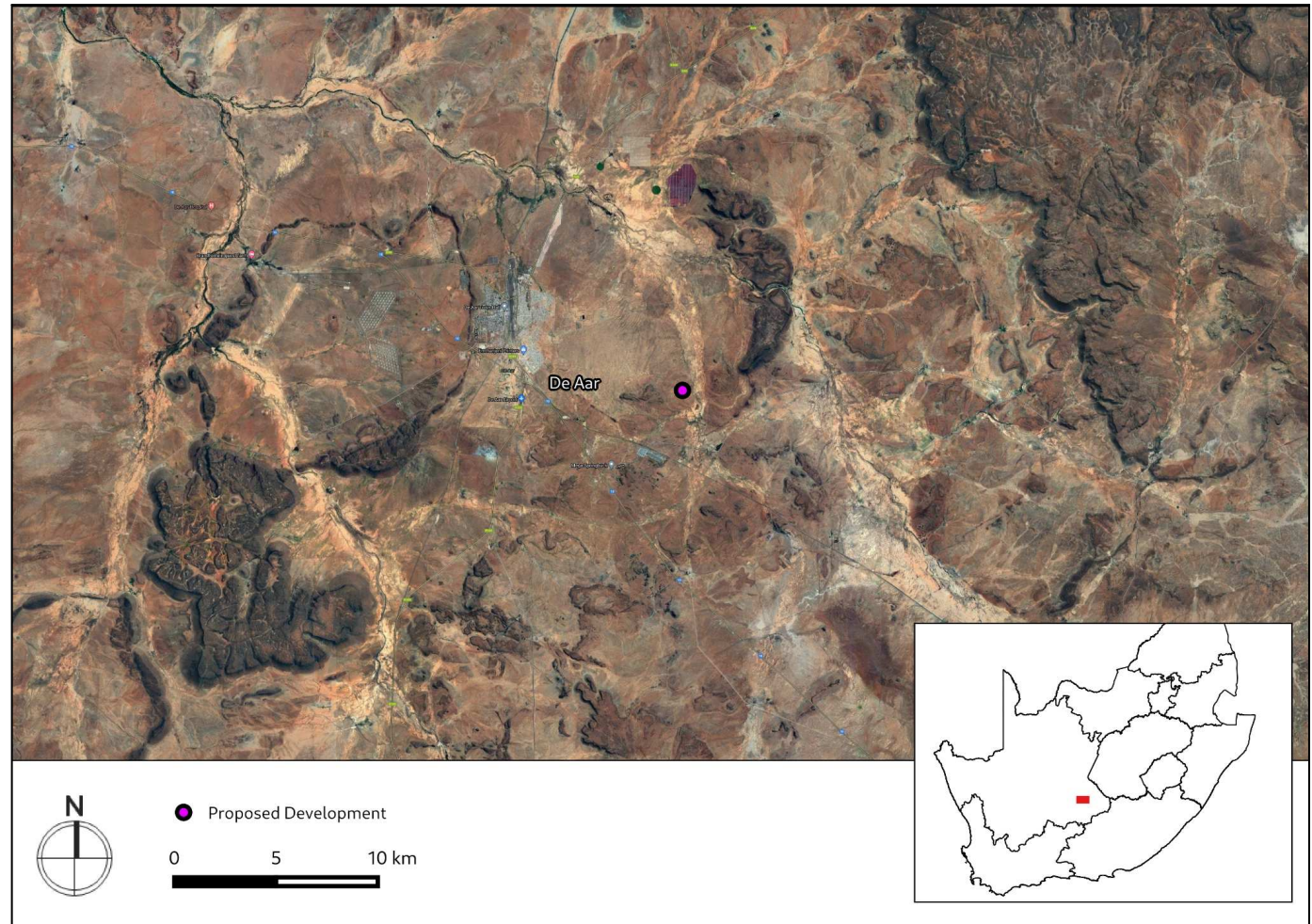


Figure 1a. Satellite map indicating the location of the proposed development in the Northern Cape Province

CTS Heritage Recommendation:	RECOMMENDATION Based on the information available, it is not likely that the proposed development the proposed development of Portion E and D will negatively impact on significant archaeological, palaeontological or cultural landscape heritage resources and as such, it is recommended that no further heritage assessments are required in terms of section 38(3) of the NHRA.
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1. Proposed Development Summary

This application is made for the proposed extension of the validity of the EAs of two authorised solar PV facilities on Portion D and Portion E (and now called the Ukuqala Solar PV facility) within the Vetlaagte Farm near De Aar. The total size of the solar facility will be 75MW. Note that all the relevant NEMA authorisations for the above two PV facilities are currently in place, and were issued in 2013 however the EAs will expire by July 2023 if not extended. The final layout was guided by the Environmental Sensitivity Map which was produced using the specialist input obtained during the original impact assessment, as well as during the course of numerous EA Amendment Applications. Furthermore, CTS Heritage has recently completed field assessments in the immediate context and as such, the site is well understood.

2. Application References

Name of relevant heritage authority(s)	SAHRA
Name of decision making authority(s)	DFFE

3. Property Information

Latitude / Longitude	30°41'22.52"S 24° 5'17.76"E
Erf number / Farm number	Remaining Extent of the Farm Vetlaagte No 4
Local Municipality	Emthanjeni
District Municipality	Pixley ka Seme
Province	Northern Cape
Current Use	Agriculture with approved PV facility
Current Zoning	Agriculture

4. Nature of the Proposed Development

Depth of excavation (m)	<2m
Height of development (m)	NA

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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-
x	a) exceeding 5 000m ² in extent
	b) involving three or more existing erven or subdivisions thereof
	c) involving three or more erven or divisions thereof which have been consolidated within the past five years
	4. Rezoning of a site exceeding 10 000m ²
	5. Other (state):

6. Additional Infrastructure Required for this Development

See original submission

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

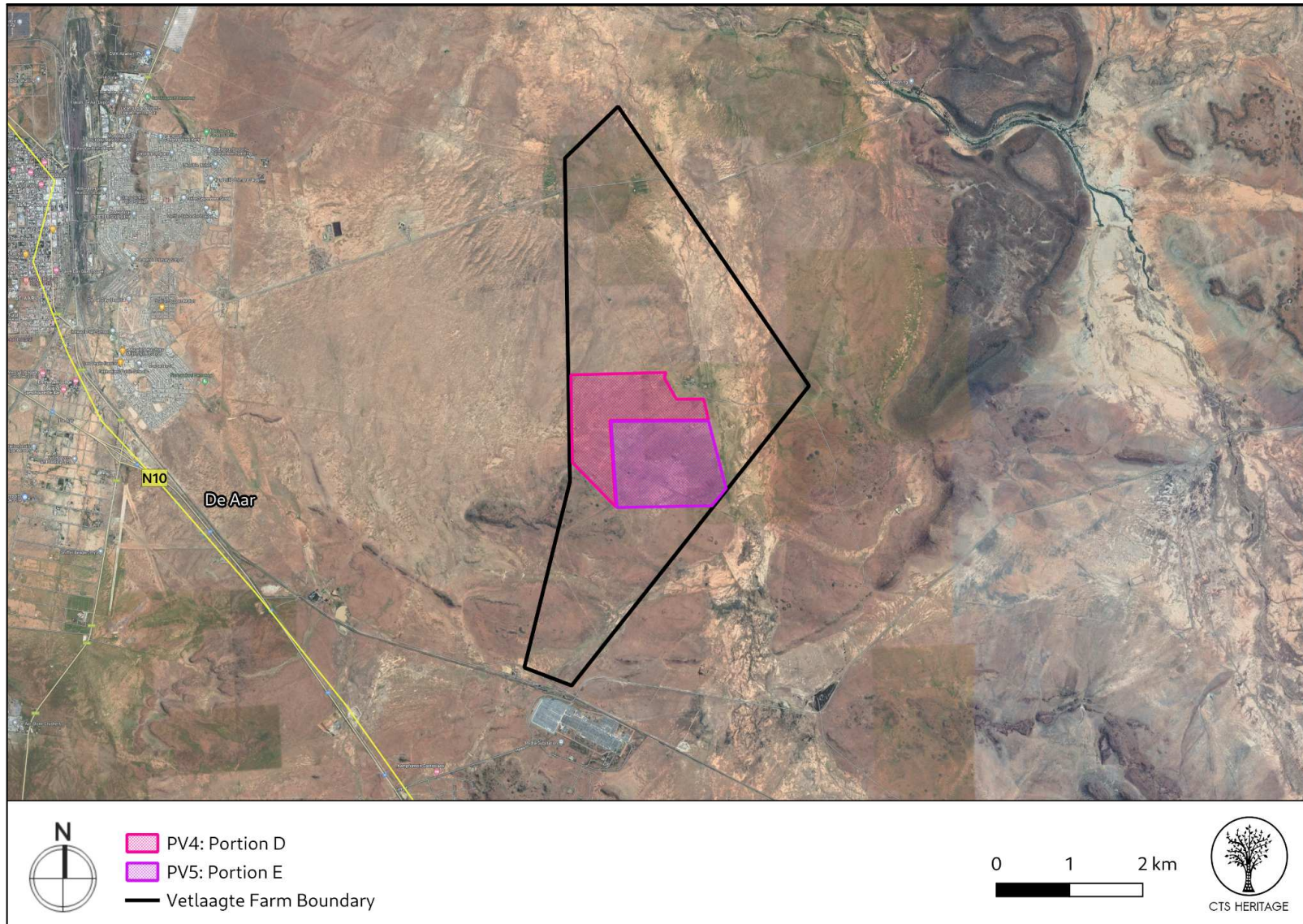


Figure 1b Overview Map. Satellite image (2022) indicating the proposed development area at closer range.

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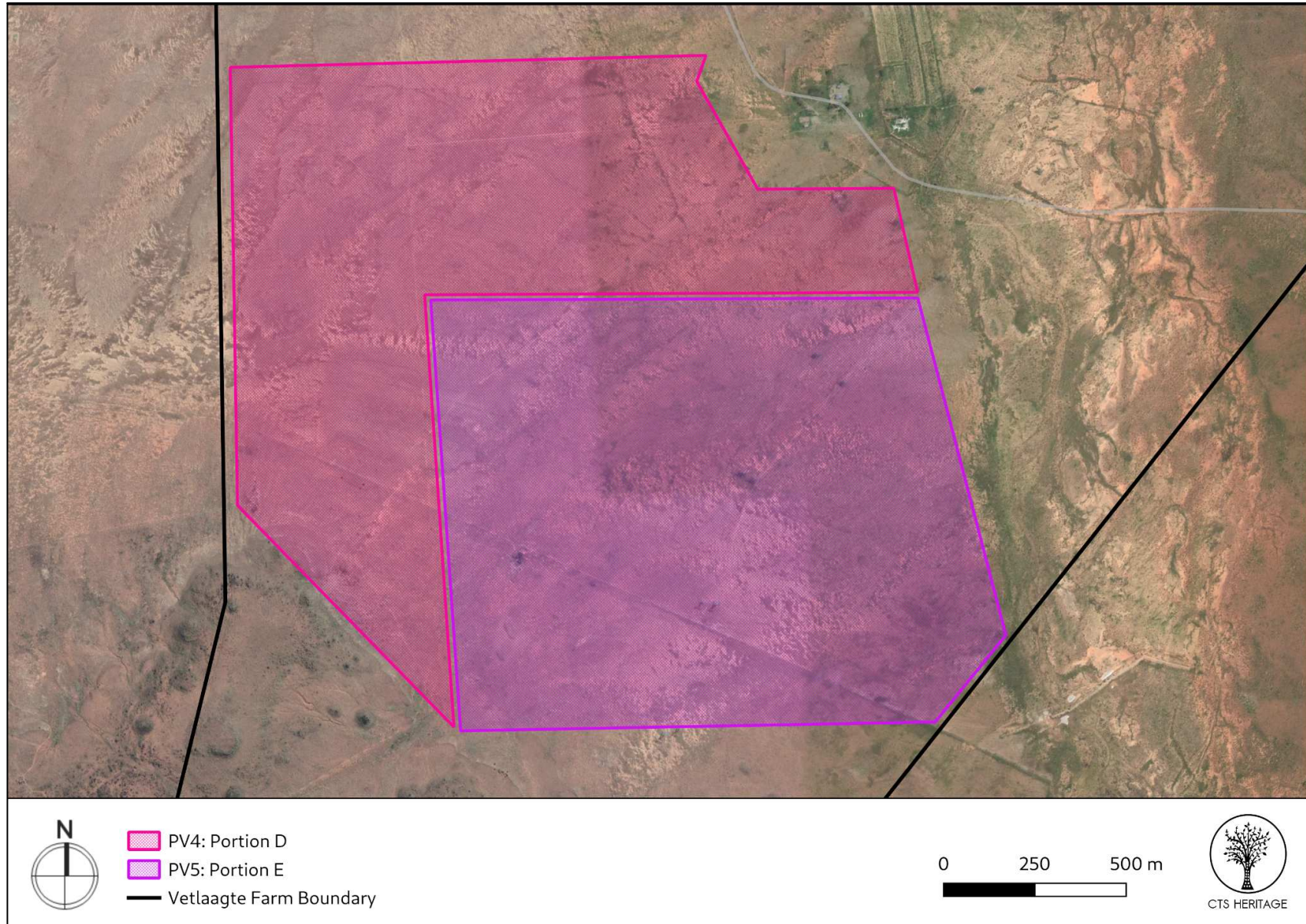


Figure 1c Overview Map. Satellite image (2022) indicating the proposed development area at closer range.



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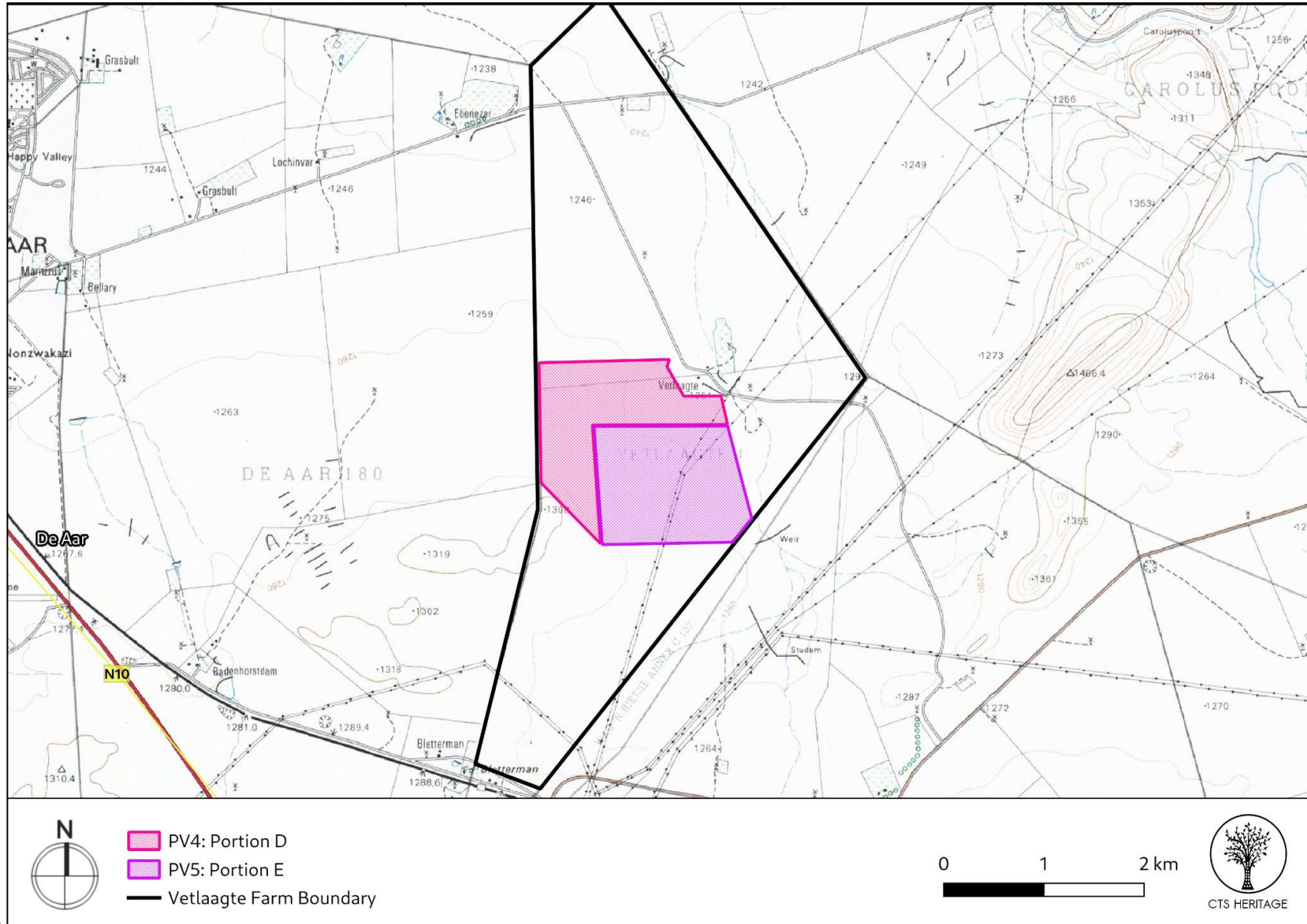


Figure 1e Overview Map. 1:50 000 Topo Map indicating the proposed development area at closer range.

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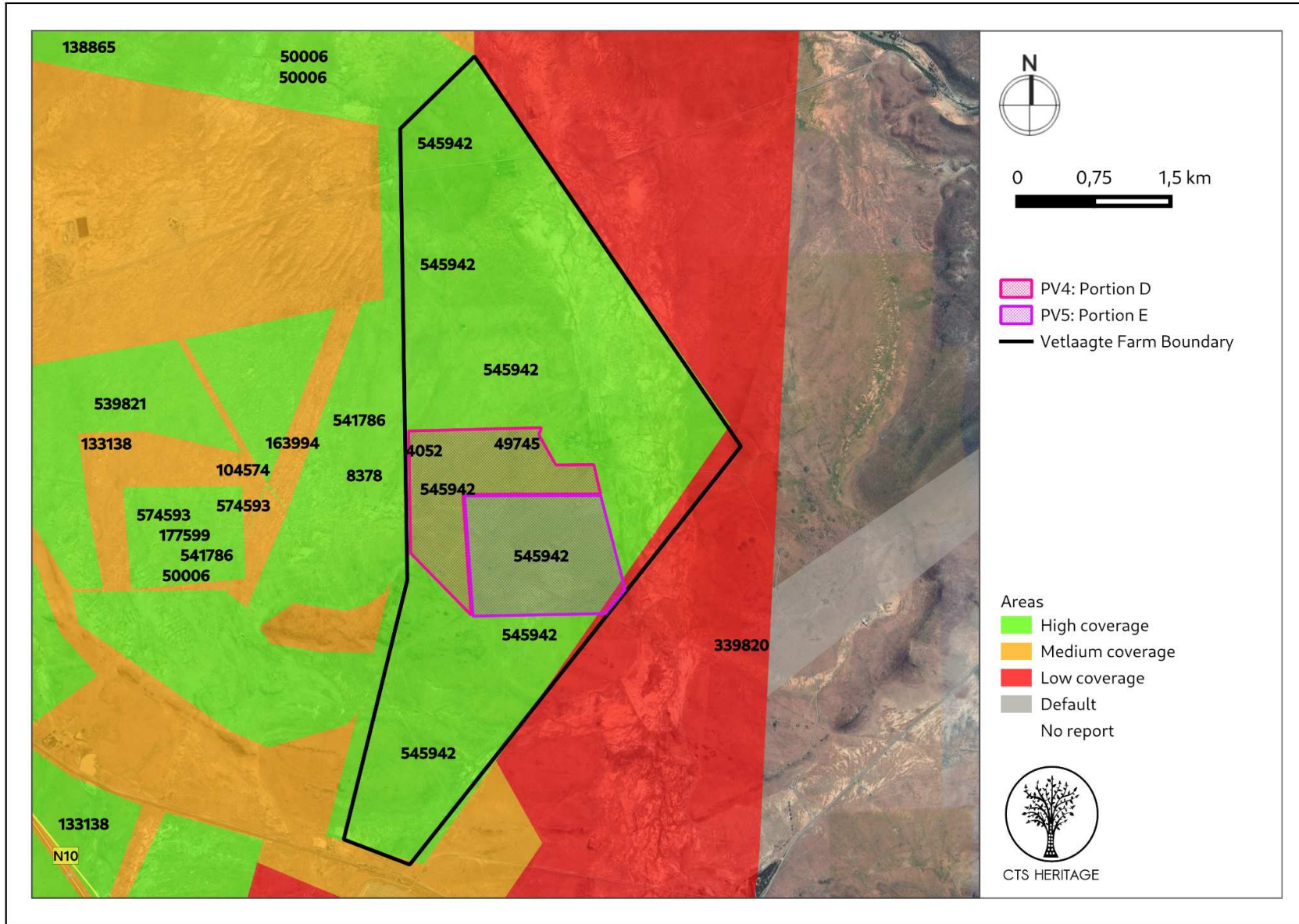


Figure 2a. Previous HIAs Map. Previous Heritage Impact Assessments surrounding the proposed development area within 10km, with SAHRIS NIDS indicated. Please see Appendix 2 for a full reference list.

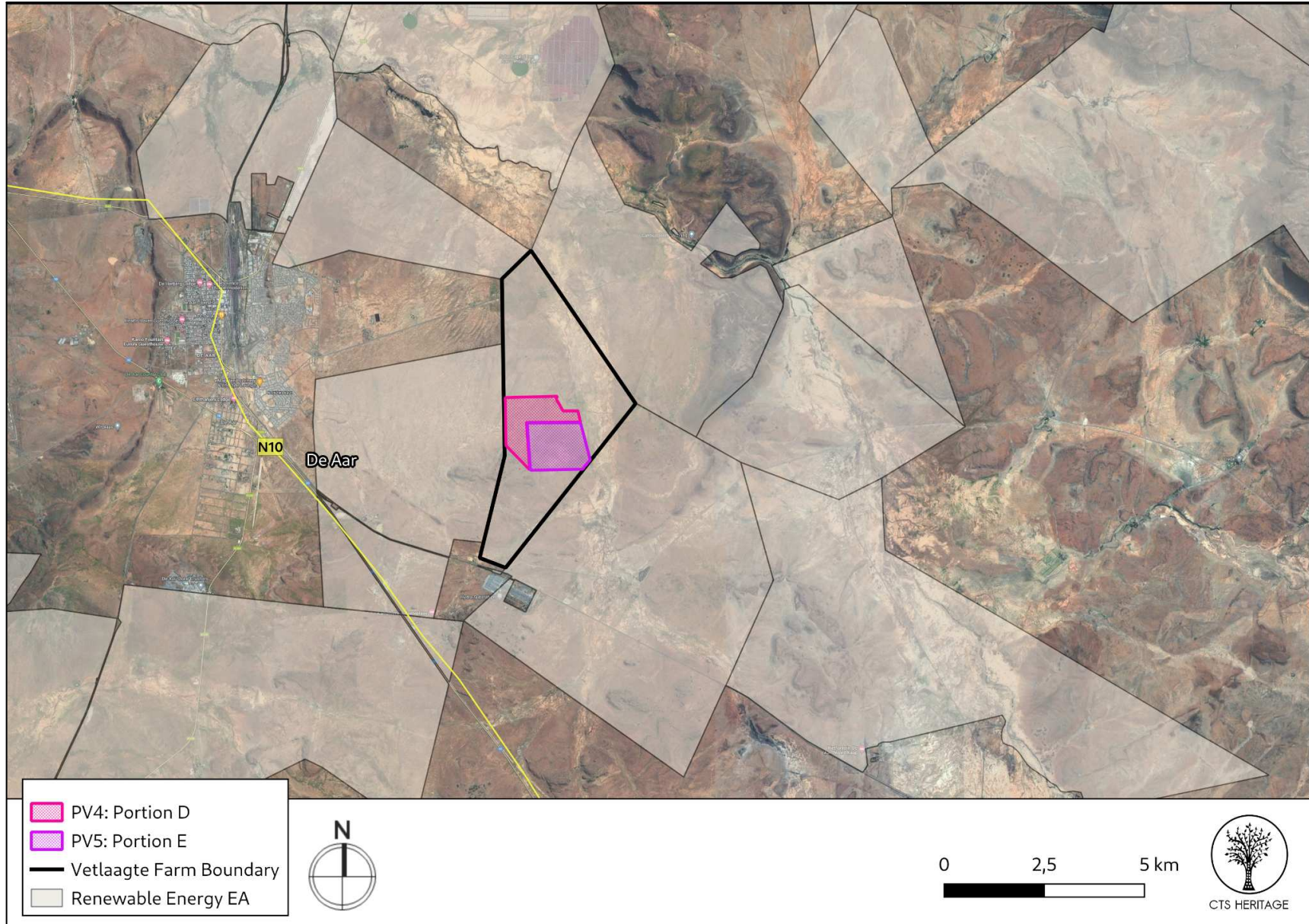


Figure 2b. Environmental Authorisations. Previous Environmental Authorisations issued for Renewable Energy Projects in the vicinity of the proposed development

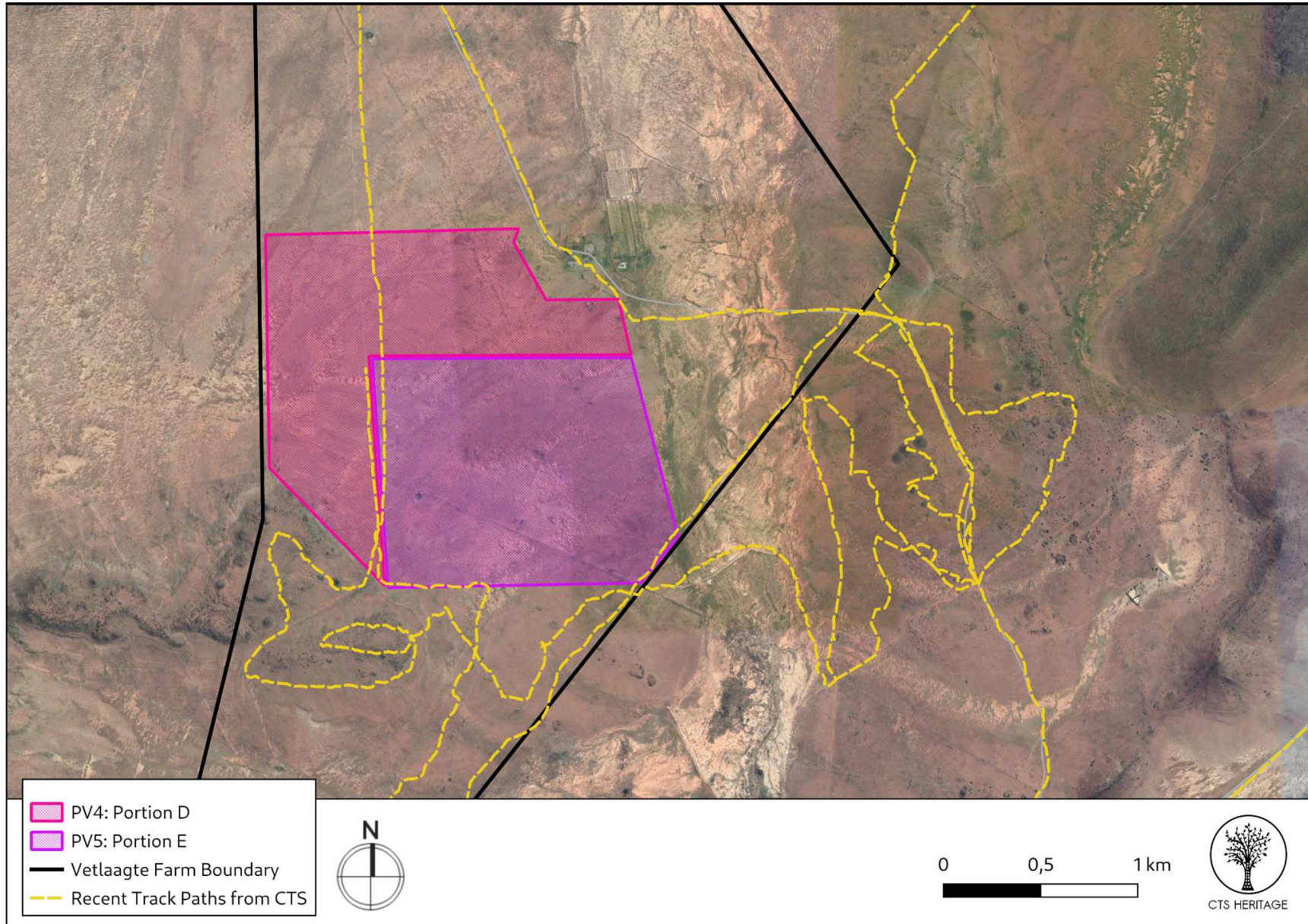


Figure 2c. Environmental Authorisations. Track paths showing the routes assessed by CTS Heritage as part of this and other assessments in the area

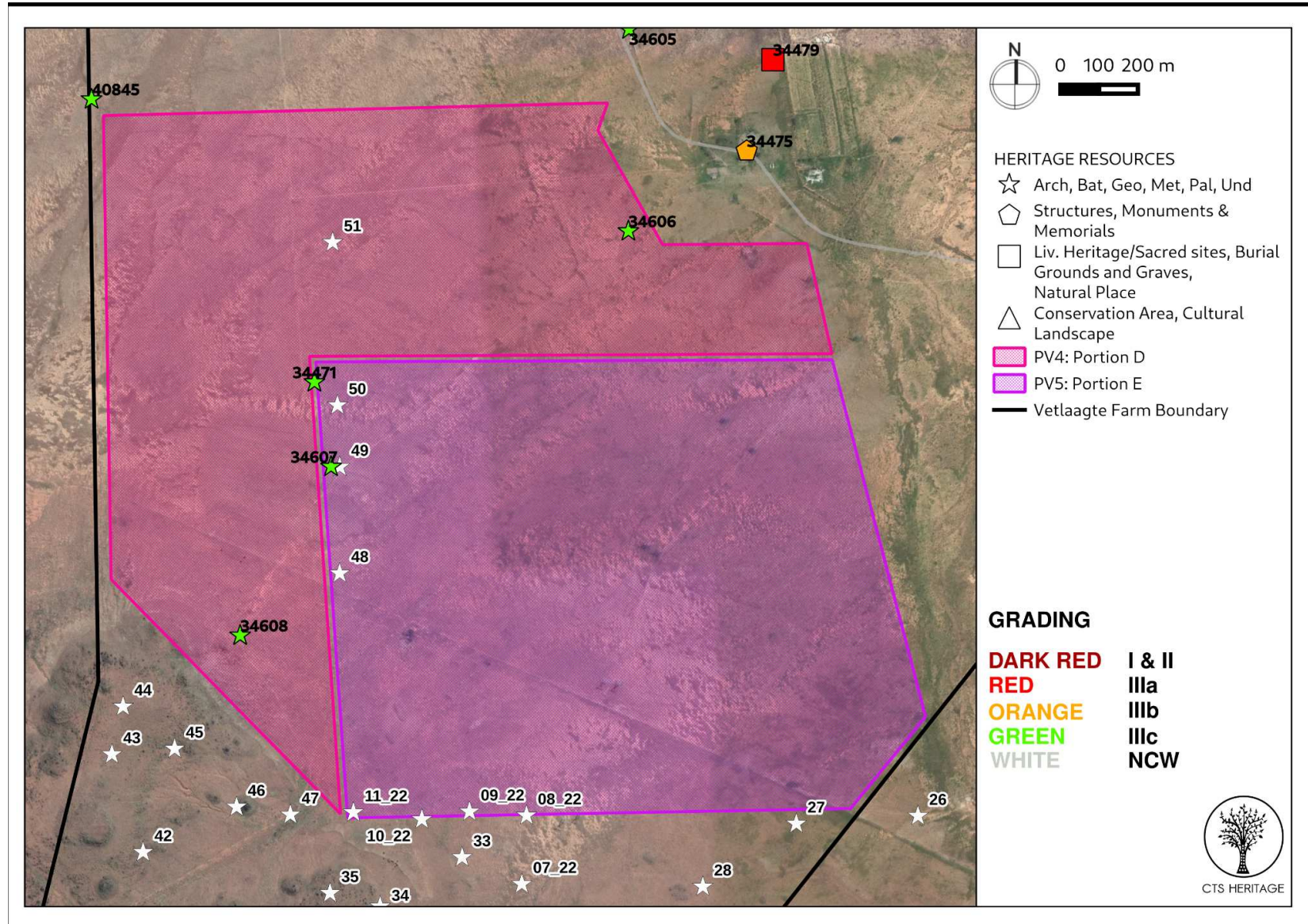


Figure 3. Heritage Resources Map. Heritage Resources previously identified in and near the study area, with SAHRIS Site IDs indicated. Please See Appendix 4 for a full description of heritage resource types.



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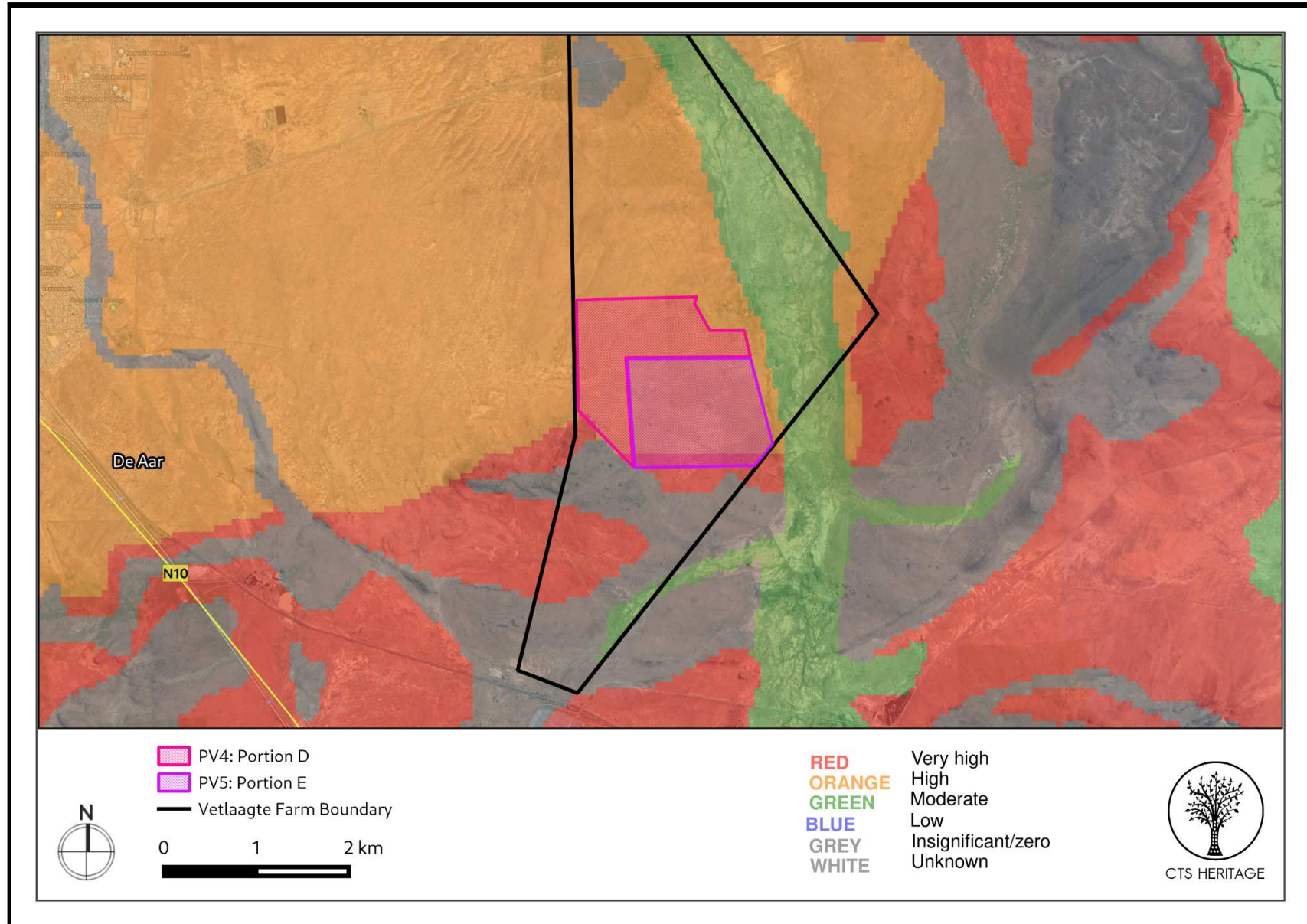


Figure 4a. Palaeosensitivity Map. Indicating very high fossil sensitivity underlying the study area. Please See Appendix 3 for a full guide to the legend.

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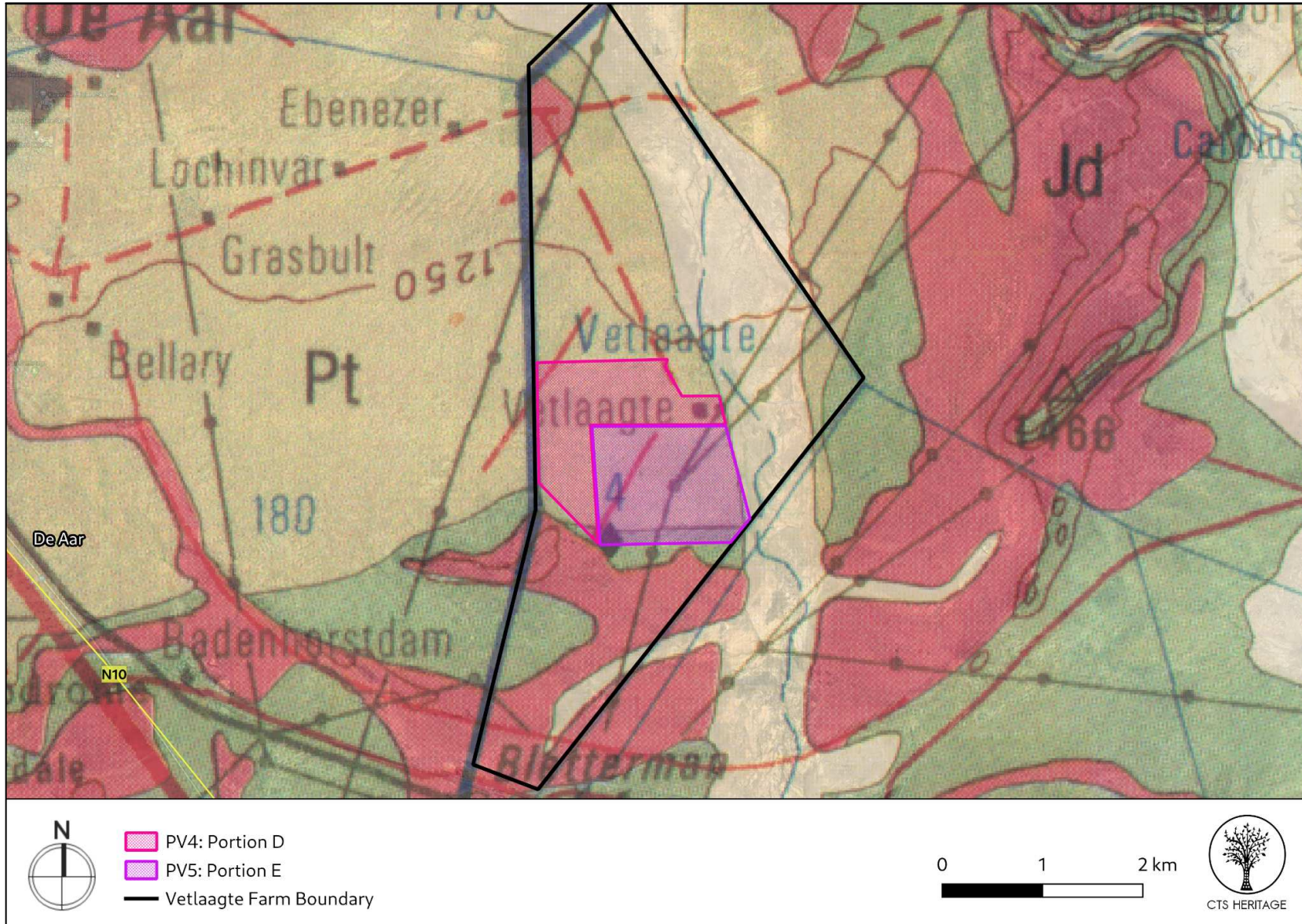


Figure 4b. Geology Map. Extracted from the Council for GeoSciences Map 3024 for Colesburg indicating that the development area is underlain by Jd: Jurassic Dolerite, Pt (lighter green): Tierberg Formation of the Ecca Group and Pa (darker green): Adelaide Subgroup of the Beaufort Group

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8. Brief Heritage Summary

This application is for the extension of the validity of the Environmental Authorisations granted for the Ukuqala Solar Energy Facility located West of De Aar in the Northern Cape. The EA's for the two SEFs considered here were granted in 2013 and will lapse in July 2023 if they are not extended.

De Aar was originally established on the Farm "De Aar." The name means "the artery," a reference to its underground water supply. The Cape Government Railways were founded in 1872, and the route that the government chose for the line to connect the Kimberley diamond fields to Cape Town on the coast, ran directly through De Aar. Because of its central location, the government also selected the location for a junction between this first railway line, and the other Cape railway networks further east, in 1881. In 1899 two brothers who ran a trading store and hotel at the junction, Isaac and Wulf Friedlander, purchased the farm of De Aar. Following the Anglo Boer War, the Friedlander brothers surveyed the land for the establishment of a town. The municipality was created a year later in 1900.

The area proposed for development has been previously approved for the establishment of the Vetlaagte Solar Energy Facility in 2012 (SAHRIS Case ID 192) and assessed in two subsequent HIAs completed by CTS Heritage in 2021 (for the grid connection infrastructure and the MTS associated with this SEF development). As such, the development area has been subject to a number of previous heritage impact assessment processes. To this end, we have included a map that indicates the tracks walked by Wiltshire in 2021 and 2022 in these assessments of the Vetlaagte project area (Figure 2c) as well as a map of the observations documented (Figure 3).

Cultural Landscape and Built Environment

As part of the 2012 process for approval of the Vetlaagte Solar Energy Facility, Kruger conducted a detailed Heritage Impact Assessment of the area proposed for development. Kruger (2012) documented historical period remains, "specifically the old Vetlaagte homestead with restored farmhouse, outbuildings, midden and labourers quarters, as well as a dilapidated dam wall constructed in the drainage line east of the farmstead are present on the property. The date of construction of the farm house is denoted by a year count ("1930") on the front gable of the structure. The entire farmstead is situated in an area excluded from the solar farm development. A small family graveyard, associated with the farmstead at Vetlaagte, also occurs in the exclusion zone about 100m north of the farm house." As the dam wall situated in the drainage line east of the farmstead has been largely destroyed, the site is of low significance and it is recommended that this site be considered to be Not Conservation Worthy. No further mitigation measures are recommended in this regard. One small structure was identified on GoogleEarth satellite imagery located in the north east corner of PV4: Portion D. In correspondence with the landowner, it was confirmed that the structure in question (also refer to the maps below) is approximately 200m south of the residential dwelling on the Vetlaagte farm. It is an old workers dwelling which is definitely not 60 years or older. This structure is a ruin that hasn't been occupied in many years and as such, this structure can be considered to be Not Conservation-Worthy.

Archaeology

According to Kruger (2012), "During the survey, widespread Middle Stone Age (MSA) material, including characteristic formal MSA stone tools such as points, blades and scrapers were documented in the survey area along a north-south oriented drainage on the eastern periphery of the property. The lithic remains occur in three large scatters and, almost without exception, in low lying areas along non-perennial drainage lines and wetland areas where precipitation and groundwater have exposed the stone tools, originally deposited on a decomposed calcrete rock layer approximately 30cm sub surface. Preliminary examinations of some of the lithics indicated that a number of flakes displayed faceted platforms, characteristic of the MSA."

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All of the heritage resources identified by Kruger (2012) as well as sites identified in subsequent assessments of this area have been mapped relative to the proposed development in Figure 3. None of the infrastructure proposed as part of this development application are located near the archaeologically sensitive drainage located along the eastern periphery of the property. The sites listed in the table below are located within the development footprint along with their recommended mitigation measures.

Site No.	Site Name	Description	Grading	Mitigation
34606	Vetlaagte 011	Large ferruginous carbonate nodules within Ecca sandstones, plus fossil wood fragments	IIIC	None required
34607	Vetlaagte 012	Thin tempestite sandstones of Waterford Formation with moderately diverse trace fossil assemblages	IIIC	None required
34608	Vetlaagte 013	Baked Beaufort Group mudrocks with transported fossil plant remains	IIIC	None required
34471	Vetlaagte 03 (SA03)	Artefacts - MSA, single blades and scrapers occur along with flakes and debris. The site integrity has been compromised by the mixing of artefacts caused by riverbank erosion	IIIC	Site properly recorded prior to construction. This was done by Wiltshire in 2022

In the assessments completed by CTS Heritage (2021) for the Vetlaagte project area, it was found that “The overall archaeological sensitivity of the development area with regard to the preservation of Early, Middle and Later Stone Age archaeology as well as Khoe and San heritage, early colonial settlement is regarded as very high. Despite this, the field assessment conducted for this project has demonstrated that the specific area proposed for development has low sensitivity for impacts to significant archaeological heritage. As indicated above, the results of this assessment align with the findings of other specialists such as Morris (2011) who notes that ephemeral MSA and LSA scatters are the dominant archaeological signature of the area and are therefore not archaeologically significant.”

Based on the findings of the various reports completed for the area, and the results of the walkdown assessments, no significant archaeological resources will be impacted by the Ukuqala SEF and there is no objection to the extension of the validity of the EA from an archaeological perspective.

Palaeontology

According to the SAHRIS Palaeosensitivity Map (Figure 4a), the area proposed for development is underlain by sediments of high and very high paleontological sensitivity. According to the extract from the Council for GeoSciences Map 3024 for Colesburg, the development area is underlain by Jurassic Dolerite, the Tierberg Formation of the Ecca Group and the Adelaide Subgroup of the Beaufort Group. The palaeontological sensitivity for the development area under consideration here has been ground-truthed by Almond (2012) who ultimately concluded that the palaeontological sensitivity of this area is LOW. Almond’s report (2012) is summarised below.

As part of the process completed in 2012, Almond completed a field-based palaeontological assessment of the area proposed for the Ukuqala SEF development. Almond (2012) found that “The potentially fossiliferous sediments of the Late Palaeozoic Karoo Supergroup (Ecca and Lower Beaufort Groups) that underlie the study area are almost

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entirely mantled in a thick layer of superficial deposits of probable Pleistocene to Recent age. These include various soils, gravels and – at least in some areas - a well-developed calcrete hardpan. The upper Ecca Group bedrocks in the northern portion of the study area contain locally abundant fossil wood (of palaeontological interest for dating and palaeoenvironmental studies), as well as low diversity non-marine trace fossil assemblages typical of the Waterford Formation, rather than the Tierberg Formation as mapped.

No vertebrate fossils and only scattered woody plant impressions of the Permian Glossopteris Flora were observed within the Lower Beaufort Group rocks that are very poorly exposed in the southern portion of the Vetlaagte study area. Trace fossils, silicified wood and rare vertebrate remains (therapsids, parareptiles) of the Middle Permian Pristerognathus Assemblage Zone have recently been recorded from this succession in the De Aar region (Almond 2010b). Extensive dolerite sills and dykes of the Early Jurassic Karoo Dolerite Suite intruding the Karoo Supergroup sediments are entirely unfossiliferous, as are rare intrusive kimberlite pipe rocks of Cretaceous age. The diverse superficial deposits within the three study areas (e.g. soils, gravels, alluvium, calcrete hardpans) are of low palaeontological sensitivity as a whole. Abundant fragments of reworked fossil wood material of Ecca provenance occur widely within subsurface and surface gravels overlying the Ecca Group outcrop area.”

The observations made by Almond (2012) are mapped relative to the proposed development in Figure 3. Three palaeontological sites may be impacted by the proposed laydown areas - SAHRIS Site 34606, 34607 and 34608 (see the table above). These sites are described by Almond (2012) and he indicates that no mitigation of these sites is required. Almond (2012) concludes that “The proposed solar power facility developments are inferred to be of LOW overall significance in terms of palaeontological heritage resource conservation because:

- The potentially fossiliferous Karoo Supergroup rocks within the development footprints (solar panel arrays, transmission lines, roads and other infrastructure) are generally buried beneath a thick mantle of fossil-poor superficial sediments (soils, gravels, calcretes);
- The Karoo Supergroup rocks are extensively disrupted by near-surface secondary calcrete formation. In many cases they have suffered baking during dolerite magma intrusion, further compromising their fossil heritage;
- The solar energy facilities each have a small footprint while extensive, deep bedrock excavations are not envisaged for this sort of alternative energy development”

In Bamford’s assessment completed for this area in 2021, she notes that “Based on experience, other reports and the lack of any significant previously recorded fossils from the area, it is unlikely that any fossils would be preserved in the Tierberg Formation or Adelaide Subgroup. Nonetheless, a Fossil Chance Find Protocol should be added to the EMPr.”

It is confirmed that there are no new assessments and/or guidelines which are now relevant which were not undertaken during the initial assessment. The SAHRA Minimum Standards for Impact Assessments (2007) remain applicable.

Cumulative Impact

The proposed renewable energy facilities located on Portions D and E are located within a belt of approved renewable energy facilities (Figure 2b) located outside of De Aar. Furthermore, there are already 5 other approved PV facilities for which this proposed development is made in support of. In terms of impacts to heritage resources, it is preferred that this kind of infrastructure development is concentrated in one location and is not sprawled across an otherwise culturally significant landscape. The proposed

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development is therefore unlikely to result in unacceptable risk or loss, nor will the proposed development result in a complete change to the sense of place of the area or result in an unacceptable increase in impact due to its location as one of many renewable energy facilities in this area.

Site Sensitivity Verification

According to the DFFE Screening Tool analysis completed for both Portion D and Portion E, the development area has Very High levels of sensitivity for impacts to palaeontological heritage and High levels of sensitivity for impacts to archaeological and cultural heritage resources. The results of this assessment in terms of site sensitivity are summarised below:

- The cultural value of the broader area has limited significance in terms of its agricultural history (Moderate)
- Limited significant archaeological resources were identified within the broader area (Low)
- No highly significant palaeontological resources were identified within the development area, however the geology underlying the development area is very sensitive for impacts to significant fossils (Low)

As per the findings of this assessment, and its supporting documentation, the outcome of the sensitivity verification disputes the results of the DFFE Screening Tool for Palaeontology and disputes the results of the screening tool for archaeology and cultural heritage - these should be considered to be Moderate to Low.

Statement on environmental processes impacting on archaeological and palaeontological heritage

Archaeological and palaeontological heritage resources reflect the environments of the deeper past and are unlikely to change significantly in as short a geological time span as 10 years. Some changes to heritage resources may result from processes of erosion and deflation but, in this particular ecological setting, would likely represent heavily disturbed contexts and consequently would be of limited scientific/heritage value.

In conclusion

It is very unlikely that the baseline status of the environment has changed since the initial EIA for the two lease areas was done in 2012. While Kruger (2012) did not communicate an impact rating during the initial assessment, the mitigation measures provided in the initial assessment are still applicable. These are listed in the Table above. No new mitigation measures should be added to the Environmental Authorisations if the DFFE decides to extend the commencement period as per the application.

The environment in terms of impacts to heritage resources has not changed significantly since 2012; therefore, there is no objection to the extension of the validity of the Environmental Authorisations.

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APPENDIX 1

List of built environment and archaeological heritage resources identified within 15km of the development area

Site ID	Site/Observation no.	Full Site Name/Description	Site Type	Grading
33933	DAR2011/004	BADENHORST DAM FARM 2011/004	Artefacts	Grade IIIb
33947	DAR2011/010	BADENHORST DAM FARM 2011/010	Stone walling	Grade IIIb
33955	DAR2011/014	BADENHORST DAM FARM 2011/014	Stone walling	Grade IIIb
33887	RNSB244	Renosterburg244	Palaeontological	Grade IIIb
33891	RNSB245	Renosterburg245	Palaeontological	Grade IIIb
34597	TBS003	Taaiboschfontein 003	Archaeological, Transport infrastructure	Grade IIIb
34598	TBS002	Taaiboschfontein 002	Structures	Grade IIIb
34603	VLG008	Vetlaagte 008	Palaeontological	Grade IIIb
33929	DAR2011/001	BADENHORST DAM FARM 2011/001	Stone walling	Grade IIIc
33931	DAR2011/002	BADENHORST DAM FARM 2011/002	Artefacts	Grade IIIc
33932	DAR2011/003	BADENHORST DAM FARM 2011/003	Artefacts	Grade IIIc
33934	DAR2011/005	BADENHORST DAM FARM 2011/005	Stone walling, Artefacts	Grade IIIc
33937	DAR2011/006	BADENHORST DAM FARM 2011/006	Stone walling	Grade IIIc
33941	DAR2011/007	BADENHORST DAM FARM 2011/007	Archaeological	Grade IIIc
33942	DAR2011/008	BADENHORST DAM FARM 2011/008	Stone walling, Artefacts	Grade IIIc
33943	DAR2011/009	BADENHORST DAM FARM 2011/009	Stone walling	Grade IIIc

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33950	DAR2011/011	BADENHORST DAM FARM 2011/011	Stone walling	Grade IIIc
33949	DAR2011/012	BADENHORST DAM FARM 2011/012	Stone walling	Grade IIIc
33954	DAR2011/013	BADENHORST DAM FARM 2011/013	Stone walling	Grade IIIc
33956	DAR2011/015	BADENHORST DAM FARM 2011/015	Stone walling	Grade IIIc
33957	DAR2011/016	BADENHORST DAM FARM 2011/016	Stone walling	Grade IIIc
33958	DAR2011/017	BADENHORST DAM FARM 2011/017	Stone walling	Grade IIIc
33951	DAR2011/018	BADENHORST DAM FARM 2011/018	Artefacts	Grade IIIc
33952	DAR2011/019	BADENHORST DAM FARM 2011/019	Artefacts	Grade IIIc
33953	DAR2011/020	BADENHORST DAM FARM 2011/020	Artefacts	Grade IIIc
33948	DAR2011/021	BADENHORST DAM FARM 2011/021	Stone walling	Grade IIIc
33946	DAR2011/022	BADENHORST DAM FARM 2011/022	Archaeological	Grade IIIc
33945	DAR2011/023	BADENHORST DAM FARM 2011/023	Stone walling	Grade IIIc
33944	DAR2011/024	BADENHORST DAM FARM 2011/024	Building	Grade IIIc
33667	DASE13	De Aar South East 13	Artefacts	Grade IIIc
33668	DASE14	De Aar South East 14	Artefacts	Grade IIIc
33669	DASE15	De Aar South East 15	Artefacts	Grade IIIc
33670	DASE16	De Aar South East 16	Artefacts	Grade IIIc
33651	DASE1	De Aar South East 1	Artefacts	Grade IIIc
33666	DASE12	De Aar South East 12	Artefacts	Grade IIIc

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33663	DASE10	De Aar South East 10	Artefacts	Grade IIIc
33671	DASE17	De Aar South East 17	Artefacts	Grade IIIc
33672	DASE18	De Aar South East 18	Artefacts	Grade IIIc
33673	DASE19	De Aar South East 19	Artefacts	Grade IIIc
33674	DASE20	De Aar South East 20	Artefacts	Grade IIIc
33675	DASE21	De Aar South East 21	Artefacts	Grade IIIc
33676	DASE22	De Aar South East 22	Artefacts	Grade IIIc
33677	DASE25	De Aar South East 25	Artefacts	Grade IIIc
33679	DASE26	De Aar South East 26	Artefacts	Grade IIIc
33678	DASE27	De Aar South East 26	Artefacts	Grade IIIc
33653	DASE4	De Aar South East 4	Artefacts	Grade IIIc
33661	DASE8	De Aar South East 8	Artefacts	Grade IIIc
33664	DASE9	De Aar South East 9	Artefacts	Grade IIIc
33662	DASE7	De Aar South East 7	Artefacts	Grade IIIc
33655	DASE6	De Aar South East 6	Artefacts	Grade IIIc
33652	DASE2	De Aar South East 2	Artefacts	Grade IIIc
33654	DASE5	De Aar South East 5	Artefacts	Grade IIIc
37209	TRANS-ECNC013	Transnet - Eastern Cape, Northern Cape 013	Ruin > 100 years, Artefacts	Grade IIIc
34468	VLG001	VETLAAGTE 1	Artefacts	Grade IIIb

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34470	VLG002	Vetlaagte 2	Artefacts	Grade IIIb
34471	VLG003	VETLAAGTE 3	Artefacts	Grade IIIc
34474	VLG004	VETLAAGTE 4	Artefacts	Grade IIIb
34475	VLG005	VETLAAGTE 5	Building	Grade IIIb
34478	VLG006	VETLAAGTE 6	Stone walling	Grade IIIc
34604	VLG009	Vetlaagte 009	Palaeontological	Grade IIIc
34605	VLG010	Vetlaagte 010	Palaeontological	Grade IIIc
34606	VLG011	Vetlaagte 011	Palaeontological	Grade IIIc
34607	VLG012	Vetlaagte 012	Palaeontological	Grade IIIc
34608	VLG013	Vetlaagte 013	Palaeontological	Grade IIIc
40830	DAR2011/025	BADENHORST DAM FARM 2011/025	Palaeontological	Grade IIIc
40831	DAR2011/026	BADENHORST DAM FARM 2011/026	Palaeontological	Grade IIIc
40832	DAR2011/027	BADENHORST DAM FARM 2011/027	Palaeontological	Grade IIIc
40833	DAR2011/028	BADENHORST DAM FARM 2011/028	Palaeontological	Grade IIIc
40834	DAR2011/029	BADENHORST DAM FARM 2011/029	Palaeontological	Grade IIIc
40836	DAR2011/031	BADENHORST DAM FARM 2011/031	Palaeontological	Grade IIIc
40837	DAR2011/030	BADENHORST DAM FARM 2011/030	Palaeontological	Grade IIIc
40838	DAR2011/032	BADENHORST DAM FARM 2011/032	Palaeontological	Grade IIIc
40839	DAR2011/033	BADENHORST DAM FARM 2011/033	Palaeontological	Grade IIIc

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40841	DAR2011/035	BADENHORST DAM FARM 2011/035	Palaeontological	Grade IIIc
40842	DAR2011/036	BADENHORST DAM FARM 2011/036	Palaeontological	Grade IIIc
40843	DAR2011/037	BADENHORST DAM FARM 2011/037	Palaeontological	Grade IIIc
40844	DAR2011/038	BADENHORST DAM FARM 2011/038	Palaeontological	Grade IIIc
40845	DAR2011/034	BADENHORST DAM FARM 2011/034	Palaeontological	Grade IIIc
34479	VLG007	VETLAAGTE 7	Burial Grounds & Graves	Grade IIIa
91325	BADE007	Badenhorst PV3/007	Artefacts	Grade IIIc
91326	BADE008	Badenhorst PV3/008	Structures	Grade IIIc
91319	BADE001	Badenhorst PV3/001	Stone walling	Grade IIIc
91320	BADE002	Badenhorst PV3/002	Artefacts	Grade IIIc
91321	BADE003	Badenhorst PV3/003	Artefacts	Grade IIIc
91322	BADE004	Badenhorst PV3/004	Artefacts	Grade IIIc
91323	BADE005	Badenhorst PV3/005	Artefacts	Grade IIIc
91324	BADE006	Badenhorst PV3/006	Artefacts	Grade IIIb
91328	BADE010	Badenhorst PV3/010	Stone walling	Grade IIIc
91329	BADE011	Badenhorst PV3/011	Structures	Grade IIIc
91330	BADE012	Badenhorst PV3/012	Structures	Grade IIIb
91331	BADE013	Badenhorst PV3/013	Structures	Grade IIIb
91333	BADE015	Badenhorst PV3/015	Artefacts	Grade IIIc

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91334	BADE016	Badenhorst PV3/016	Artefacts	Grade IIIc
91335	BADE017	Badenhorst PV3/017	Structures	Grade IIIc
91336	BADE018	Badenhorst PV3/018	Burial Grounds & Graves	Grade IIIc
91337	BADE019	Badenhorst PV3/019	Structures	Grade IIIc
91338	BADE020	Badenhorst PV3/020	Structures	Grade IIIc
91339	BADE021	Badenhorst PV3/021	Artefacts	
91341	BADE022	Badenhorst PV3/022	Artefacts	
91342	BADE023	Badenhorst PV3/023	Artefacts	
91343	BADE024	Badenhorst PV3/024	Artefacts	
91344	BADE025	Badenhorst PV3/025	Artefacts	
91345	BADE026	Badenhorst PV3/026	Artefacts	
91346	BADE027	Badenhorst PV3/027	Artefacts	
91347	BADE028	Badenhorst PV3/028	Artefacts	
91348	BADE029	Badenhorst PV3/029	Artefacts	
91349	BADE030	Badenhorst PV3/030	Artefacts	
91332	BADE014	Badenhorst PV3/014	Structures	Grade IIIb
132051	DAR2013/001	BADENHORST DAM FARM	Stone walling	Grade IIIb
128603	3024CA/SEF/2012/SA01	Solar Energy Facility- site SA01	Artefacts	
128614	3024CA/SEFFDA180/2013/DAR2	Solar Energy Facilities on the Farm De Aar 180- Site	Building	Ungraded

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	013/001	DAR2013/001		
128615	3024CA/SEFFDA180/2013/DAR2 013/002	Solar Energy Facilities on the Farm De Aar 180- Site DAR2013/002	Artefacts	Ungraded
128616	3024CA/SEFFDA180/2013/DAR2 013/003	Solar Energy Facilities on the Farm De Aar 180- Site DAR2013/003	Artefacts	Ungraded
128618	3024CA/SEFFDA180/2013/DAR2 013/004	Solar Energy Facilities on the Farm De Aar 180- Site DAR2013/004	Artefacts	Ungraded
128619	3024CA/SEFFDA180/2013/DAR2 013/005	Solar Energy Facilities on the Farm De Aar 180- Site DAR2013/005	Artefacts	Ungraded
128620	3024CA/SEFFDA180/2013/DAR2 013/013	Solar Energy Facilities on the Farm De Aar 180- Site DAR2013/013	Artefacts	Ungraded
128621	3024CA/SEFFDA180/2013/DAR2 013/014	Solar Energy Facilities on the Farm De Aar 180- Site DAR2013/014	Artefacts	Ungraded
128623	3024CA/SEFFDA180/2013/DAR2 013/015	Solar Energy Facilities on the Farm De Aar 180- Site DAR2013/015	Artefacts	Ungraded
128624	3024CA/SEFFDA180/2013/DAR2 013/016	Solar Energy Facilities on the Farm De Aar 180- Site DAR2013/016	Artefacts	Ungraded
128627	3024CA/SEFFDA180/2013/DAR2 013/017	Solar Energy Facilities on the Farm De Aar 180- Site DAR2013/017	Artefacts	Ungraded
128628	3024CA/SEFFDA180/2013/DAR2 013/018	Solar Energy Facilities on the Farm De Aar 180- Site DAR2013/018	Artefacts	Ungraded
128629	3024CA/SEFFDA180/2013/DAR2 013/019	Solar Energy Facilities on the Farm De Aar 180- Site DAR2013/019	Artefacts	Ungraded
128630	3024CA/SEFFDA180/2013/DAR2	Solar Energy Facilities on the Farm De Aar 180- Site	Artefacts	Ungraded

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	013/020	DAR2013/020		
128631	3024CA/SEFFDA180/2013/DAR2 013/021	Solar Energy Facilities on the Farm De Aar 180- Site DAR2013/021	Artefacts	Ungraded
128632	3024CA/SEFFDA180/2013/DAR2 013/022	Solar Energy Facilities on the Farm De Aar 180- Site DAR2013/022	Artefacts	Ungraded
128633	3024CA/SEFFDA180/2013/DAR2 013/023	Solar Energy Facilities on the Farm De Aar 180- Site DAR2013/023	Artefacts	Ungraded
128634	3024CA/SEFFDA180/2013/DAR2 013/024	Solar Energy Facilities on the Farm De Aar 180- Site DAR2013/024	Building	Ungraded
128635	3024CA/SEFFDA180/2013/DAR2 013/006	Solar Energy Facilities on the Farm De Aar 180- Site DAR2013/006	Artefacts	Ungraded
128636	3024CA/SEFFDA180/2013/DAR2 013/007	Solar Energy Facilities on the Farm De Aar 180- Site DAR2013/007	Artefacts	Ungraded
128637	3024CA/SEFFDA180/2013/DAR2 013/008	Solar Energy Facilities on the Farm De Aar 180- Site DAR2013/008	Stone walling	Ungraded
128638	3024CA/SEFFDA180/2013/DAR2 013/009	Solar Energy Facilities on the Farm De Aar 180- Site DAR2013/009	Stone walling	Ungraded
128639	3024CA/SEFFDA180/2013/DAR2 013/010	Solar Energy Facilities on the Farm De Aar 180- Site DAR2013/010	Artefacts	Ungraded
128640	3024CA/SEFFDA180/2013/DAR2 013/011	Solar Energy Facilities on the Farm De Aar 180- Site DAR2013/011	Artefacts	Ungraded
128641	3024CA/SEFFDA180/2013/DAR2 013/012	Solar Energy Facilities on the Farm De Aar 180- Site DAR2013/012	Artefacts	Ungraded
128642	3024CA/SEFFDA180/2013/DAR2	Solar Energy Facilities on the Farm De Aar 180- Site	Artefacts	Ungraded

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	011/001	DAR2011/001		
128643	3024CA/SEFFDA180/2013/DAR2 011/002	Solar Energy Facilities on the Farm De Aar 180- Site DAR2011/002	Artefacts	Ungraded
128644	3024CA/SEFFDA180/2013/DAR2 011/003	Solar Energy Facilities on the Farm De Aar 180- Site DAR2011/003	Artefacts	Ungraded
128645	3024CA/SEFFDA180/2013/DAR2 011/004	Solar Energy Facilities on the Farm De Aar 180- Site DAR2011/004	Artefacts	Ungraded
128646	3024CA/SEFFDA180/2013/DAR2 011/005	Solar Energy Facilities on the Farm De Aar 180- Site DAR2011/005	Artefacts	Ungraded
128647	3024CA/SEFFDA180/2013/DAR2 011/006	Solar Energy Facilities on the Farm De Aar 180- Site DAR2011/006	Artefacts	
128648	3024CA/SEFFDA180/2013/DAR2 011/007	Solar Energy Facilities on the Farm De Aar 180- Site DAR2011/007	Artefacts	Ungraded
128650	3024CA/SEFFDA180/2013/DAR2 011/008	Solar Energy Facilities on the Farm De Aar 180- Site DAR2011/008	Artefacts	Ungraded
128652	3024CA/SEFFDA180/2013/DAR2 011/009	Solar Energy Facilities on the Farm De Aar 180- Site DAR2011/009	Artefacts	Ungraded
128653	3024CA/SEFFDA180/2013/DAR2 011/010	Solar Energy Facilities on the Farm De Aar 180- Site DAR2011/010	Artefacts	Ungraded
128654	3024CA/SEFFDA180/2013/DAR2 011/011	Solar Energy Facilities on the Farm De Aar 180- Site DAR2011/011	Artefacts	Ungraded
128655	3024CA/SEFFDA180/2013/DAR2 011/012	Solar Energy Facilities on the Farm De Aar 180- Site DAR2011/012	Artefacts	Ungraded
128656	3024CA/SEFFDA180/2013/DAR2	Solar Energy Facilities on the Farm De Aar 180- Site	Artefacts	Ungraded

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	011/013	DAR2011/013		
128657	3024CA/SEFFDA180/2013/DAR2011/014	Solar Energy Facilities on the Farm De Aar 180- Site DAR2011/014	Artefacts	Ungraded
128658	3024CA/SEFFDA180/2013/DAR2011/015	Solar Energy Facilities on the Farm De Aar 180- Site DAR2011/015	Artefacts	Ungraded
128659	3024CA/SEFFDA180/2013/DAR2011/016	Solar Energy Facilities on the Farm De Aar 180- Site DAR2011/016	Stone walling	Ungraded
128660	3024CA/SEFFDA180/2013/DAR2011/017	Solar Energy Facilities on the Farm De Aar 180- Site DAR2011/017	Artefacts	Ungraded
128661	3024CA/SEFFDA180/2013/DAR2011/018	Solar Energy Facilities on the Farm De Aar 180- Site DAR2011/018	Artefacts	Ungraded
128662	3024CA/SEFFDA180/2013/DAR2011/019	Solar Energy Facilities on the Farm De Aar 180- Site DAR2011/019	Artefacts	Ungraded
128663	3024CA/SEFFDA180/2013/DAR2011/020	Solar Energy Facilities on the Farm De Aar 180- Site DAR2011/020	Artefacts	Ungraded
128664	3024CA/SEFFDA180/2013/DAR2011/021	Solar Energy Facilities on the Farm De Aar 180- Site DAR2011/021	Artefacts	Ungraded
128665	3024CA/SEFFDA180/2013/DAR2011/022	Solar Energy Facilities on the Farm De Aar 180- Site DAR2011/022	Artefacts	Ungraded
128666	3024CA/SEFFDA180/2013/DAR2011/023	Solar Energy Facilities on the Farm De Aar 180- Site DAR2011/023	Artefacts	Ungraded
128668	3024CA/SEFFDA180/2013/DAR2011/024	Solar Energy Facilities on the Farm De Aar 180- Site DAR2011/024	Building	Ungraded

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APPENDIX 2

Reference List from SAHRIS

Heritage Impact Assessments				
Nid	Report Type	Author/s	Date	Title
104574	Heritage Scoping	Wouter Fourie	10/10/2012	Heritage Scoping Report for the Proposed Wind Farm Facility for Renosterberg Wind Energy Company (RWEC) near Petrusville, Northern Cape Province
104576	Heritage Scoping	Wouter Fourie	10/10/2012	Heritage Scoping Report for the Proposed Solar PV Facility for Renosterberg Wind Energy Company (RWEC) near Petrusville, Northern Cape Province
104804	PIA Desktop	John E Almond	01/09/2012	Palaeontological specialist assessment: desktop study PROPOSED RENOSTERBERG SOLAR PV AND WIND ENERGY FACILITIES NEAR DE AAR, NORTHERN CAPE PROVINCE
133138	HIA Phase 1	Jayson Orton, Lita Webley	09/07/2013	HERITAGE IMPACT ASSESSMENT FOR MULTIPLE PROPOSED SOLAR ENERGY FACILITIES
133536	Palaeontological Specialist Reports	John E Almond	01/07/2013	PALAEONTOLOGICAL SPECIALIST STUDY
133536	Palaeontological Specialist Reports	John E Almond	01/07/2013	PALAEONTOLOGICAL SPECIALIST STUDY
163982	Palaeontological Specialist Reports		31/08/2013	Palaeontological specialist assessment: combined desktop and field study: Proposed development PV Solar Facility near De Aar, Northern CApe Province
163994		Wouter Fourie	03/08/2013	Proposed PV Facility: Heritage Impact Report
177599	AIA Phase 1	Jonathan Kaplan	01/04/2010	ARCHAEOLOGICAL IMPACT ASSESSMENT PROPOSED PHOTOVOLTAIC POWER GENERATION FACILITY IN DE AAR NORTHERN CAPE

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177600	Site Inspection Report	Will Archer, Jonathan Kaplan	01/05/2012	Reconnaissance and plan for further mitigation: sites impacted on by proposed photovoltaic power generation facility in De Aar Northern Cape
256408	Palaeontological Specialist Reports	John E Almond	16/07/2013	Palaeontological Specialist Study: Combined Desktop and Field-based Assessments - Proposed Photovoltaic (Solar) Energy Facilities on Badenhorst Dam Farm near De Aar, Northern Cape
256413	Heritage Impact Assessment Specialist Reports	Jayson Orton	09/07/2013	Heritage Impact Assessment for Multiple Proposed Solar Energy Facilities on De Aar 180/1 (Badenhorst Dam Farm), De Aar, Northern Cape
339820	Heritage Impact Assessment Specialist Reports	Lita Webley, Jayson Orton	01/12/2011	Proposed De Aar Wind Energy Facility on the North and South Plateau, Northern Cape Province
339824	Heritage Impact Assessment Specialist Reports	Lita Webley, David Halkett	01/06/2015	Addendum: Proposed Wind Energy Facility situated on the Eastern plateau (South) near De Aar, Northern Cape Province.
4052	HIA Phase 1	Albert van Jaarsveld	01/03/2006	Hydra-Perseus and Beta-Perseus 765 kV Transmission Power Lines Environmental Impact Assessment. Impact on Cultural Heritage Resources
49745	AIA Phase 1	Neels Kruger	01/03/2012	ARCHAEOLOGICAL IMPACT ASSESSMENT (AIA) OF DEMARCATED SURFACE AREAS ON THE OF THE FARM VETLAAGTE 4, DE AAR, NORTHERN CAPE PROVINCE
49843	PIA Phase 1	John E Almond	01/05/2012	PALAEONTOLOGICAL SPECIALIST STUDY: COMBINED DESKTOP AND FIELD-BASED ASSESSMENTS Proposed solar power generation facilities on the remaining extent of the farm Vetlaagte No. 4, De Aar, Northern Cape Province
50006	HIA Phase 1	Jayson Orton	20/02/2012	HERITAGE IMPACT ASSESSMENT FOR THREE SOLAR ENERGY FACILITIES AT DE AAR, WESTERN CAPE

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53198	HIA Phase 1	Elize Becker	20/04/2012	Phase 2 Heritage Impact Assessment De Aar Solar One Photovoltaic Power Project Heritage Impact Assessment Phase 2
53200	Heritage Scoping	Elize Becker	18/01/2012	HERITAGE IMPACT ASSESSMENT SCOPING REPORT Prepared for De Aar Solar One Photovoltaic Power Plant, Northern Cape
58989	PIA Desktop	James Brink	10/08/2012	A Palaeontological Desktop Study of the Area to be Affected by the Proposed Photovoltaic Power Project on Portion 3 of Farm Hartebeestplaats 135
8378	HIA Phase 1	Jayson Orton	29/02/2012	HIA for three solar energy facilities at the De Aar, Northern Cape (Paarde Valley, Badenhorst Dam Farm and Annex Du Plessis Dam Farm)
89361	HIA Phase 1	Neels Kruger	01/03/2012	ENNEX DEVELOPMENTS: PROPOSED ESTABLISHMENT OF A SOLAR ENERGY FACILITY NEAR DE AAR, NORTHERN CAPE PROVINCE Phase 1 Archaeological Impact Assessment Report

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APPENDIX 3 - Keys/Guides

Key/Guide to Acronyms

AIA	Archaeological Impact Assessment
DARD	Department of Agriculture and Rural Development (KwaZulu-Natal)
DEA	Department of Environmental Affairs (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:	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.

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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 PALAEOLOGICAL 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

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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:

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- 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.

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