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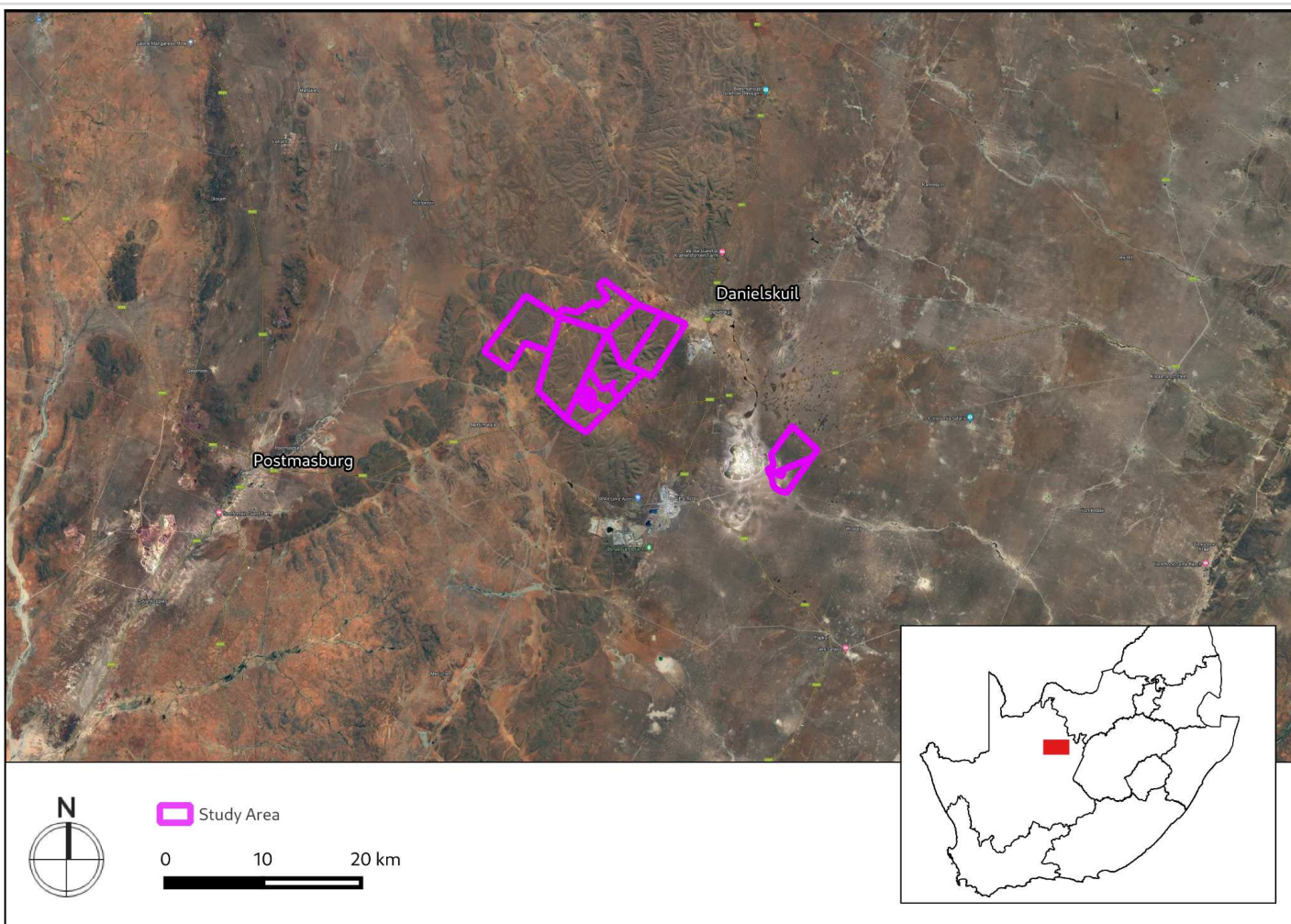
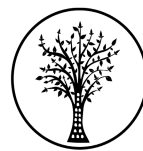
CTS Reference Number:	CTS21_227	
SAHRIS Reference:		
Client:	Savannah	
Date:	November 2022	
Title:	Limestone PV 1 Solar Energy Facility, Northern Cape Province	
CTS Heritage Recommendation	RECOMMENDATION Based on the available information, it is likely that the proposed development will negatively impact on significant archaeological, palaeontological and cultural landscape heritage resources. As such, it is recommended that an HIA is required that assesses these impacts and proposes mitigation measures.	

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



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1. Proposed Development Summary

AGV Projects (Pty) Ltd is proposing the development of a commercial Photovoltaic(PV) Facility and associated infrastructure on a site located ~16km south-east of the town of Danielskuil and in the Northern Cape Province. The site is located within the Kgatelopele Local Municipality and the ZF Mgcawu District Municipality. The project site comprises the following farm portion:

- Portion 4 of the Farm Engeland 300

The Limestone PV 1 will have a contracted capacity of between 75MWp to 100MWp. A broader study area of 1842 ha and a preferred project site with an extent of 200-300ha have been identified by AGV Projects (Pty) Ltd as technically suitable for the development of the Limestone PV 1 facility. Environmental Site Establishment processes were undertaken before the initiation of the EIA. The aim of the Environmental Site Establishment processes was to determine the suitability from an environmental and social perspective and identify areas that should be avoided in development planning. The project is planned as part of a larger cluster of renewable energy projects, which includes another 75-100MWp PV Solar Energy Facility (Limestone PV 2) located adjacent to Limestone PV 1 and 360MW Wind Energy Facility (Oryx Wind Energy Facility) also located near Danielskuil. The Limestone PV 1 project site is proposed to accommodate the following infrastructure:

- PV modules mounted on either a single axis tracking & fixed structure, dependent on optimisation, technology available and cost.
- Inverters and transformers.
- Low voltage cabling between the PV modules to the inverters
- Fence around the project development area with security and access control
- Camera surveillance
- Internet connection
- 33kV cabling between the project components and the facility substation
- 33/132kV onsite facility substation
- Battery Energy Storage System (BESS) with a footprint of 3-5ha.
- Site offices and maintenance buildings, including workshop areas for maintenance and storage as well as parking for staff and visitors.
- Laydown/staging area on site in front of mounting structures during installation. Temporary store area close to site entrance (Less than 1ha).
- Access roads (up to 6m wide) and internal distribution roads (up to 4m wide).
- Temporary concrete batching facility
- Stormwater management infrastructure as required

Table 1: Details or dimensions of typical infrastructure required for the 75-100MWp Limestone PV 1 Solar Energy Facility

Infrastructure	Footprint and dimensions
Number of Panels	To be determined
Panel Height	+/- 2.2m
Technology	Use of fixed-tilt and single-axis tracking.

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Contracted Capacity	Between 75MWp and 100MWp
Area occupied by the solar array	To be determined in the EIA phase
Area occupied by the on-site facility substation	0.5 – 0.75ha
Capacity of on-site facility substation	33kV/132kV
Cabbling between the PV array and the onsite substation	The cabling will be in underground trenches, and operate at a voltage of up to 33kV.
Extent of areas required for laydown of materials, equipment etc.	Less than 2ha
Access and internal roads	Existing roads will be used as far as possible. There are existing gravel roads that can be utilised for site access (width of up to 6m). Upgrading of existing roads or new roads will be required. New internal access roads required (+/-4m), same for construction and operation. Internal access roads will be gravel/hard surfaced.
Grid connection	132kV overhead lines with 31m corridors for overhead lines. Project site adjacent existing MTS (Olien MTS) but exact grid connection details will be determined later.
Temporary infrastructure	Temporary store area close to site entrance (Less than 1ha).

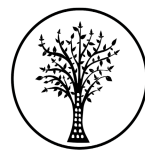
The Limestone PV 1 facility is proposed in response to the identified objectives of the national and provincial government and local and district municipalities to develop renewable energy facilities for power generation purposes. It is the developer's intention to submit a bid in terms of a regulated power purchase procurement process (e.g., REIPPPP) with the aim of evacuating the generated power into the national grid or obtaining a commercial PPA (Power Purchase Agreement). This will aid in the diversification and stabilisation of the country's electricity supply, in line with the objectives of the Integrated Resource Plan (IRP) with the Limestone PV 1 Facility set to inject up to 75MW (peak AC power) into the national grid.

From a regional perspective, the area within the Northern Cape identified for the project is considered favourable for the development of a commercial PV facility due to the low environmental sensitivity of the identified site, excellent solar resource, and availability of land on which the development can take place. There is also potential for evacuating the power to the national grid via a direct grid connection at the Olien MTS (Main Transmission Substation) which is adjacent to the proposed site. The site is also in proximity to large electricity users which opens opportunities for commercial PPAs (Behind the metre connection Or Wheeling to a 3rd party off-taker).

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2. Application References

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

3. Property Information

Latitude / Longitude	28°13'29.56"S 23°25'10.83"E
Erf number / Farm number	PV: Portion 4 of the Farm Engeland 300
Local Municipality	Tsantsabane
District Municipality	ZF Mgcawu
Province	Northern Cape
Current Zoning	Agriculture

4. Nature of the Proposed Development

Project Area	TBA
Depth of excavation (m)	TBA
Height of development (m)	TBA

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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
	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

TBA

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

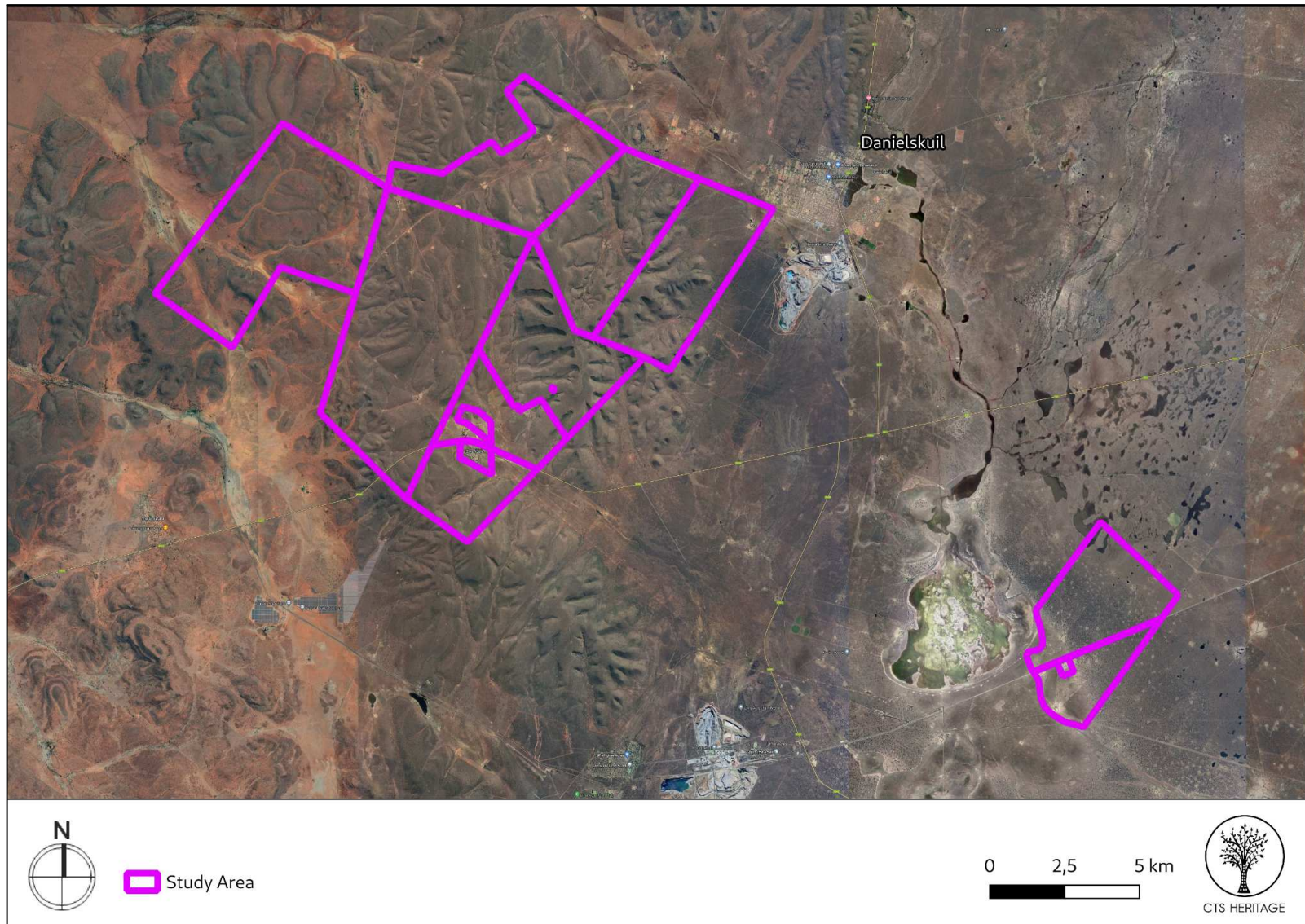


Figure 1b. Overview Map. Satellite image (2022) indicating the proposed development area for the WEF and 2x PV Facilities



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Figure 1c. Overview Map. Satellite image (2020) indicating the proposed development area for the PV

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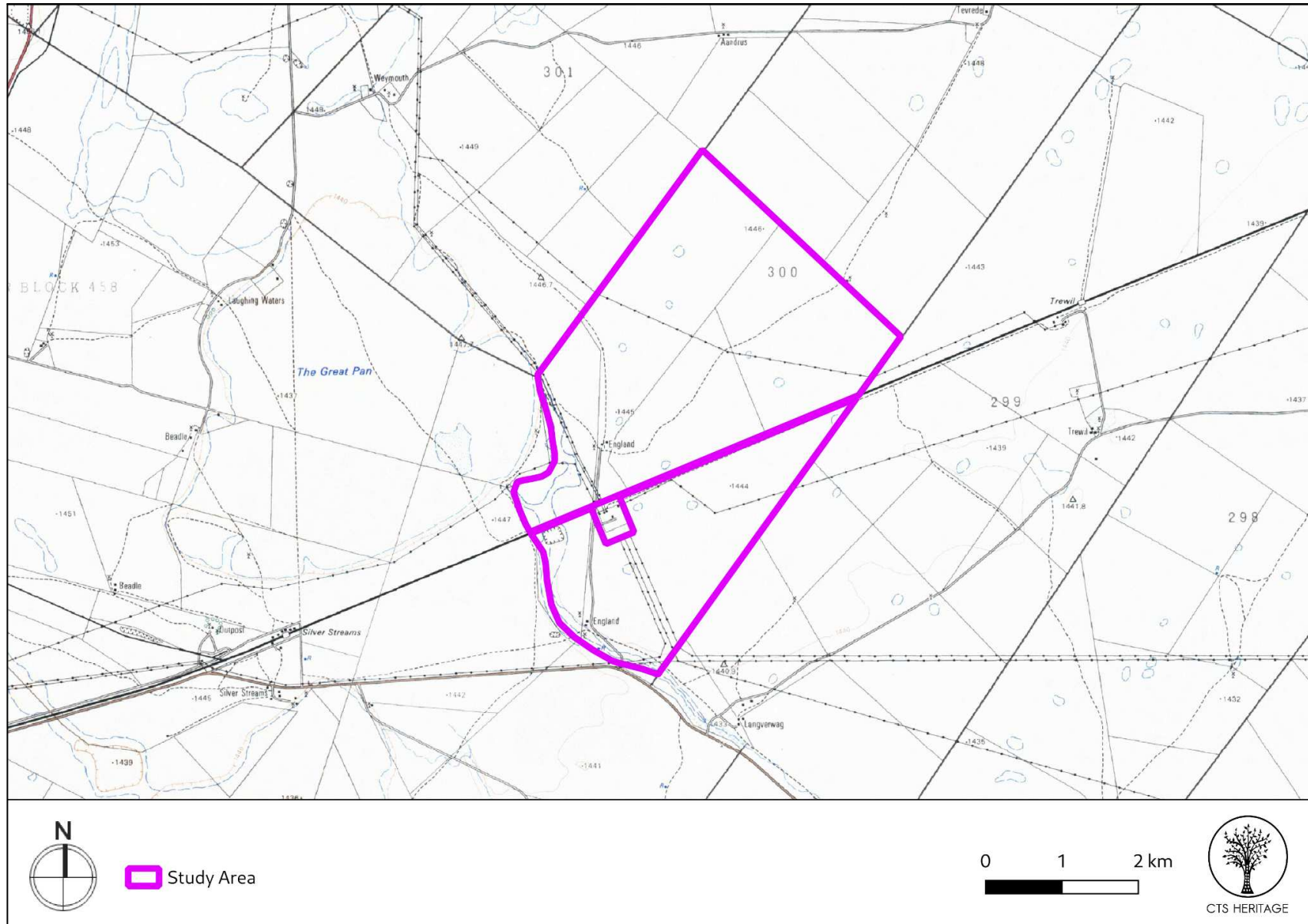


Figure 1d. Overview Map. Extract from the 1:50 000 Topo Map indicating the proposed development area for the PV

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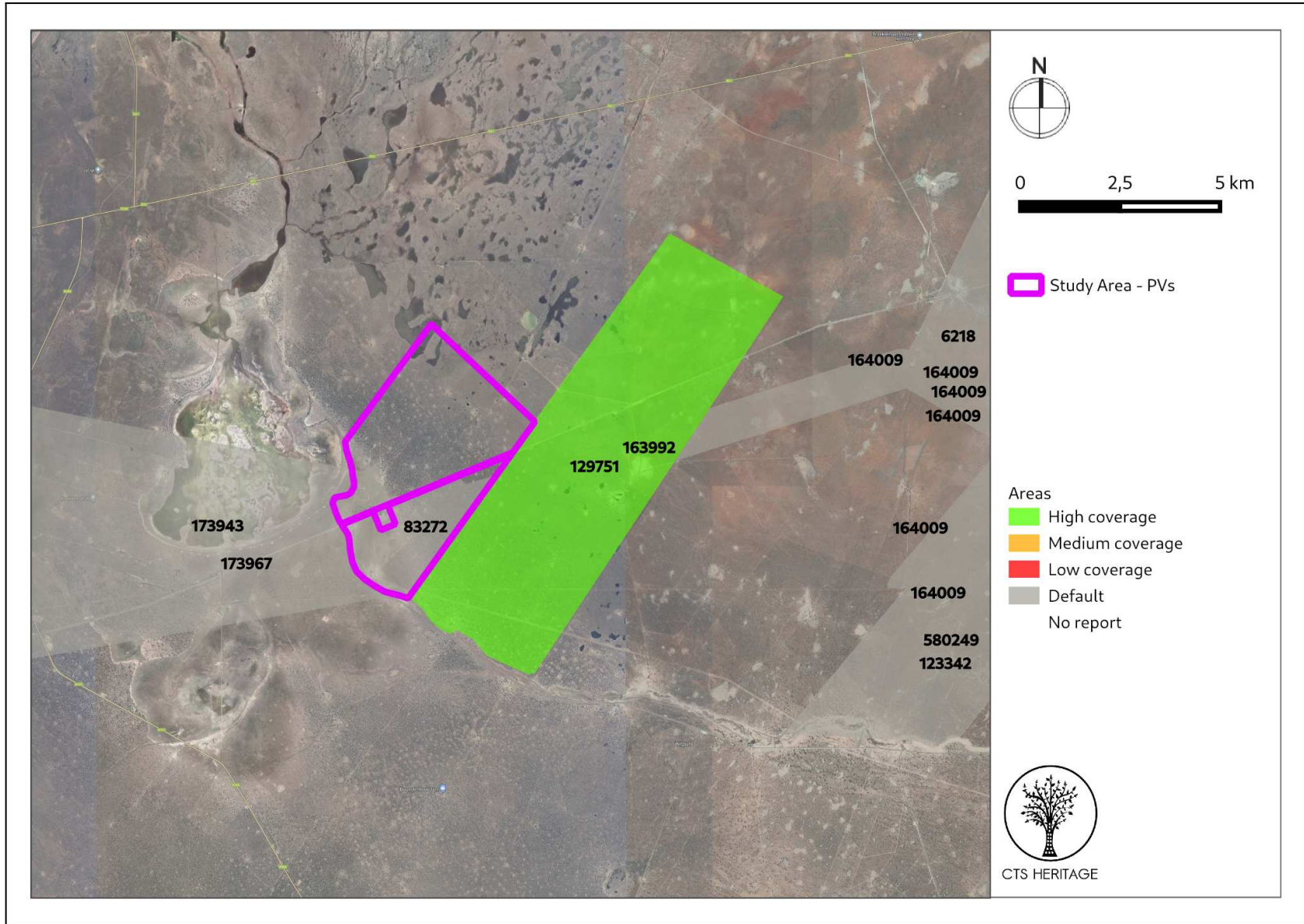


Figure 2. Previous HIAs Map. Previous Heritage Impact Assessments covering the proposed development area with SAHRIS NIDS indicated. Please see Appendix 2 for a full reference list.

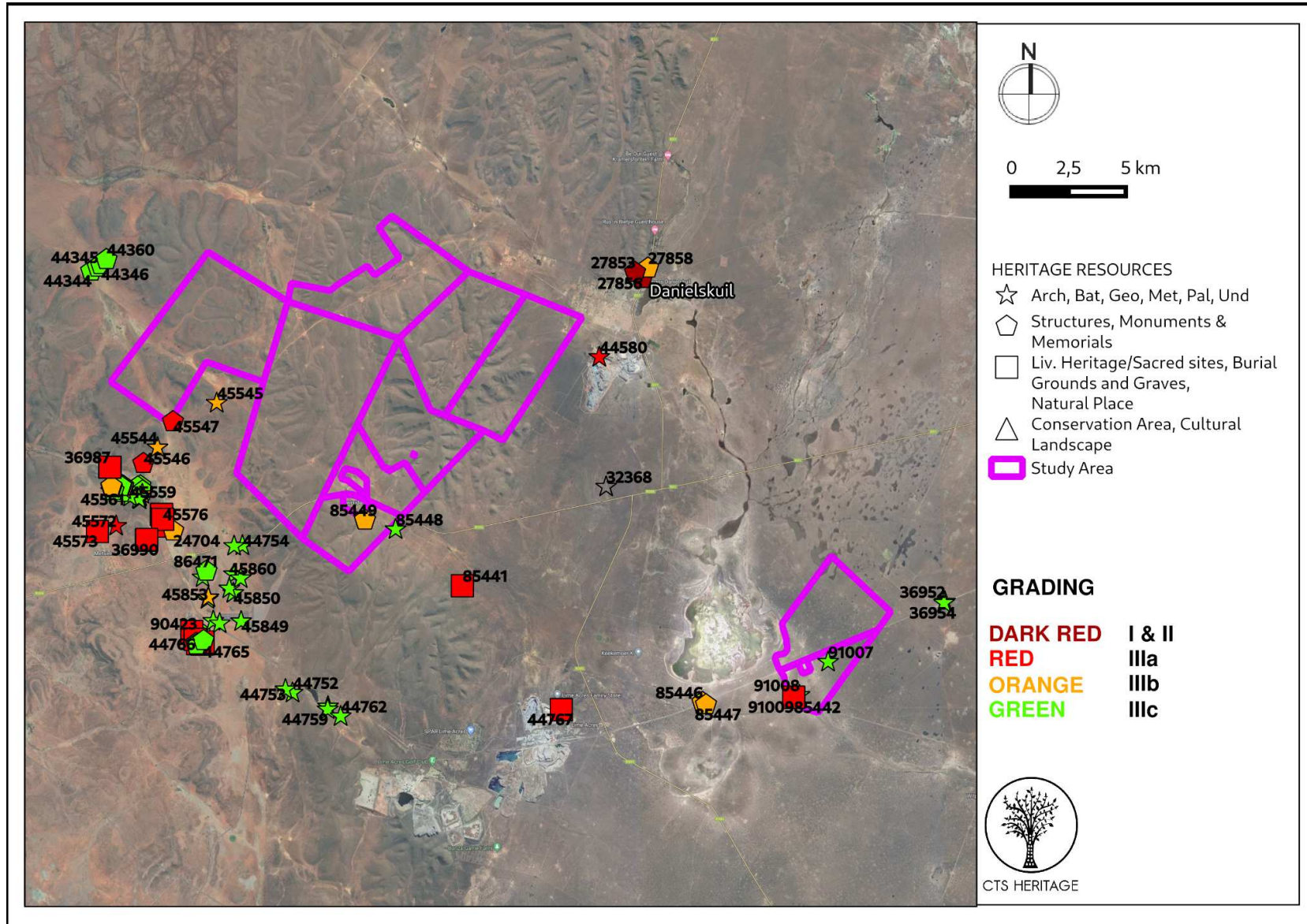


Figure 3. Heritage Resources Map. Heritage Resources previously identified within the study area, with SAHRIS Site IDs indicated in the insets below. Please See Appendix 4 for full description of heritage resource types.



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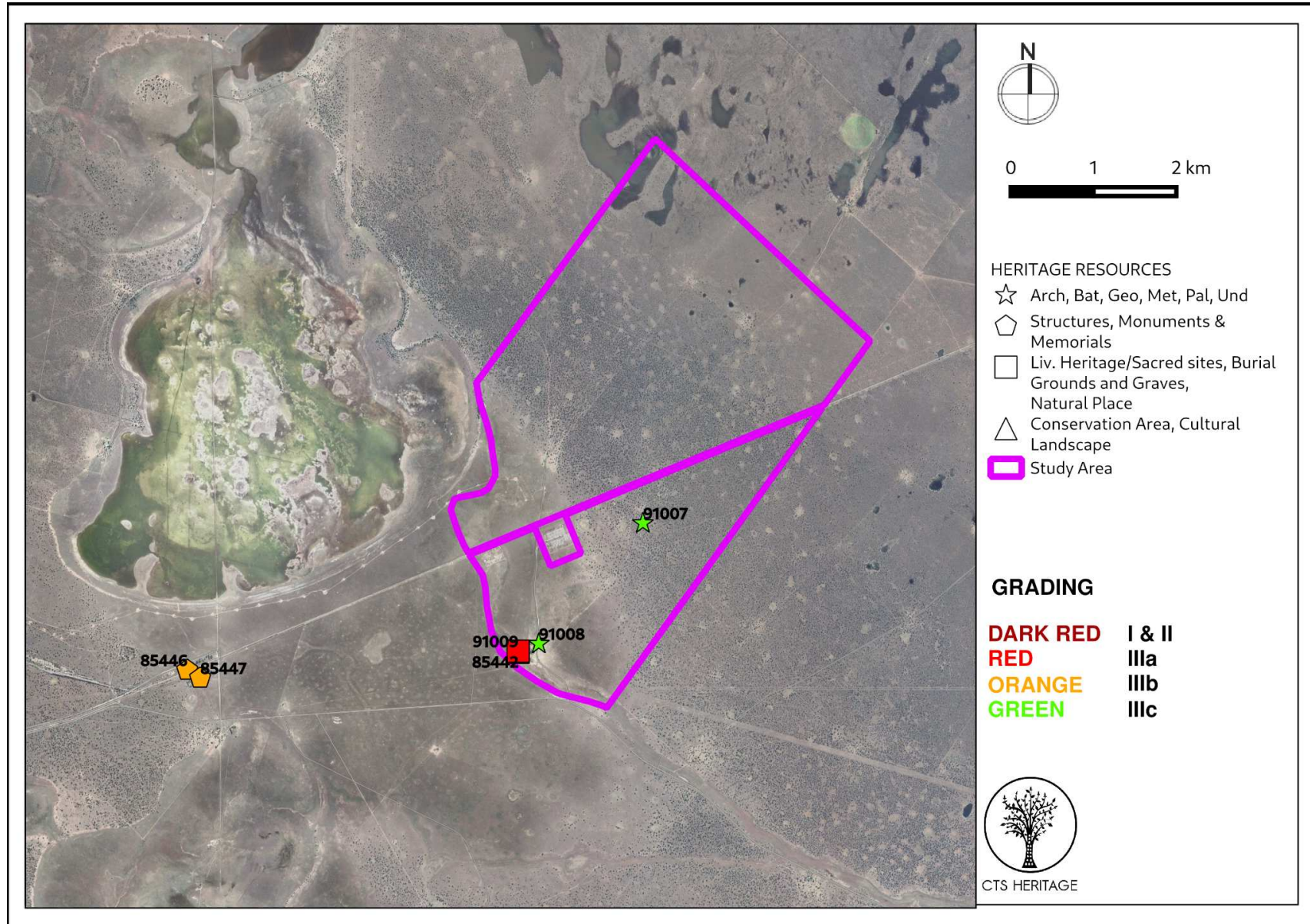


Figure 3a. Heritage Resources Map Inset A focussing on the PV facility

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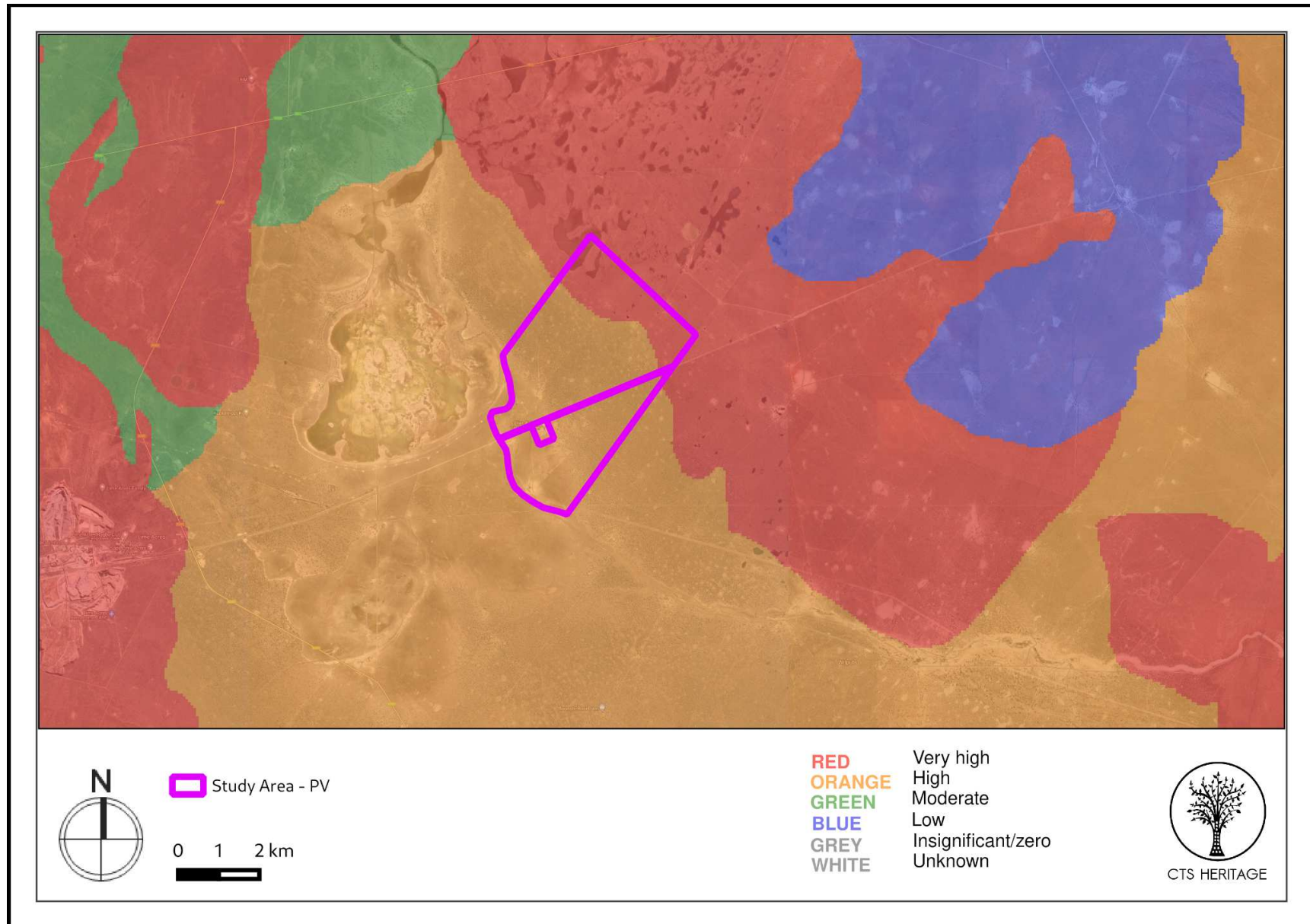


Figure 4a. Palaeosensitivity Map. Indicating fossil sensitivity underlying the study area. Please See Appendix 3 for a full guide to the legend.

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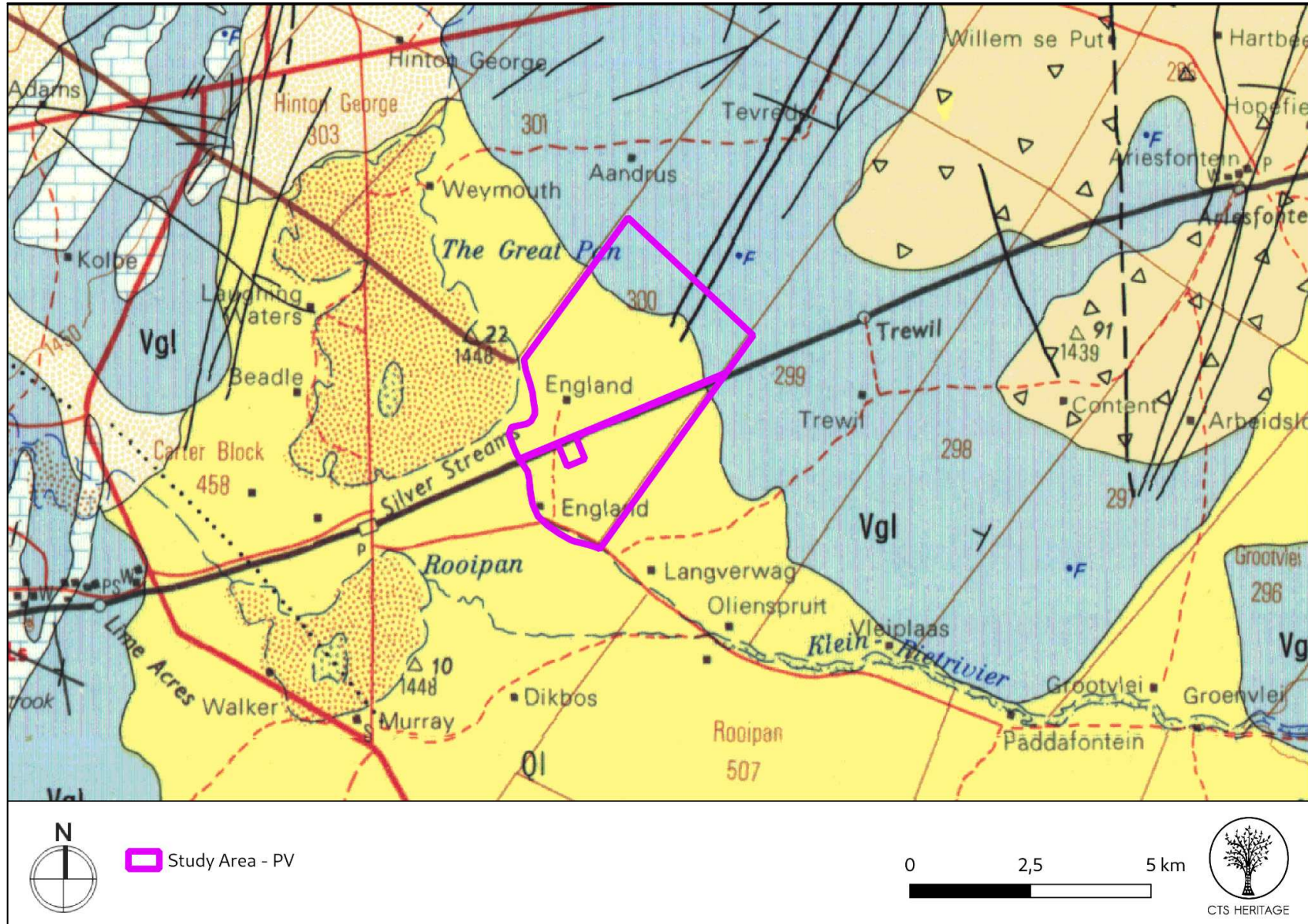


Figure 4b. Geology Map. Extract from the CGS 2822 Postmasburg Map indicating that the development area is underlain by sediments of the Vo: Ongeluk Formation, Vad: Danielskuil Member and Vak: Kuruman Member of the Asbesberge Formation, **Vgl: Lime Acres Member** of the Ghaap Plateau, **Qi: Surface Limestone** and Qs: Quaternary Sands

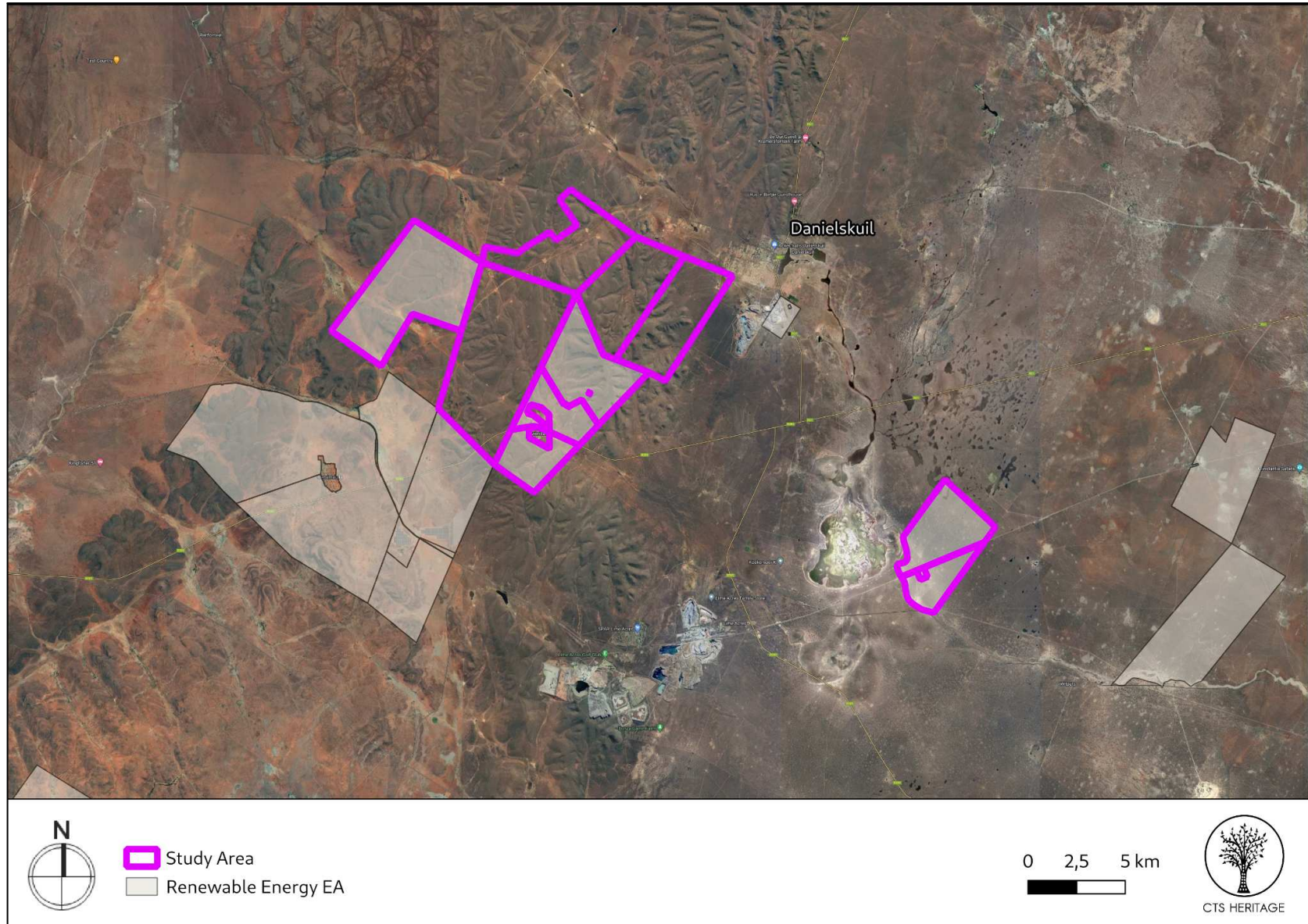


Figure 5. Cumulative Impact Map. Indicating other Renewable Energy Facilities that have been granted Environmental Authorisation (EA). The EA that overlaps this development area has lapsed.



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8. Heritage Assessment

Background

This application is for the proposed development of the Limestone PV 1 facility that forms part of the Danielskuil Renewable Energy Facility projects consisting of a Wind and 2x Solar Energy Facilities located between Danielskuil and Postmasburg in the Northern Cape. Originally a station of the London Missionary Society called Sibling, Postmasburg became a Griqua village with the name Blinkklip and was then proclaimed a town on 6 June 1892. Postmasburg achieved municipal status in 1936. Postmasburg had its own diamond rush. The first diamond was discovered in 1918 and as a result an open cast mine grew. The mine was permanently flooded in 1935 and as a result, just like Kimberley, Postmasburg could also boast its very own “Big Hole”. This hole is over 45 m deep and filled with fish. Postmasburg also boasts spectacular architecture and many historical sites. An old blue dolomite stone Reformed Church was built in 1908. There is also a rather impressive gun known as “Howitzer Gun” which stands at the civic centre. It honours the men of Postmasburg who died during World War II. The proposed development is also located in close proximity Lime Acres, home to the employees of the Finsch Diamond Mine located nearby.

Cultural Landscape

In 1801, the London Missionary Society also established a station among the Griqua at *Leeuwenkuil*. The site proved too arid for cultivation and in about 1805 they moved the station to another spring further up the valley and called it *Klaarwater*. Their second choice was little better than their first, and for many years a lack of water prevented any further development. The name of the settlement was changed later to Griquatown or *Griekwastad* in Afrikaans. They lived among a mixed nomadic community of the Chaguriqua tribe and “bastards” (people of mixed origin) from Piketberg. Their two leaders were Andries Waterboer and Adam Kok II. From 1813 to 17 July 1871, the town and its surrounding area functioned as Andries *Waterboer's Land*. *Griekwastad* was later the capital of British Colony Griqualand West from 1873 to 1880, with its own flag and currency, before it was annexed into the Cape Colony. The proposed development is located on one of the main routes between Griekwastad and Kuruman and as such, evidence of this heritage may be impacted by the proposed development.

Danielskuil derives its name from a cone-shaped depression deep in the dolomitic limestone; with a domed covering, reminiscent of the biblical ‘Daniel in the lions’ den’. The Griqua leader Adam Kok is said to have used this depression as a prison, and to also have kept snakes in it. The area was famous because of the Griqua Chief who ruled there by the name of Barend Barends. Barend Barends was the son of a “half-Hottentot Dutchman” and one of the most important leaders along the turbulent northern frontier of the Cape Colony from 1790 to 1834. He was one of the first chiefs of the Griqua tribe, an indigenous Khoi group. A book, Barend Barends - Die Vergete Kaptein van Danielskuil, has been recently published about his story. During the Anglo Boer war (1899-1902) the British army built and used a blockhouse fort, which overlooks the town from the north.

Archaeology

An archaeological assessment of the Finsch Mine was completed by Henderson in 2005 (SAHRIS ID 6780). Henderson drafted a brief history of the Finsch Mine and this is not repeated here. Suffice to note that “Recent human activity at the Finsch Mine, which would have left traces of mining and structures, therefore only dates back to 1959 on Brits. It would appear that there may be an earlier date for farming activities on Bonza”. Elements of the cultural landscape that may be impacted by the proposed development include the sense of place of the historic core of Postmasburg as well as the mining and farming heritage of the area.

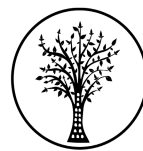
Due to mining activities in the area, a number of heritage impact assessments have been completed in close proximity to the development area and these are relevant here (Figure 2 and Appendix 2). The well known Taung site that preserved early hominid remains is located only some 50 kilometres to the west of the site under investigation. Wonderwerk cave near Kuruman also retains evidence of early peoples in its 6 metre midden deposit, especially in the rear portions of the cave. Towards the front rock-art from later Stone Age peoples are also preserved. Furthermore the engraving sites Wildebeestkuil, Driekopseiland and Nootgedacht near Kimberly confirm a continued presence of Later Stone Age peoples in the general region. It is very likely that significant archaeological heritage may be impacted by the proposed development.

A recent HIA completed by CTS Heritage located south of this proposed development area (CTS 2022) revealed a great many heritage resources evident within the broader context.

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The vast majority of these resources, consisting of individual artefacts and low density artefact scatters ascribed to the Middle and Later Stone Age as well as rural infrastructure such as wind mills, have been determined to be not conservation-worthy. A number of heritage resources of significance were, however, also identified. These resources range from significant archaeological sites and scatters, to burial grounds and graves as well as historic farm werfs and infrastructure such as the irrigation furrows ascribed to the work of the London Missionary Society and the local Griekwa population. The relationship between the furrows, the farm werfs and the burials form a unique and layered cultural landscape that speaks to the unique past of this area and its Griekwa inhabitants. It is likely that similar heritage resources are located within this development footprint.

A number of known heritage resources that have been identified through other Heritage Impact Assessment processes are located within the assessment area. It is recommended here that the mitigation measures previously proposed for these resources are adopted for this project. This information is detailed below:

Site ID	Site Name	Description	Grading	Recommended Mitigation	Report
85442	HR06: Redstone Solar Thermal Power Project to Olien MTS Heritage Report 004	An informal cemetery with 5 graves was identified at this location. The graves were placed in a single line next to each other and were orientated from west to east. The graves have informal mounds of soil and packed rocks as dressings. The graves are situated approximately 120m to the west of the farmstead. The graves are most probably associated with farm labourers who were previously working on the farm Engeland. There was nobody on the farm to question about these graves. Site size: Approximately 5m x 15m.	IIIA	Adjust the development layout and demarcate site with at least a 10 metre buffer.	ACWA Power SolarReserve Redstone Solar Thermal Power Plant to Olien Substation, in the ZF Ngcawu District Municipality – Heritage Impact Assessment. <i>PGS Heritage</i> (2014)
91007	Olien SEF002	Later Stone Age flakes on chert from a dispersed scatter in the northern part of the area	IIIC	None	Archaeological & Cultural Heritage Impact Assessment Phase 1: Proposed Olien Solar Project development on Portion 4 of Farm 300, Barkly West, near Limeacres, Northern Cape. <i>Morris</i> (2012)
91008	Olien SEF003	Remains of kraals made from calcrete cobbles.	IIIC	None	Archaeological & Cultural Heritage Impact Assessment Phase 1: Proposed Olien Solar Project development on Portion 4 of Farm 300, Barkly West, near Limeacres, Northern Cape. <i>Morris</i> (2012)
91009	Olien SEF004	A row of unmarked graves was documented	IIIA	The graves should be fenced and development must be restricted to no closer than 100 m.	Archaeological & Cultural Heritage Impact Assessment Phase 1: Proposed Olien Solar Project development on Portion 4 of Farm 300, Barkly West, near Limeacres, Northern Cape. <i>Morris</i> (2012)

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Palaeontology

According to the SAHRIS Palaeosensitivity Map, the area proposed for development is predominantly underlain by sediments of very high and high palaeontological sensitivity (Figure 4a). According to the Extract from the CGS 2822 Postmasburg Map, the development area is underlain by sediments of the Ongeluk Formation, Danielskuil Member and Kuruman Member of the Asbesberge Formation, the Lime Acres Member of the Ghaap Plateau as well as Surface Limestone Quaternary Sands.

In an assessment completed for a proposed powerline that traverses the same geological formations, Almond (2015, SAHRIS ID 344620) concluded that “On the basis of both desktop analysis and fieldwork within the broader power line study area (Almond 2013a, 2014) the palaeontological sensitivity of all power line corridors under consideration is assessed as low. This also applies to the area to the north of Lime Acres where stromatolites occur within the underlying bedrock but are rarely well-exposed at surface and are therefore unlikely to be significantly impacted by the proposed transmission lines. The Makganyene Formation outcrop area in the north-western corner of the Remainder of the Farm Nr 469, close to the R385 tar road, is of considerable scientific interest as an accessible part of the limited rock record for an Early Proterozoic (c. 2.3 billion years-old) “snowball earth” glacial event, when ice sheets may have covered much of the planet. However, fossil stromatolites do not occur within the succession here and significant palaeontological impacts are therefore not anticipated. Potential impacts on local palaeontological heritage are assessed for all power line corridor options as being of low negative significance.” It is likely that similar palaeontological sensitivities exist for the proposed development area and as such, it is recommended that potential impacts to palaeontological heritage are assessed.

RECOMMENDATION

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

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9. Scoping Assessment Impact Table

Impact

- Impact to archaeological resources
- Impact to palaeontological resources
- Impact to Cultural Landscape
- Cumulative Impact

Desktop Sensitivity Analysis of the Site

- Impact to significant archaeological resources such as Stone Age artefact scatters, burial grounds and graves, historical artefacts, historical structures and rock art engravings through destruction during the development phase is likely.
- Impacts to palaeontological resources are likely.
- Due to the nature of the development and its context, cumulative impact and negative impact to the cultural landscape is possible

Issue	Nature of Impact	Extent of Impact	No-Go Areas
Impact to significant heritage resources through destruction during the development phase.	Destruction of significant heritage resources	Local scale with broader impacts to scientific knowledge	None known at present

Gaps in knowledge & recommendations for further study

- It is likely that the proposed development will impact significant cultural landscape, archaeological and palaeontological heritage and as such, it is recommended that a heritage impact assessment be completed that assesses these impacts as per section 38(3) of the NHRA.

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APPENDIX 1

List of heritage resources within close proximity to the development area

Site ID	Site no	Full Site Name	Site Type	Grading
27858	9/2/074/0007	Old Police Station complex, Rhodes Street, Danielskuil	Building	Grade IIIb
86471	GROE001	Groenwater 001	Structures	Grade IIIc
27856	9/2/074/0005	First and Second Dutch Reformed Churches, Danielskuil	Building	Grade II
27853	9/2/074/0009	Anglo-Boer War Blockhouse, Danielskuil	Building	Grade II
95513	PGS06	PGS06 - Humansrus, Daniëlskuil	Deposit	
45544	GRNWTR01	Groenwater 453-01	Artefacts	Grade IIIb
45545	GRNWTR02	Groenwater 453-02	Artefacts	Grade IIIb
45546	GRNWTR03	Groenwater 453-03	Structures	Grade IIIa
45547	GRNWTR04	Groenwater 453-04	Building	Grade IIIa
45548	GRNWTR05	Groenwater 453-05	Artefacts	Grade IIIc
45549	GRNWTR06	Groenwater 453-06	Artefacts	Grade IIIc
45550	GRNWTR07	Groenwater 453-07	Artefacts	Grade IIIc
45551	GRNWTR08	Groenwater 453-08	Artefacts	Grade IIIb
45552	GRNWTR09	Groenwater 453-09	Structures	Grade IIIc
45553	GRNWTR10	Groenwater 453-10	Structures	Grade IIIc
45554	GRNWTR11	Groenwater 453-11	Structures	Grade IIIc
45555	GRNWTR12	Groenwater 453-12	Stone walling	Grade IIIb

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45556	GRNWTR13	Groenwater 453-13	Stone walling	Grade IIIc
45557	GRNWTR14	Groenwater 453-14	Stone walling	Grade IIIb
45558	GRNWTR15	Groenwater 453-15	Stone walling	Grade IIIc
45559	GRNWTR16	Groenwater 453-16	Archaeological	Grade IIIc
45560	GRNWTR17	Groenwater 453-17	Structures	Grade IIIc
45561	GRNWTR18	Groenwater 453-18	Stone walling	Grade IIIb
45562	GRNWTR19	Groenwater 453-19	Structures	Grade IIIb
45563	GRNWTR20	Groenwater 453-20	Structures	Grade IIIb
45564	GRNWTR21	Groenwater 453-21	Structures	Grade IIIc
45565	GRNWTR22	Groenwater 453-22	Structures	Grade IIIc
45566	GRNWTR23	Groenwater 453-23	Structures	Grade IIIc
45567	GRNWTR24	Groenwater 453-24	Structures	Grade IIIc
45568	GRNWTR25	Groenwater 453-25	Structures	Grade IIIb
45569	GRNWTR26	Groenwater 453-26	Structures	Grade IIIb
45571	GRNWTR27	Groenwater 453-27	Burial Grounds & Graves	Grade IIIa
45572	GRNWTR28	Groenwater 453-28	Archaeological	Grade IIIa
45573	GRNWTR29	Groenwater 453-29	Burial Grounds & Graves	Grade IIIa
45574	GRNWTR30	Groenwater 453-30	Burial Grounds & Graves	Grade IIIa
45575	GRNWTR31	Groenwater 453-31	Burial Grounds & Graves	Grade IIIa
45576	GRNWTR32	Groenwater 453-32	Burial Grounds & Graves	Grade IIIa

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36990	HOT029	Hotazel 029	Burial Grounds & Graves, Stone walling	Grade IIIa
32368	GMB-001	Gloria Mine Bridge	Archaeological	
36991	HOT030	Hotazel 030	Cultural Landscape	Grade IIIa
24704	Ngqura Manganese Railway	Groenwater crossing station	Building	Grade IIIb
45847	HUMA001	Humansrus 001	Artefacts	Grade IIIc
45848	HUMA002	Humansrus 002	Artefacts	Grade IIIc
45849	HUMA003	Humansrus 003	Artefacts	Grade IIIc
45850	HUMA004	Humansrus 004	Artefacts	Grade IIIc
45852	HUMA005	Humansrus 005	Artefacts	Grade IIIc
45853	HUMA006	Humansrus 006	Artefacts	Grade IIIc
45856	HUMA008	Humansrus 008	Artefacts	Grade IIIc
45858	HUMA009	Humansrus 009	Artefacts	Grade IIIc
45860	HUMA010	Humansrus 010	Artefacts	Grade IIIc
85440	RSTP002	Redstone Solar Thermal Power Project to Olien MTS Heritage Report 002	Burial Grounds & Graves	Grade IIIa
85441	RSTP003	Redstone Solar Thermal Power Project to Olien MTS Heritage Report 003	Burial Grounds & Graves	Grade IIIa
85442	RSTP004	Redstone Solar Thermal Power Project to Olien MTS Heritage Report 004	Burial Grounds & Graves	Grade IIIa
85443	RSTP005	Redstone Solar Thermal Power Project to Olien MTS Heritage Report	Building	Grade IIIb

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		005		
85445	RSTP007	Redstone Solar Thermal Power Project to Olien MTS Heritage Report 007	Structures	Grade IIIc
85446	RSTP008	Redstone Solar Thermal Power Project to Olien MTS Heritage Report 008	Transport infrastructure	Grade IIIb
85447	RSTP009	Redstone Solar Thermal Power Project to Olien MTS Heritage Report 009	Building	Grade IIIb
85448	RSTP010	Redstone Solar Thermal Power Project to Olien MTS Heritage Report 010	Stone walling	Grade IIIc
85449	RSTP011	Redstone Solar Thermal Power Project to Olien MTS Heritage Report 011	Structures	Grade IIIb
44751	HUM01	Humansrus 01	Artefacts	Grade IIIc
44752	HUM02	Humansrus 02	Artefacts	Grade IIIc
44753	HUM03	Humansrus 03	Artefacts	Grade IIIc
44580	OUPLAAS01	Ouplaas Engravings 01	Rock Art	Grade IIIa
44754	HUM04	Humansrus 04	Artefacts	Grade IIIc
44755	HUM05	Humansrus 05	Artefacts	Grade IIIc
44759	HUM06	Humansrus 06	Artefacts	Grade IIIc
44761	HUM07	Humansrus 07	Artefacts	Grade IIIc
44762	HUM08	Humansrus 08	Artefacts	Grade IIIc
44763	HUM09	Humansrus 09	Burial Grounds & Graves	Grade IIIa
44764	HUM10	Humansrus 10	Burial Grounds & Graves	Grade IIIa

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44765	HUM11	Humansrus 11	Burial Grounds & Graves	Grade IIIa
44766	HUM12	Humansrus 12	Burial Grounds & Graves	Grade IIIa
44767	HUM13	Humansrus 13	Burial Grounds & Graves	Grade IIIa
44769	HUM15	Humansrus 15	Structures	Grade IIIc
44344	PL438/488-15	Plaas 438/488 - 15	Structures	Grade IIIc
44345	PL438/488-16	Plaas 438/488 - 16	Structures	Grade IIIc
44346	PL438/488-17	Plaas 438/488 - 17	Structures	Grade IIIc
44770	HUM16	Humansrus 16	Structures	Grade IIIc
44771	HUM17	Humansrus 17	Structures	Grade IIIc
44359	PL438/488-22	Plaas 438/488 - 22	Building	Grade IIIc
44360	PL438/488-23	Plaas 438/488 - 23	Building	Grade IIIc
36952	HOT010	Hotazel 010	Palaeontological	Grade IIIc
36954	HOT011	Hotazel 011	Palaeontological	Grade IIIc
36989	HOT028	Hotazel 028	Burial Grounds & Graves	Grade IIIa
36987	HOT026	Hotazel 026	Burial Grounds & Graves	Grade IIIa
36988	HOT027	Hotazel 027	Burial Grounds & Graves	Grade IIIa
92643	HUMA016	Humansrus 016	Artefacts	Grade IIIb
92644	HUMA017	Humansrus 017	Burial Grounds & Graves	Grade IIIa
92645	HUMA018	Humansrus 018	Burial Grounds & Graves	Grade IIIa
92646	HUMA019	Humansrus 019	Burial Grounds & Graves	Grade IIIa

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92647	HUMA020	Humansrus 020	Structures	Grade IIIc
92648	HUMA021	Humansrus 021	Burial Grounds & Graves	Grade IIIa
92649	HUMA022	Humansrus 022	Structures	Grade IIIc
92650	HUMA023	Humansrus 023	Structures	Grade IIIc
90422	HUMA011	Humansrus 011	Structures	Grade IIIc
90423	HUMA012	Humansrus 012	Structures	Grade IIIb
90424	HUMA013	Humansrus 013	Structures	Grade IIIc
90425	HUMA014	Humansrus 014	Structures	Grade IIIb
90426	HUMA015	Humansrus 015	Archaeological	Grade IIIc
91007	OLI002	Olien SEF002	Artefacts	Grade IIIc
91008	OLI003	Olien SEF003	Stone walling	Grade IIIc
91009	OLI004	Olien SEF004	Burial Grounds & Graves	Grade IIIa

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APPENDIX 2

Reference List with relevant AIAs and PIAs

Heritage Impact Assessments				
Nid	Report Type	Author/s	Date	Title
109815	HIA Phase 1	Wouter Fourie	22/03/2012	132 kV Power line connection to the Humasrus Solar Thermal Energy Power plant, postmasburg.
114648	PIA Desktop	John E Almond	01/09/2012	Palaeontological specialist assessment: desktop study PROPOSED 16 MTPA EXPANSION OF TRANSNETâ€™S EXISTING MANGANESE ORE EXPORT RAILWAY LINE & ASSOCIATED INFRASTRUCTURE BETWEEN HOTAZEL AND THE PORT OF NGQURA, NORTHERN & EASTERN CAPE. Part 1: Hotazel to Kimberley, Northern Cape
122772	HIA Phase 1	Wouter Fourie	01/09/2011	Heritage Impact Assessment for the Humansrus Solar Thermal Energy Power Plant, Postmasburg
129751	HIA Phase 1	Elize Becker	20/02/2013	Phase 1 Heritage Impact Assessment Hotazel to Kimberley and De Aar to Port of Ngqura
145149	HIA Phase 1	Louisa Hutten	01/11/2013	HERITAGE IMPACT ASSESSMENT REPORT FOR THE FARMS PLAAS 438 PORTION 1 & PLAAS 588 RE
155262	PIA Desktop	John E Almond	22/12/2013	Palaeontological Heritage Basic Assessment: Desktop Study - Proposed construction of a 132 kV power line and switchyard associated with the Redstone Solar Thermal Energy Plant near Postmasburg, Northern Cape Province
162535	AIA Phase 1	David Morris	02/03/2012	Archaeological Impact Assessment Phase 1: Proposed development of a PV Power Station at Welcome Wood (extended area), near Owendale, Northern Cape
162542	PIA Desktop	John E Almond	01/02/2012	PALAEONTOLOGICAL IMPACT ASSESSMENT: DESKTOP STUDY Proposed PV power stations Welcome Wood II and III adjacent to Welcome Wood Substation, near DaniÅ«lskuil, Northern Cape Province
163992		Wouter Fourie	03/12/2013	Proposed Construction of the Limestone 1 - 132kV Power Line and the associated Switchyards on Portion 0 (remaining extent) of the Farm 267, Northern Cape Province
173943	Heritage Impact	Marko Hutten,	15/07/2014	Proposed Construction of two 132kV Power Lines and Switchyards to connect the ACWA Power SolarReserve

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	Assessment Specialist Reports	John Almond		Redstone Solar Thermal Power Plant with the Olien Substation â€“ Option 1: ACWA Power SolarReserve Redstone Solar Thermal Power Plant to Olien Substation, in the ZF Ngcawu District Municipality â€“ Heritage Impact Assessment
173967	Heritage Impact Assessment Specialist Reports	Marko Hutten	15/07/2014	Proposed Construction of two 132kV Power Lines and Switchyards to connect the Redstone Solar Thermal Energy Plant with the Olien Substation in the ZF Ngcawu District Municipality â€“ Heritage Impact Assessment Option 2: Silverstreams substation to Olien Substations
344620	PIA Phase 1	John E Almond	09/11/2015	Palaeontological Heritage Report for the proposed 132 kV power lines between the ACWA Power SolarReserve Redstone Solar Thermal Energy Plant Site and Olien Main Transmission Substation near Lime Acres, Northern Cape Province
361351	AIA Phase 1	Karen Van Ryneveld	20/03/2016	Archaeological Impact Assessment Report
361357	PIA Phase 1	Lloyd Rossouw	03/05/2016	Palaeontological Impact Assessment
4604	AIA Phase 1	David Morris, Peter Beaumont	01/10/1994	Ouplaas 2 Rock Engravings, Danielskuil
6958	AIA Phase 1	Wouter Fourie	10/06/2011	Humansrus Solar Thermal Energy Power Plant, Postmasburg
73252	HIA Phase 1	Wouter Fourie	13/09/2012	Heritage Impact Assessment - Proposed Construction of 132kv Power Line and Switchyard Associated with the Redstone Solar Thermal Energy Plant in the Northern Cape Province
7842	AIA Phase 1	Cobus Dreyer	19/11/2007	Archaeological and Historical Investigation of the Proposed Mining Activities at the Farm Rosslyn, Lime Acres, Northern Cape
8240	AIA Phase 1	David Morris	11/06/2010	Proposed development of PV Power Station at Welcome Wood, near Owendale, Northern Cape
83272	HIA Phase 1	David Morris	01/08/2012	Archaeological & Cultural Heritage Impact Assessment Phase 1: Proposed Olien Solar Project development on Portion 4 of Farm 300, Barkly West, near Limeacres, Northern Cape
83273	PIA Desktop	Jennifer Botha-Brink	26/06/2012	PALAEONTOLOGICAL IMPACT ASSESSMENT OF THE PROPOSED OLIEN SOLAR PROJECT ON FARM 300, BARKLY WEST, NORTHERN CAPE PROVINCE

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8899	PIA Phase 1	John E Almond	04/05/2011	Recommended exemption from further palaeontological studies: Proposed Humansrus Solar Thermal Energy Power Plant development on Farm 469, near Postmasburg, Northern Cape Province
9047	PIA Phase 1	John E Almond	11/06/2010	Proposed photovoltaic power station adjacent to Welcome Wood Substation, Owendale near Postmasburg, Northern Cape Province

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APPENDIX 3 - Keys/Guides

Key/Guide to Acronyms

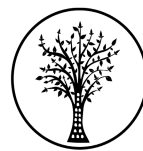
AIA	Archaeological Impact Assessment
DARD	Department of Agriculture and Rural Development (KwaZulu-Natal)
DEA	Department of Environmental Affairs (National)
DEADP	Department of Environmental Affairs and Development Planning (Western Cape)
DEDEAT	Department of Economic Development, Environmental Affairs 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 was undertaken.

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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

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- 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 a member 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 100 Heritage Impact Assessments throughout South Africa.

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