CTS HERITAGE

HERITAGE SCREENER

CTS Reference Number:	**CTS21_197**
SAHRIS Case No.	
Client:	**Savannah Environmental (Pty) Ltd**
Date:	**October 2021**
Title:	**Additional development area for the authorised Engie Sannaspos PV Facility is the Mangaung Metropolitan Municipality, Free State Province**

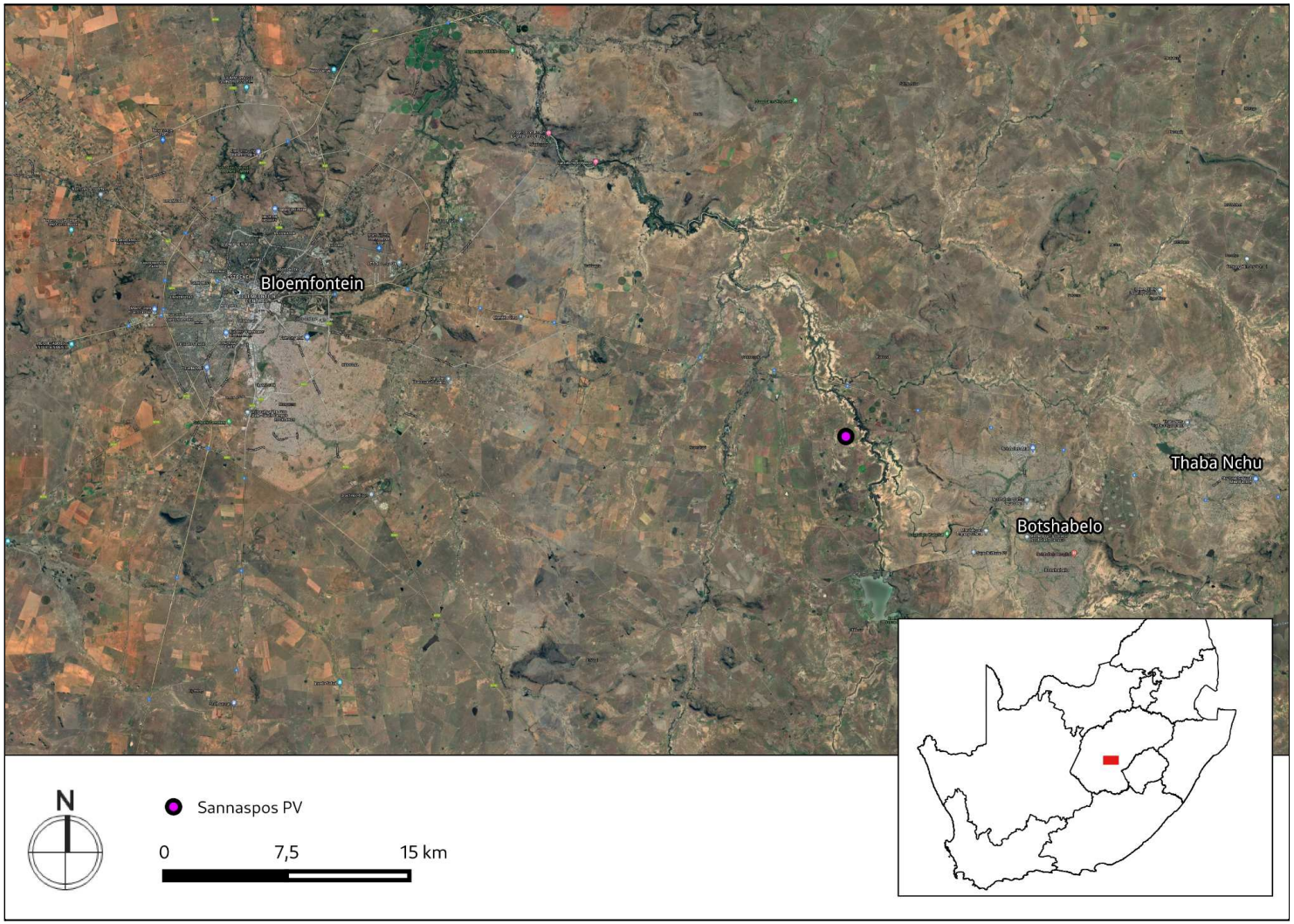

Figure 1a. Satellite map indicating the location of the proposed development in the Free State

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1. Proposed Development Summary

ENGIE Sannaspos Solar Project (Pty) Ltd received authorisation for the proposed Sannaspos PV Plant Phase 1 (75MW) and associated infrastructure, located on portion 0 of Farm 1808 Besemkop and Portion 0 of Farm 2962 Lejwe, within the Mangaung Metropolitan Municipality, Free State Province in June 2013. The EIA considered includes an area of 150ha for the PV arrays. The applicant is proposing to expand this area by 50ha within which project infrastructure will be placed.

2. Application References

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

3. Property Information

Latitude / Longitude	29°11'38.80"S 26°35'37.40"E
Erf number / Farm number	Portion 0 of Farm 1808 Besemkop and Portion 0 of Farm 2962 Lejwe.
Local Municipality	Mangaung Metropolitan Municipality
District Municipality	Lejweleputswa
Province	Free State
Current Use	Agriculture with approved PV facility
Current Zoning	Agriculture

4. Nature of the Proposed Development

Total Area	50ha
Depth of excavation (m)	2 to 3m
Height of development (m)	3 to 5m

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

As per the project description.

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

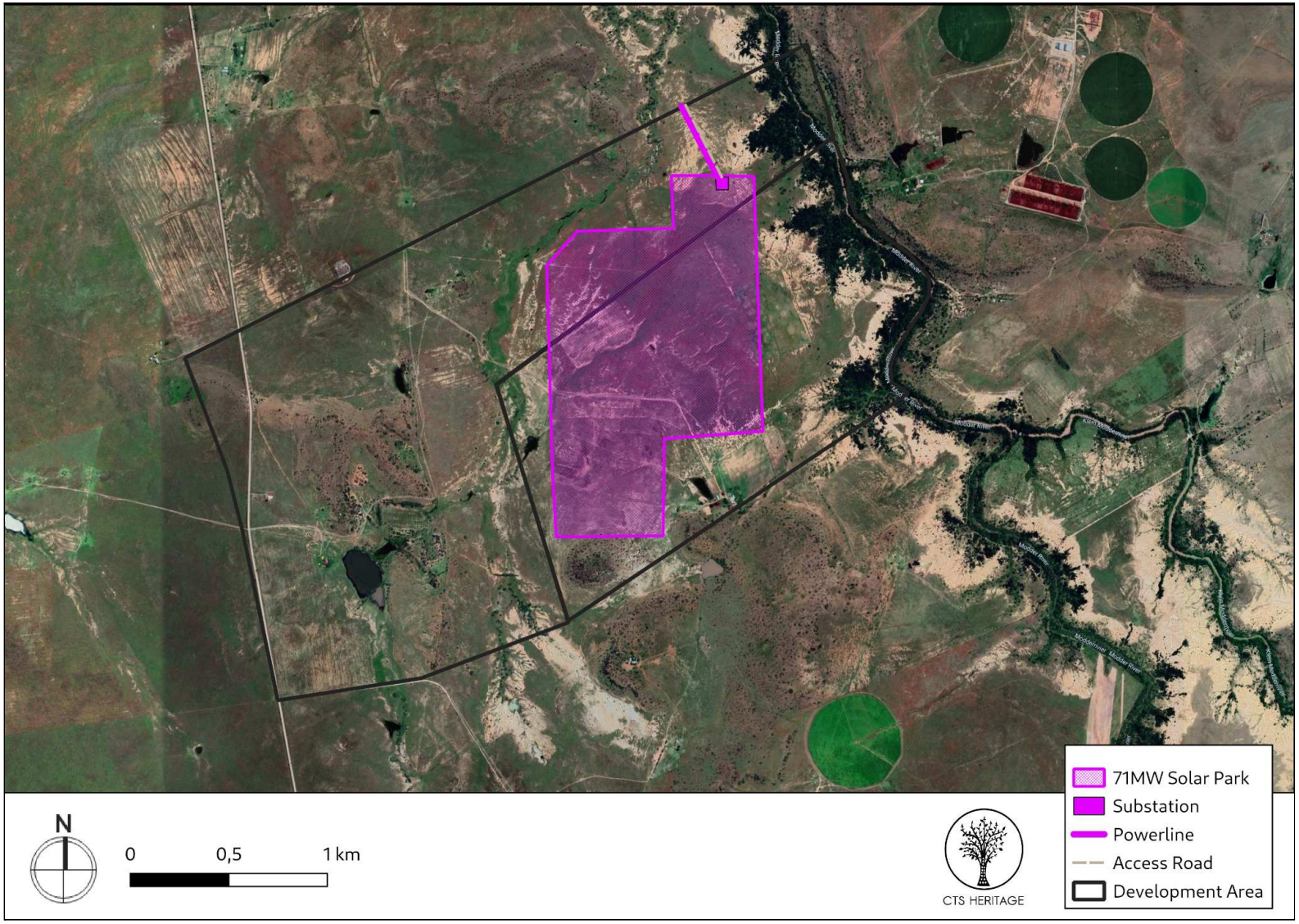

Figure 1b. Overview Map. Satellite image (2020) indicating the approved Sannaspos PV layout

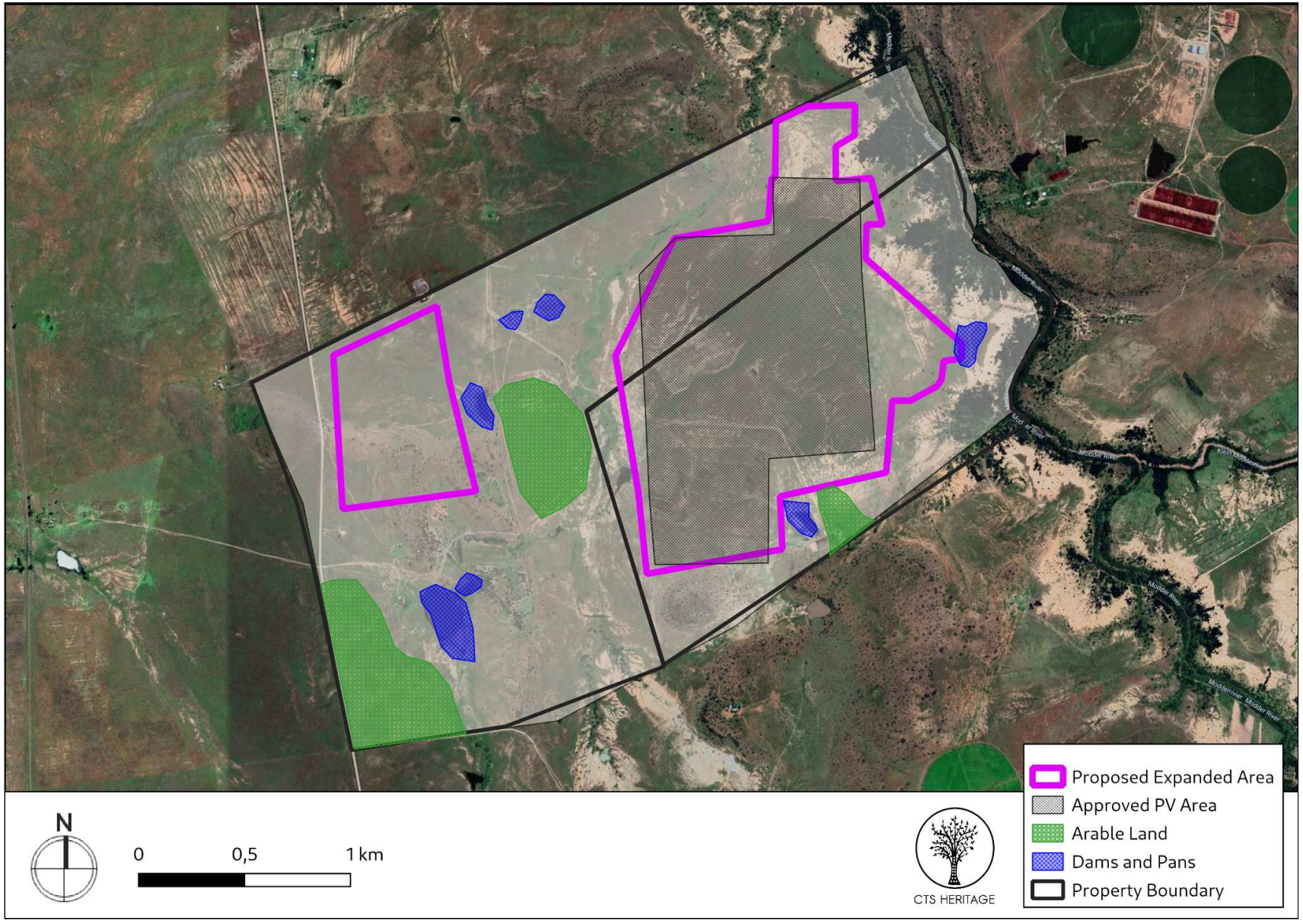

Figure 1c. Overview Map. Satellite image (2020) indicating the proposed development area

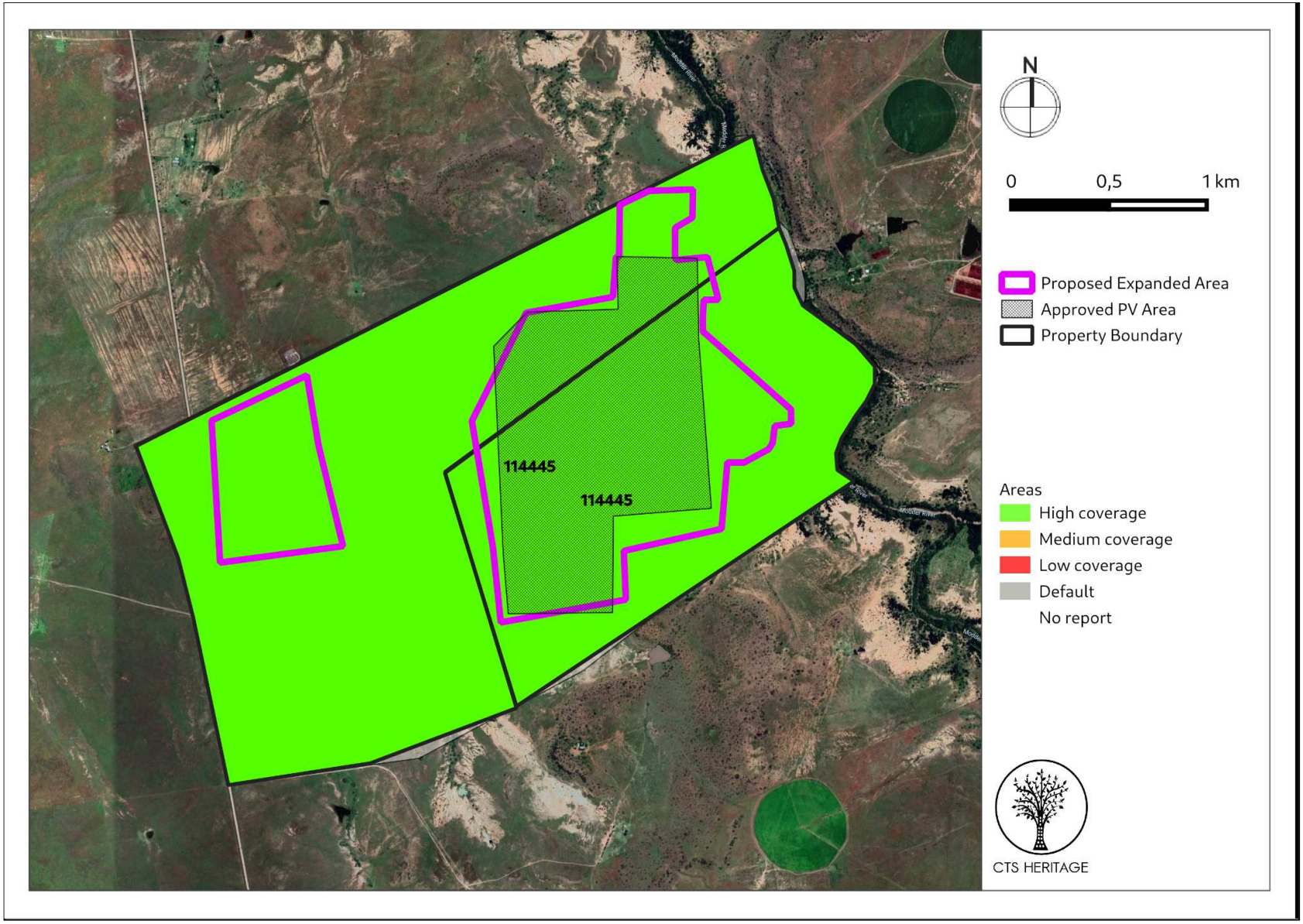

Figure 2. Previous HIAs Map. Previous Heritage Impact Assessments covering the proposed development area with SAHRIS NIDS indicated. Please see Appendix 2 for a full reference list.

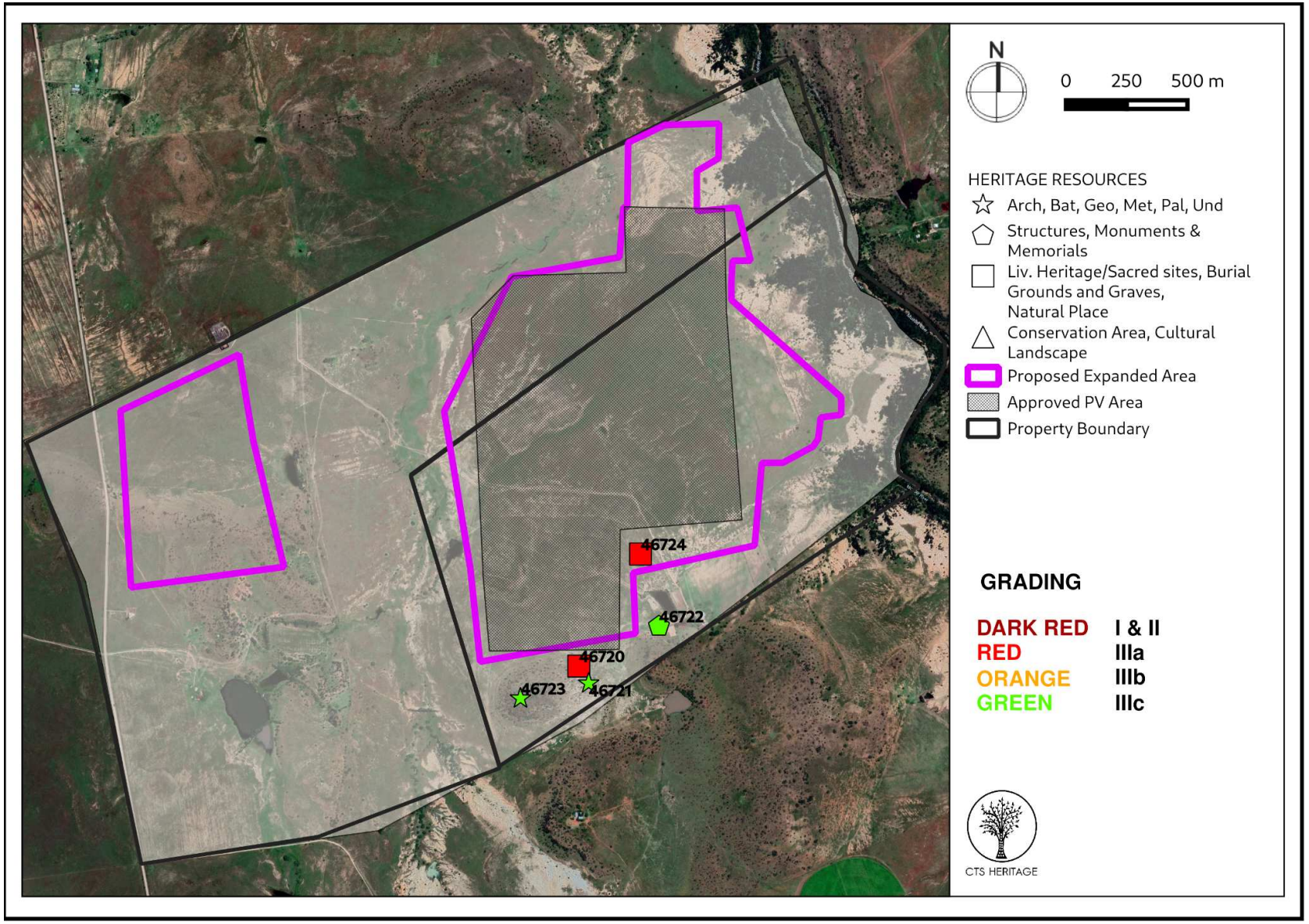

Figure 3. Heritage Resources Map. Heritage Resources previously identified within the study area, with SAHRIS Site IDs indicated in the insets below. Please See Appendix 4 for a full description of heritage resource types.

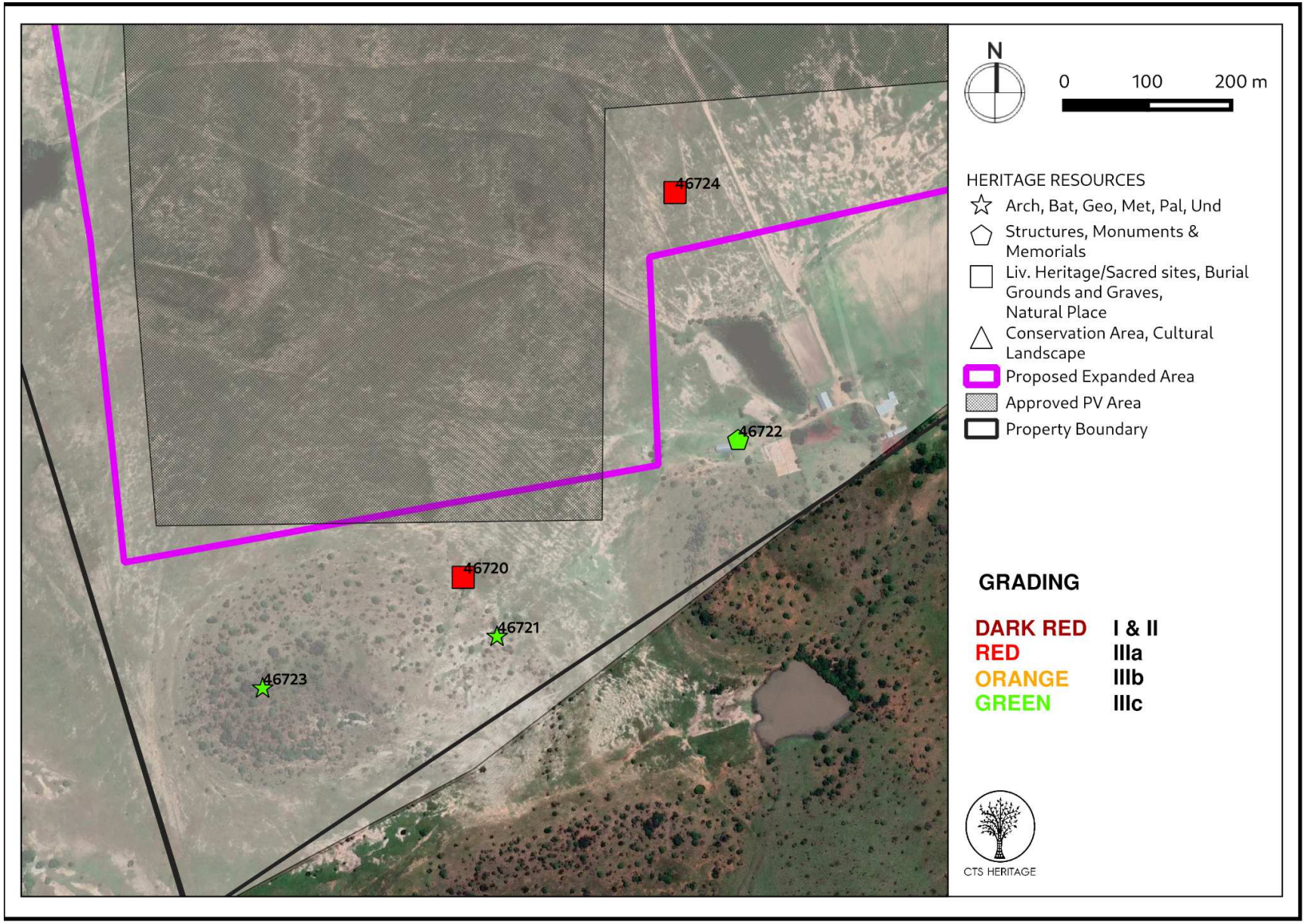

Figure 3a. Heritage Resources Map Inset A

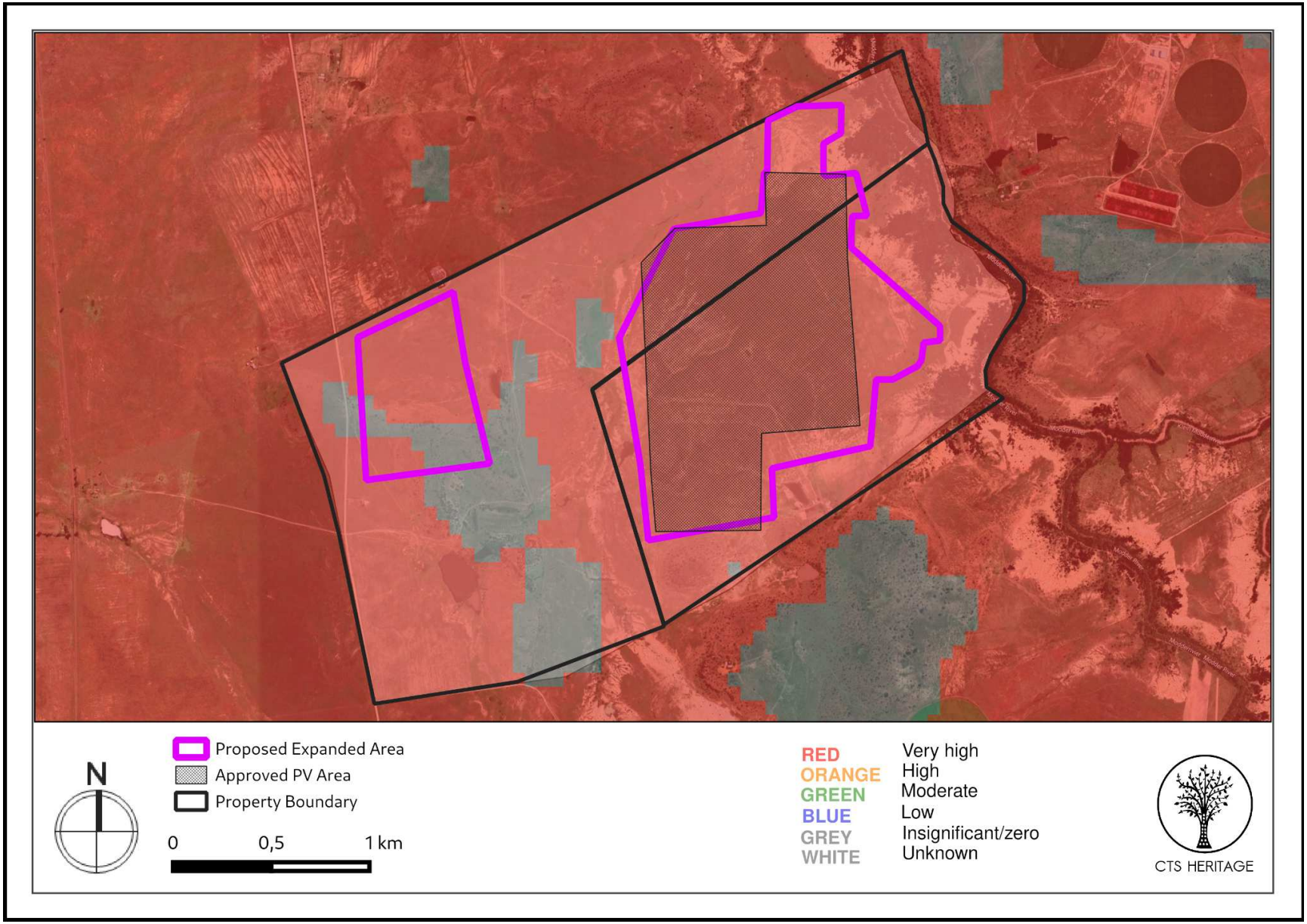

Figure 4a. Palaeosensitivity Map. Indicating fossil sensitivity underlying the study area. Please See Appendix 3 for a full guide to the legend.

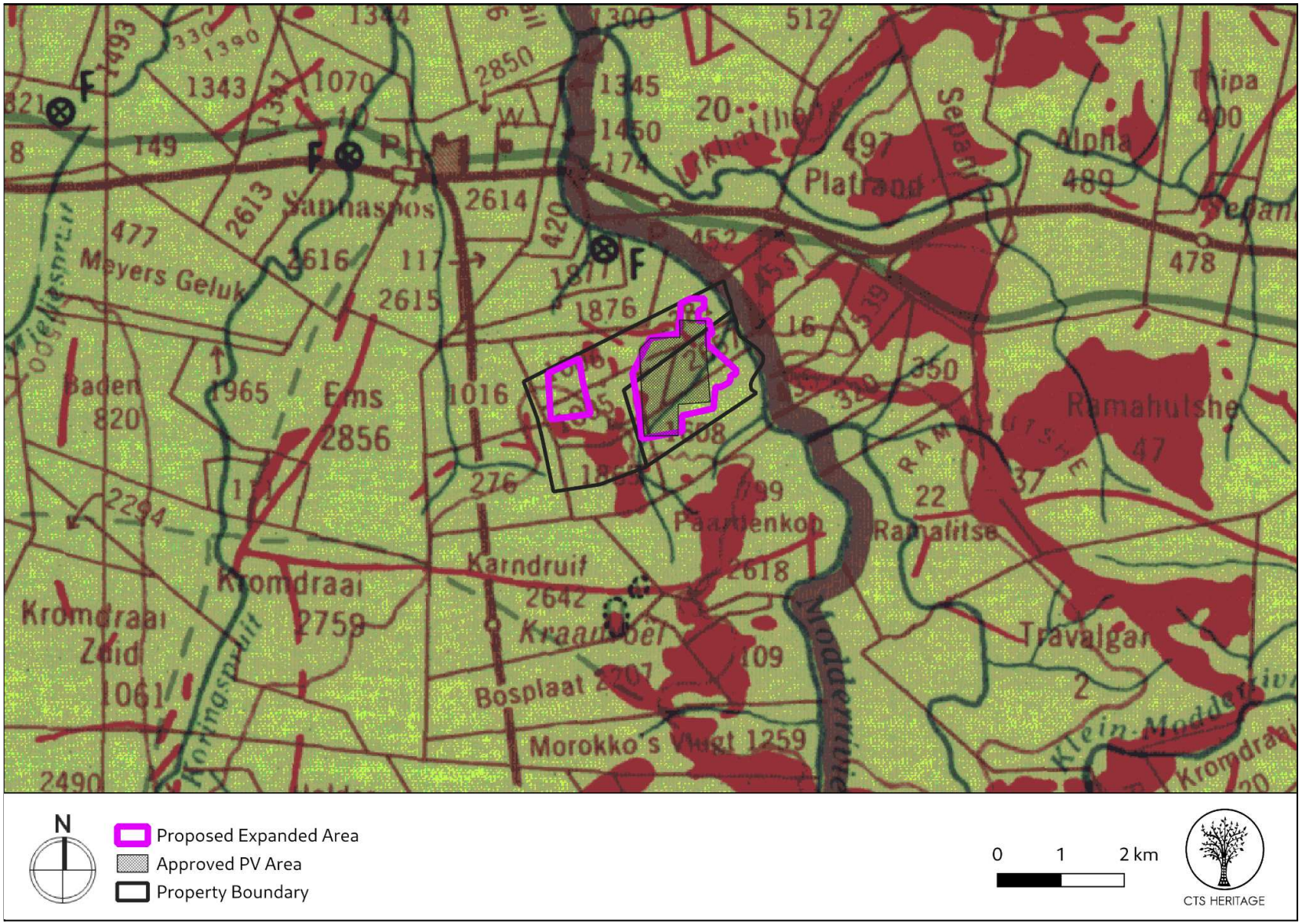

Figure 4b. Geology Map.Extract from the CGS 2926 Bloemfontein Map indicating that the development area for the Sannaspos PV is underlain by sediments of the Adelaide Subgroup (K3m) and Jurassic Dolerite (Jd)

8. Heritage Assessment

Background
On 26 June 2013, Environmental Authorisation (EA) was granted for the for the proposed construction of a commercial photovoltaic (PV) solar energy facility (known as the Sannaspos PV Facility) as well as all associated infrastructure on Portion 0 of Farm 1808 Besemkop and Portion 0 of Farm 2962 Lejwe, situated approximately 10 kilometres south of the N8 to Bloemfontein (in the north-west) and Thaba Nchu (in the south-east). Its northern and western boundary is located in a portion of Farm Lejwe 2962.

The EIA considered includes an area of 150ha for the PV arrays. The applicant is proposing to expand this area by 50ha within which project infrastructure will be placed. The area proposed for the Sannaspos PV Facility was thoroughly assessed for impacts to heritage resources in a Heritage Impact Assessment conducted by Tomose (2013, SAHRIS NID 114445) and a Palaeontological Impact Assessment by Bamford (2021, SAHRIS NID 582594). These reports are referred to below in order to determine the likely heritage sensitivity of the area proposed for the expansion.

Archaeology and Built Environment Heritage
A broad summary of the archaeology of the Free State is included in Tomose (2013) and is not included here. It is sufficient to note that, scattered throughout the Karoo is evidence of historic and prehistoric occupation in the form of Early, Middle and Later Stone Age lithics and other material remains. The descendents of the historic and prehistoric occupants of the region are found in the indigeous Khoe and San, as well as modern inhabitants of the area. The development area of Sannaspos takes its name from an engagement fought during the Second Boer War (1899-1902). According to Tomose (2013), “Using the new Commandos tactic, Chief Commandant De Wet defeated British forces under Brigadier General RG Broadwood in Sannaspos, some 28km east of Bloemfontein. This is in close proximity to the proposed development area. In this battle the British lost 159 men with the Boer Commandos only losing 13 – a huge and significant blow to the British. The defeated British garrison in Sannaspos had been protecting the Sannaspos water works, the main water supply to the newly captured Bloemfontein by the British forces.”

A monument commemorating this event has been established and it is currently used as one of the tour attractions of the Free State province battlefields tours and is located some 5km from the Sannaspos PV facility.

The Sannaspos PV facility development area has been thoroughly assessed by Tomose in his report dated July 2013. In his assessment, he identified 5 sites of heritage significance which needed to be considered for the development of the Sannaspos PV facility.

- ***Sannas-1 (Grade IIIA)*** SAHRIS ID 46720
  On the foot hill of one of the Koppies, an un-formalised and/or non-municipal cemetery i.e. not formalised in terms of bylaws regulating parks and cemeteries or being declared formal in terms of a traditional council, was located with approximately 13 graves. The graves are characterised by stone cairns or stone mound dressing. One grave out of the 13 has a cross to mark the headstone. The graves are all facing east-west in a typical burial orientation. The archaeologist was led to the site by farm workers after he asked about possible graves in the area.

- ***Sannas-2 (Grade IIIC)*** SAHRIS ID 46721
  Two MSA stone scatters were found at the foothill of a hill in Besemkop in an exposed calcrete layer.

- ***Sannas-3 (Grade IIIC)*** SAHRIS ID 46722

Site number 3 is a historic stone shed located within Besemkop farmstead. The main farmhouse and its outbuildings are modernised and the shed is the only remaining historical structure that exists in the farmstead. The shed has 3 north facing windows, 2 doors on either sides, 1 door on its southern façade. The shed is built using stone and has a corrugated iron sheet roof which seems to have been recently added on or refurbished.

- ***Sannas-4 (NCW)*** SAHRIS ID 46723
  Graffiti inscription site located on the hill located south of Besemkop. The inscriptions show 1990s dates and are considered to be a form of graffiti as they are too young to meet the criteria for rock art consideration. The archaeologist was led to the site after he asked the farm workers about possible rock art sites on the hill.

- ***Sannas-5 (Grade IIIA)*** SAHRIS ID 46724
  The site is located along the road leading to the farmstead. It is a cemetery, possibly created by the first farm owners of the area, consisting of approximately 8 graves. The graves have granite dressing and headstones. The graves burial orientation is east-west, a typical burial position.
  This burial site is located within the proposed expanded footprint These graves are clearly visible and are marked. It is required in the Heritage Management Plan that has been drafted for the Sannaspos PV Facility that these burials are fenced as per the recommendations of the HIA as follows:
  "The burial sites at Sannas-1 (SAHRIS ID 46720) and Sannas-5 (SAHRIS ID 46724) must be fenced using clearview fencing to ensure visual permeability and continuity in terms of sense of place. A gate must be created for access purposes for relatives and relevant community members. The position of this gate must be such that it can be accessed without risk to the Sannaspos PV facility. This fencing must be placed 5m from the nearest identifiable burial."

As per the recommendations of Tomose (2013), a Heritage Management Plan has been developed for the PV Facility (CTS Heritage, 2021) that includes guidelines and protocols for the management of impacts to heritage resources. The proposed expanded layout does not impact any known structures directly. One structure of low significance was identified within the broader development area (Sannas-3, Site ID 46722); however no impact to this structure is anticipated as it is associated with the farm werf. Should it be necessary that structures that have been graded or structures that are older than 60 years require alteration or demolition during this phase, HFS must be contacted regarding permission in terms of section 34 of the NHRA.

Palaeontology
According to the SAHRIS Palaeosensitivity Map, the area proposed for the PV Facility is underlain by sediments of very high and zero palaeontological sensitivity (Figure 4a). According to the extract from the CGS 2926 Bloemfontein Map, the development area is underlain by sediments of the Adelaide Subgroup and Jurassic Dolerite. Bamford (2021) completed a palaeontological field assessment of the development area. In the report, it is noted that the area proposed for development is underlain by geological sediments of the Adelaide Subgroup of the Beaufort Group (of very high paleontological sensitivity), and Jurassic Dolerite that has zero palaeontological sensitivity. According to the updated biostratigraphy (Smith et al., 2020), the whole of the Adelaide Subgroup has been divided into five Assemblage Zones based on the dominant or temporally exclusive vertebrate fossils.

If vertebrate fossils were common in this region and had been well mapped then the specific Assemblage Zone would have been indicated in the literature. Common names for the fossils that could occur here are fish, amphibians, reptiles, therapsids, terrestrial and freshwater tetrapods, as well as freshwater bivalves, trace fossils including tetrapod trackways and burrows. Where the vertebrates do not occur it is possible to find sparse to rich assemblages of vascular plants of the late Glossopteris Flora, including some petrified logs), and insects are also prevalent at some sites.

From the updated Karoo Biozone map in Smith et al. (2020) the Sannaspos site is in the Daptocephalus Assemblage Zone and on the margin of the two subzones, the lower Dicynodon-Therignathus subzone and upper Lystrosaurus maccaigi—Moschinus subzone. Fossil plants also occur in the Adelaide Subgroup and they are from the Glossopteris flora

and include leaf impressions of Glossopteris, early gymnosperms, lycopods, sphenophytes, ferns and silicified wood. They are not common however. The Sannaspos PV facility area was walked by a palaeontologist and no fossil material or significance palaoentological resources were identified (Bamford, 2021). Bamford (2021) notes that “Based on the nature of the project, surface activities may impact upon the fossil heritage if preserved in the development footprint. The geological structures suggest that the rocks are the right age and type to contain fossils. No fossils were seen during the site visit. Furthermore, the material to be disturbed are the loose surface soils and sands and they do not preserve fossils.”

Since there is a very small chance that fossils from the Adelaide Subgroup below the ground surface may be disturbed, Bamford (2021) recommended that a Fossil Chance Find Protocol be implemented during development. This recommendation has been included in this management plan.

RECOMMENDATION

On condition that the protocols outlined in the HIA and the Heritage Management Plan are followed, it is not likely that the proposed expansion to the PV facilities will negatively impact on significant resources and as such, no further assessment of impacts to heritage resources is recommended.

There is no objection to the proposed expansion for the Sannaspos PV Facilities on heritage grounds.

Table 2: Impact Assessment Table

NATURE: Significant archaeological, built environment and palaeontological heritage resources may be impacted by the construction phase of the proposed expansion								
		Archaeology, Built Environment and Cultural Landscape without Mitigation		**Archaeology, Built Environment and Cultural Landscape with Mitigation**		**Palaeontology without Mitigation**		**Palaeontology with Mitigation**
MAGNITUDE	**H (8)**	One burial site with approximately 8 marked graves is located within the expanded development area. No other significant archaeological or other heritage resources will be impacted by the proposed expanded layout	**L (1)**	One burial site with approximately 8 marked graves is located within the expanded development area. No other significant archaeological or other heritage resources will be impacted by the proposed expanded layout	**H (10)**	The sediments underlying the proposed development have very high palaeontological sensitivity.	**H (10)**	The sediments underlying the proposed development have very high palaeontological sensitivity.
DURATION	**H (5)**	Where manifest, the impact will be permanent.	**H (5)**	Where manifest, the impact will be permanent.	**H (5)**	Where manifest, the impact will be permanent.	**H (5)**	Where manifest, the impact will be permanent.
EXTENT	**L (1)**	Localised within the site boundary	**L (1)**	Localised within the site boundary	**L (1)**	Localised within the site boundary.	**L (1)**	Localised within the site boundary.
PROBABILITY	**H (4)**	Highly probable	**L (1)**	Probability is low	**P (3)**	It is probable that fossils would be impacted	**I (1)**	It is improbable that fossils would be impacted
SIGNIFICANCE	**M**	(8+5+1)x4=56 (Medium)	**L**	(1+5+1)x1=7 (Low)	**M**	(10+5+1)x3=48 (Medium)	**L**	(10+5+1)x1=16 (Low)
STATUS		Negative		Neutral		Negative		Neutral
REVERSIBILITY	**L**	Any impacts to heritage resources that do occur are irreversible	**L**	Any impacts to heritage resources that do occur are irreversible	**L**	Any impacts to heritage resources that do occur are irreversible	**L**	Any impacts to heritage resources that do occur are irreversible
IRREPLACEABLE LOSS OF RESOURCES?	**L**	Possible	**L**	Possible	**L**	Possible	**L**	Possible
CAN IMPACTS BE MITIGATED		Yes				Yes		
MITIGATION: ● The burial sites at Sannas-1 (SAHRIS ID 46720) and Sannas-5 (SAHRIS ID 46724) must be fenced using clearview fencing to ensure visual permeability and continuity in terms of sense of place. A gate must be created for access purposes for relatives and relevant community members. The position of this gate must be such that it can be accessed without risk to the Sannaspos PV facility. This fencing must be placed 5m from the nearest identifiable burial ● The provisions of the Heritage Management Plan drafted for the Sannaspos PV Facility must be adhered to ● The Chance Fossil Finds Protocol included in Bamford (2021) must be implemented.								
RESIDUAL RISK: ● If concentrations of archaeological heritage material and human remains are uncovered during construction, all work must cease immediately and be reported to SAHRA so that systematic and professional investigation/ excavation can be undertaken.								

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APPENDIX 1

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.

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APPENDIX 2

Reference List with relevant AIAs and PIAs

Heritage Impact Assessments				
Nid	**Report Type**	**Author/s**	**Date**	**Title**
114445	HIA	Nkosinathi Tomose	07/07/2013	A Phase 1 Heritage impact assessment study for the proposed photovoltaic (PV) solar energy facilities (in Sannaspos), near Bloemfontein, Free State Province: DEA Ref No: 14/12/16/3/3/2/360 (Phase 1); DEA Ref No: 14/12/16/3/3/1/615 (Phase 2)
114446	Desktop PIA	Job M. Kibii	31/07/2021	Proposed Sannaspos PV solar energy facilities, Portion 0 of Farm 1808 Besemkop and Portion 0 of Farm 2962 Lejwe of Mangaung Metropolitan Municipality, Free State Province
582594	PIA	Marion Bamford	06/08/2021	Palaeontological Impact Assessment for the proposed Sannaspos Photo voltaic Facility, Farms Lejwe and Besemkop, Free State Province
582594	Heritage Management Plan	Jenna Lavin	27/08/2021	HERITAGE CONSERVATION MANAGEMENT PLAN for the approved Sannaspos Photovoltaic Facility near Bloemfontein in the Free State 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)
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:	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 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.