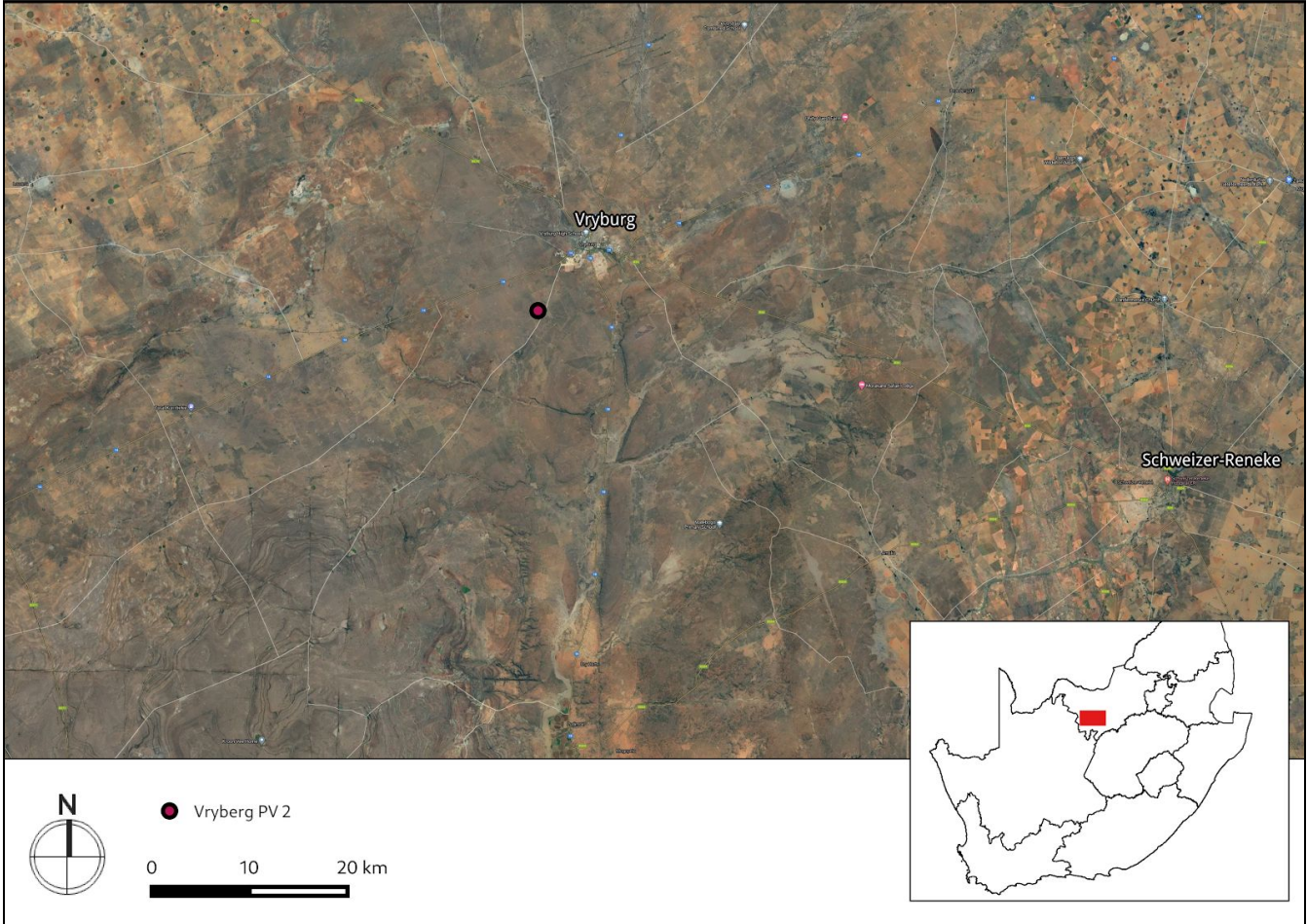




CTS HERITAGE

## HERITAGE SCREENER

CTS Reference Number:	CTS20_177	
SAHRIS Reference:	12807	
Client:	Savannah Environmental (Pty) Ltd	
Date:	October 2020	
Title:	HERITAGE SCREENING ASSESSMENT FOR THE PROPOSED AMENDMENT TO THE VRYBURG 2 SOLAR FACILITY, NORTH WEST PROVINCE	
<b>RECOMMENDATION</b> <b>The heritage resources in the area proposed for development are sufficiently recorded</b> - 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.		

**Figure 1a.** Satellite map indicating the location of the proposed development in the North West Province

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## 1. Proposed Development Summary

Vryburg Solar 2 (Pty) Ltd is proposing the inclusion of the construction and operation of a Battery Energy Storage (BESS) for the authorised Vryburg 2 Solar Energy Facility, with a capacity of up to 500MW/500MWh into the project description of the Environmental Authorisation (EA). The BESS which will have an extent of no more than 5ha will be developed within the authorised development footprint of Vryburg Solar 2, within the authorised 15 ha construction compound/laydown area. The BESS will connect to the authorised on-site facility substation of the Vryburg Solar 2 via underground cables. The project is located within the Vryburg Renewable Energy Development Zone (REDZ), within ward 4 of the Naledi Local Municipality and within the greater Dr Ruth Segomotsi Mompati District Municipality in the North West Province 10km south-west of Vryburg. The authorised solar energy facility and associated infrastructure will be located on the following farm portions:

- Portion 1 of Retreat Farm 671;
- Portion 2 of Frankfort Farm 672;
- Remaining extent of Frankfort Farm 672;
- Portion 1 of Frankfort Number Farm 672; and
- The Remainder of Rosendal Farm 673.

The BESS will be located on Portion 1 of Retreat Farm 671.

The purpose and utilisation of a Battery Energy Storage System (BESS) is to save and store excess electrical output as it is generated, allowing for a timed release when the capacity is required. BESS systems therefore provide flexibility in the efficient operation of the electricity grid through decoupling of the energy supply and demand.

The following infrastructure is associated with the BESS:

- Electrochemical battery storage systems with a maximum height of 3.5m; and
- Multi-core 22kV or 33kV underground cables, to follow internal access roads of the PV facility, to connect the battery storage area to the on-site facility substation.

In addition, Vryburg Solar 2 (Pty) Ltd is also proposing a change in the description included in the Environmental Authorisation pertaining to the on-site substation. The change relates to the addition of collector infrastructure as part of the authorised on-site substation and within the authorised footprint of the substation.

Vryburg Solar 2 (Pty) Ltd is also proposing to correct the wording in the current EA relating to the size in ha of the development footprint. The current EA states that the size in ha of the development footprint is 225ha. This is a typing error that should read **255ha** as per the area assessed within the EIA Report.

It is the Developer's intention to bid the solar PV facility and the battery energy storage under the Risk Mitigation Independent Power Producer (IPP) Procurement Programme and/or Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) of the Department of Mineral Resources and Energy and/or any future relevant procurement programme. Ultimately, the development of the solar PV facility as well as the battery energy storage is intended to be part of the renewable energy projects portfolio for South Africa, as contemplated in the Integrated Resources Plan (IRP).

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## 2. Application References

Name of relevant heritage authority(s)	SAHRA
Name of decision making authority(s)	Department of Environment, Fisheries and Forestry (DEFF).

## 3. Property Information

Latitude / Longitude	24.6782 E, -27.0199 S
Erf number / Farm number	Portion 1 of Retreat Farm 671
Local Municipality	Naledi Local Municipality
District Municipality	Dr Ruth Segomotsi Mompati District Municipality
Province	North West Province
Current Use	Agriculture with approved PV facility
Current Zoning	Agriculture

## 4. Nature of the Proposed Development

Total Area	<5ha
Depth of excavation (m)	1m
Height of development (m)	3.5m

## 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.

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	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 <sup>2</sup> 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 <sup>2</sup>
	5. Other (state):

## 6. Additional Infrastructure Required for this Development

NA

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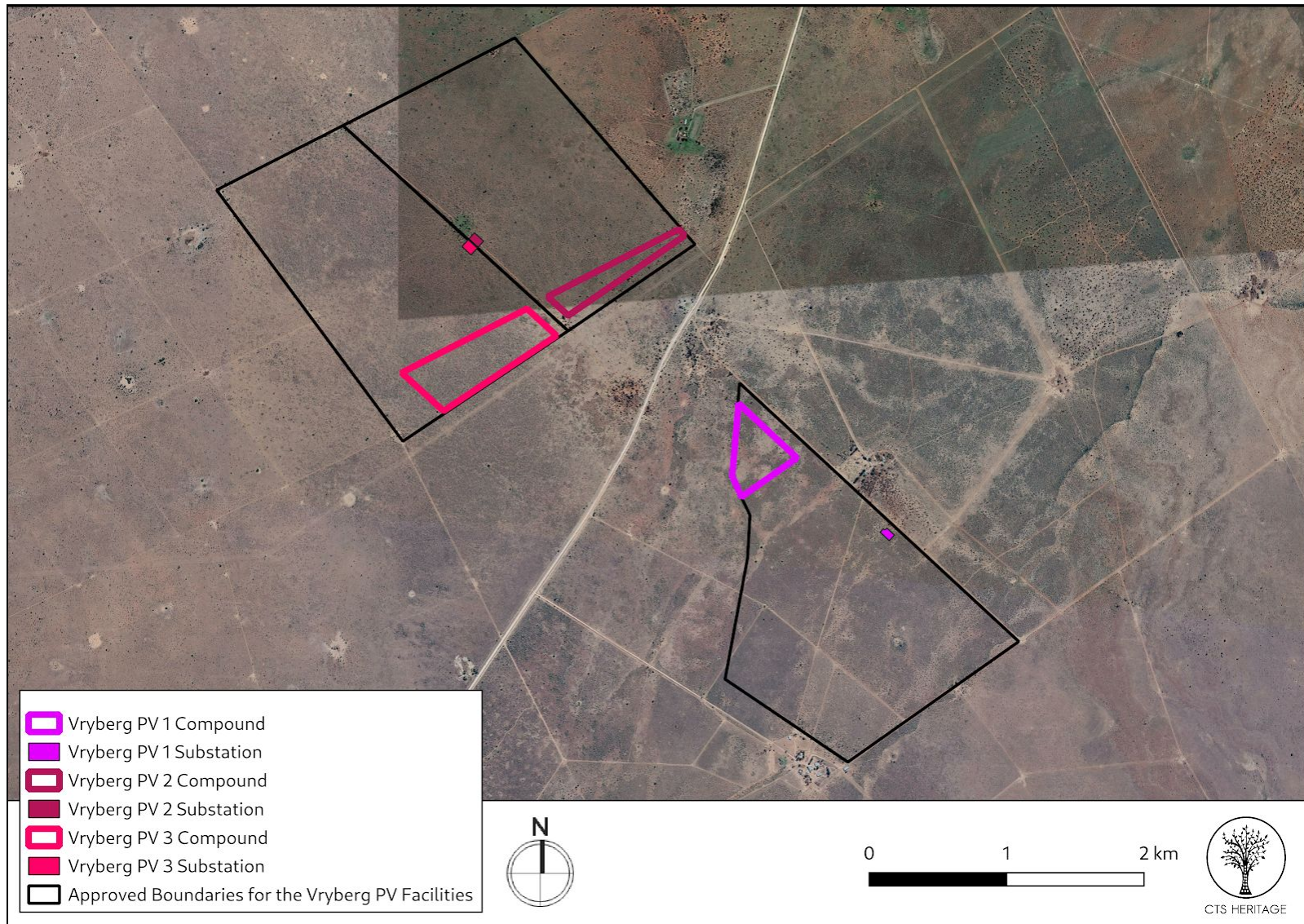
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## 7. Mapping (please see Appendix 3 and 4 for a full description of our methodology and map legends)



**Figure 1b. Overview Map.** Satellite image (2020) indicating the proposed development area relative to the approved Vryburg 1, 2 and 3 Solar Energy Facilities

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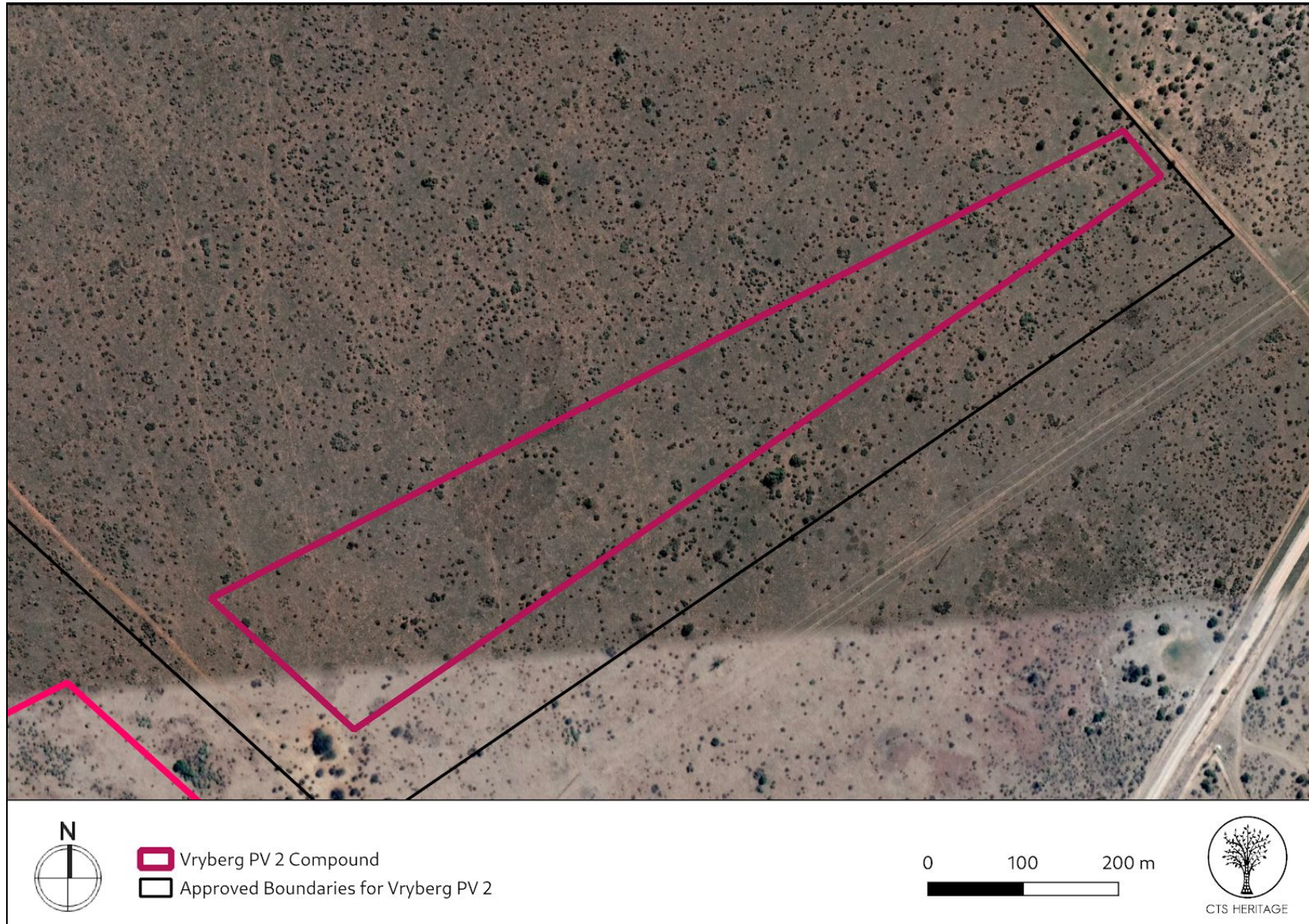
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**Figure 1c. Overview Map.** Satellite image (2020) indicating the proposed BESS development area

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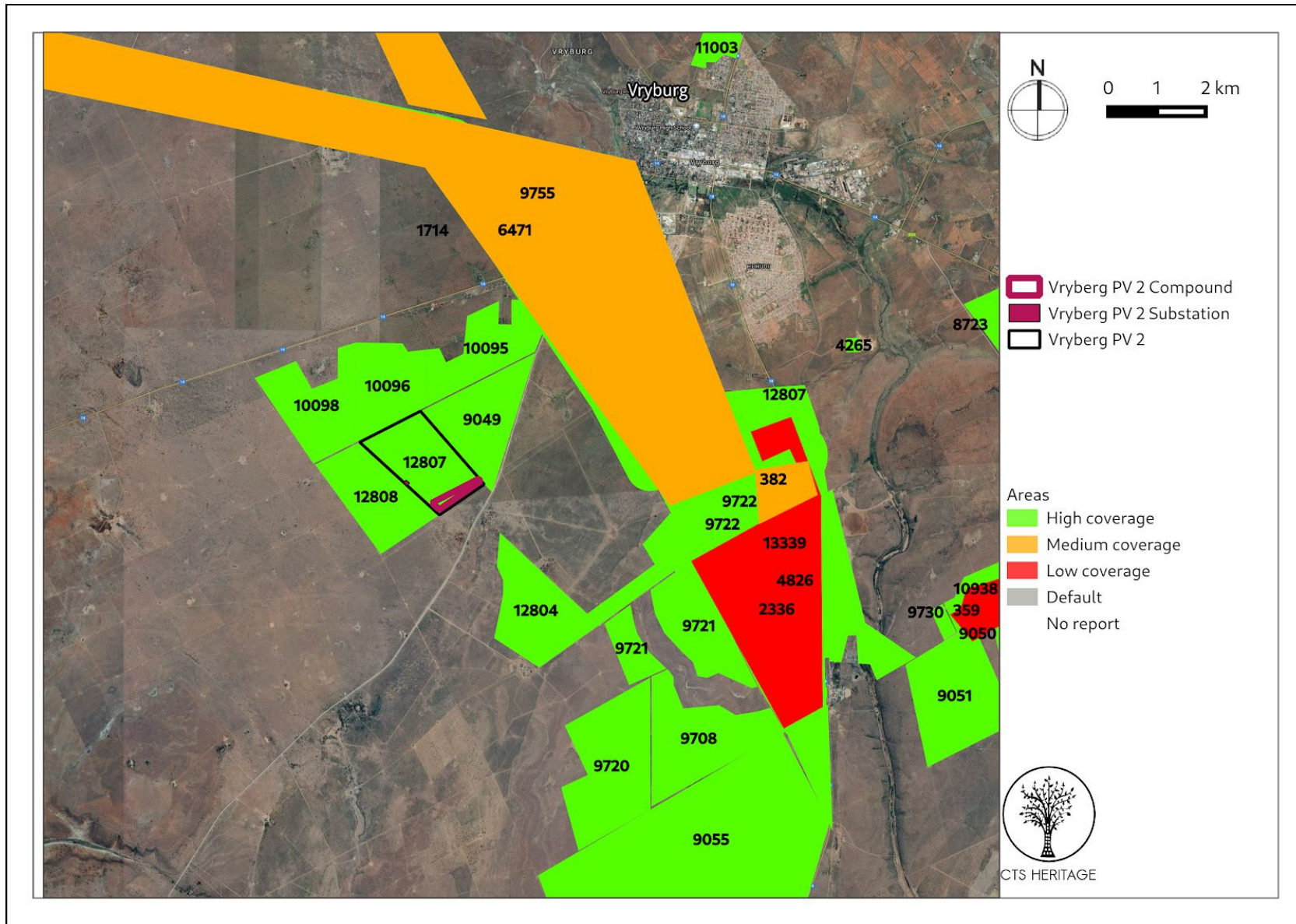
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**Figure 2. Previous HIAs Map.** Previous Heritage Impact Assessments covering the proposed development area with SAHRIS NIDS indicated. Please see Appendix 2 for a full reference list.

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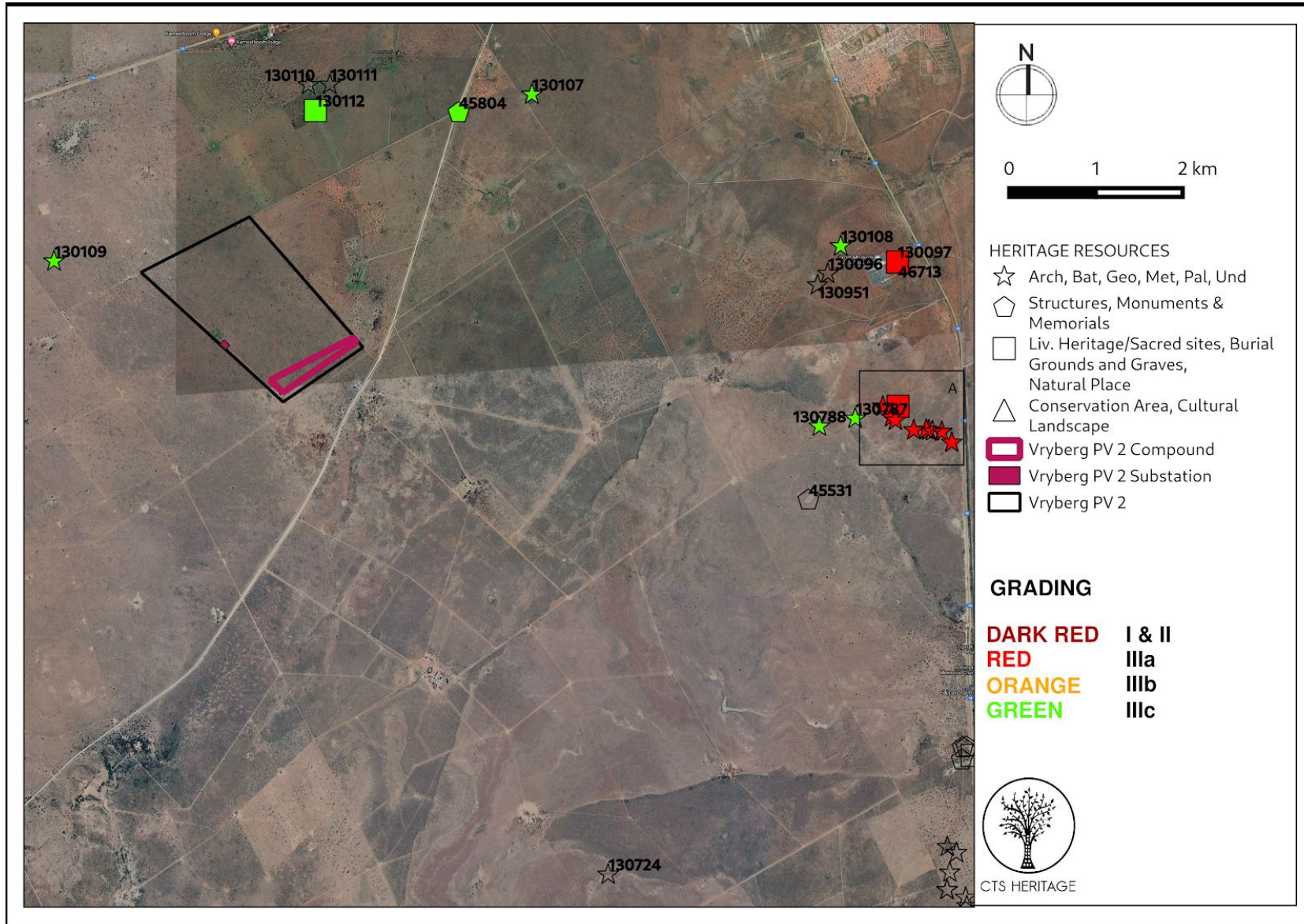
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**Figure 3. Heritage Resources Map.** Heritage Resources previously identified within the study area, with SAHRIS Site IDs indicated in the insets below. Please See Appendix 4 for full description of heritage resource types.

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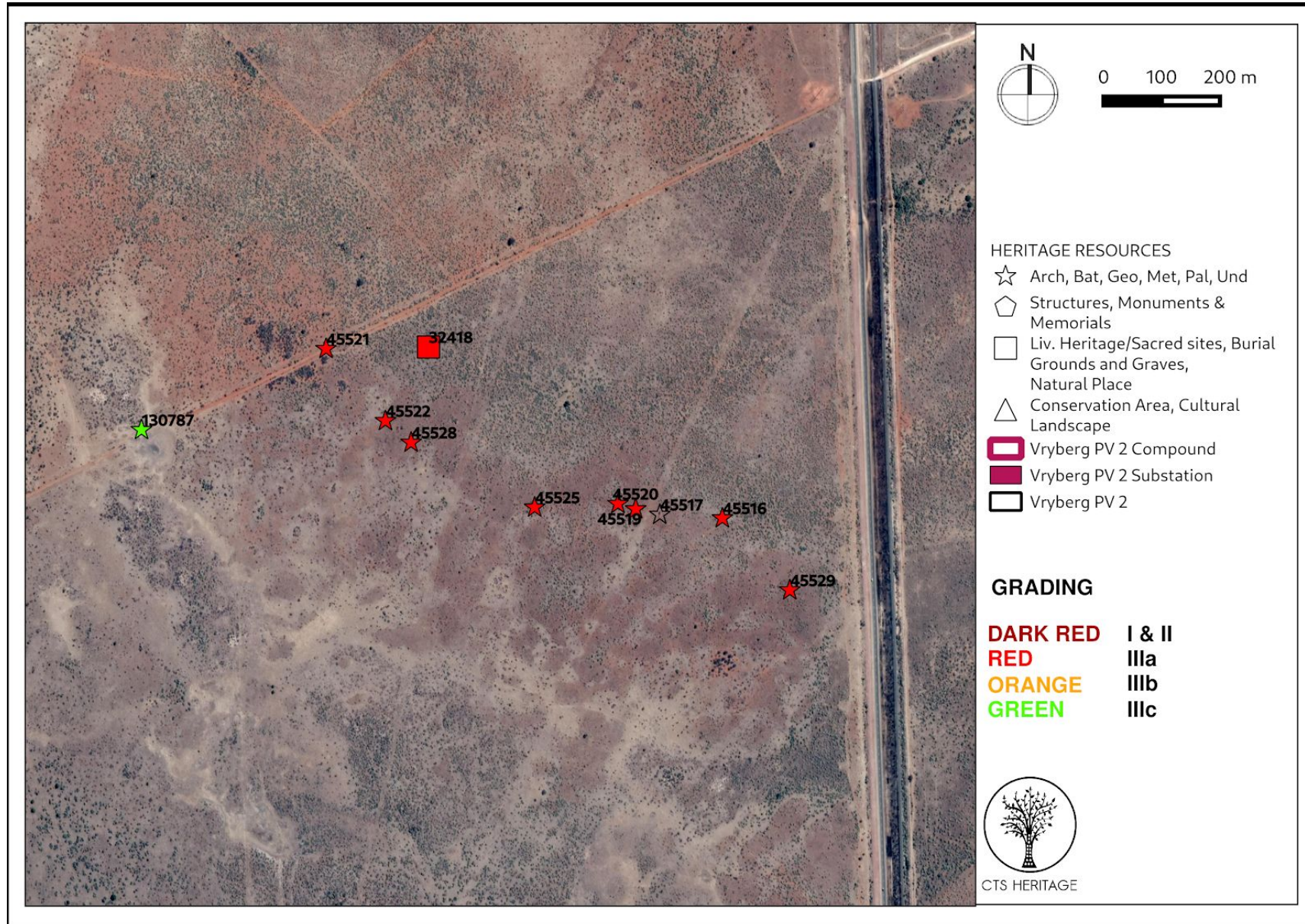


Figure 3a. Heritage Resources Map Inset A

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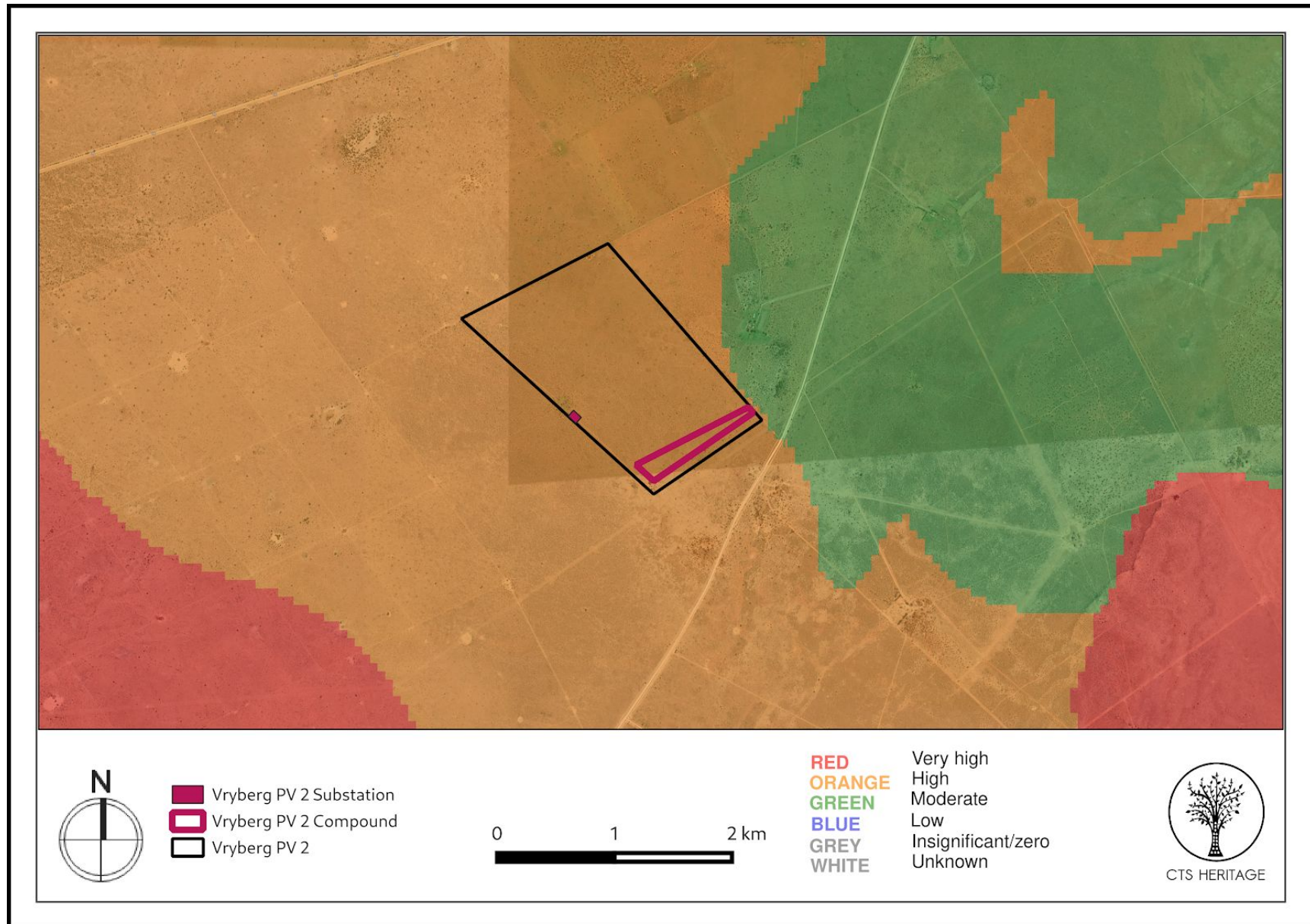
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**Figure 4a. Palaeosensitivity Map.** Indicating fossil sensitivity underlying the study area. Please See Appendix 3 for a full guide to the legend.

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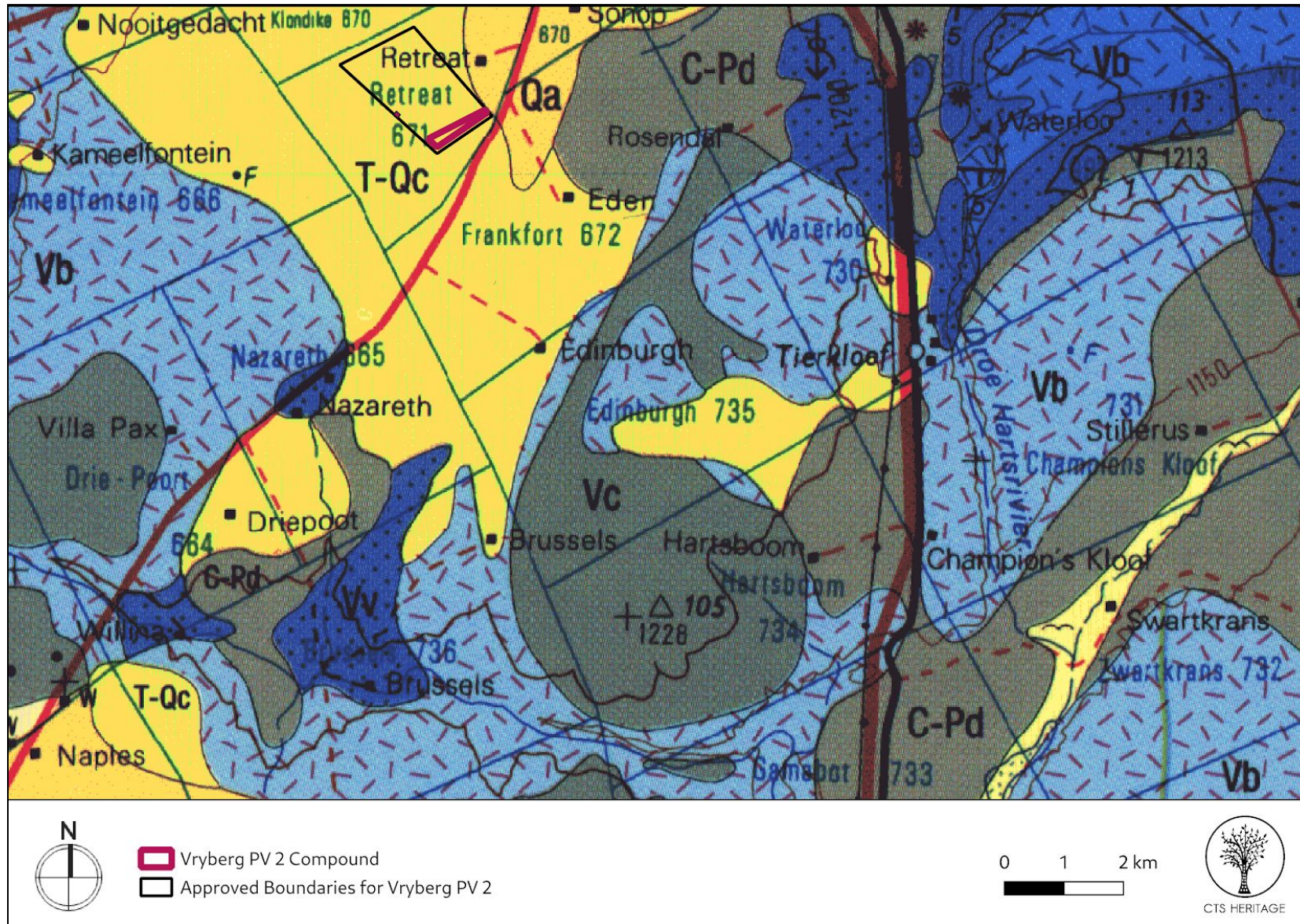
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**Figure 4b. Geology Map.** Extract from the CGS 2724 Christiana Map indicating that the development area for the Vryburg 2 Solar Energy Facility as well as the development area for the BESS is underlain by Tertiary calcrete and Quaternary alluvium, sand and soils (T-Qc)

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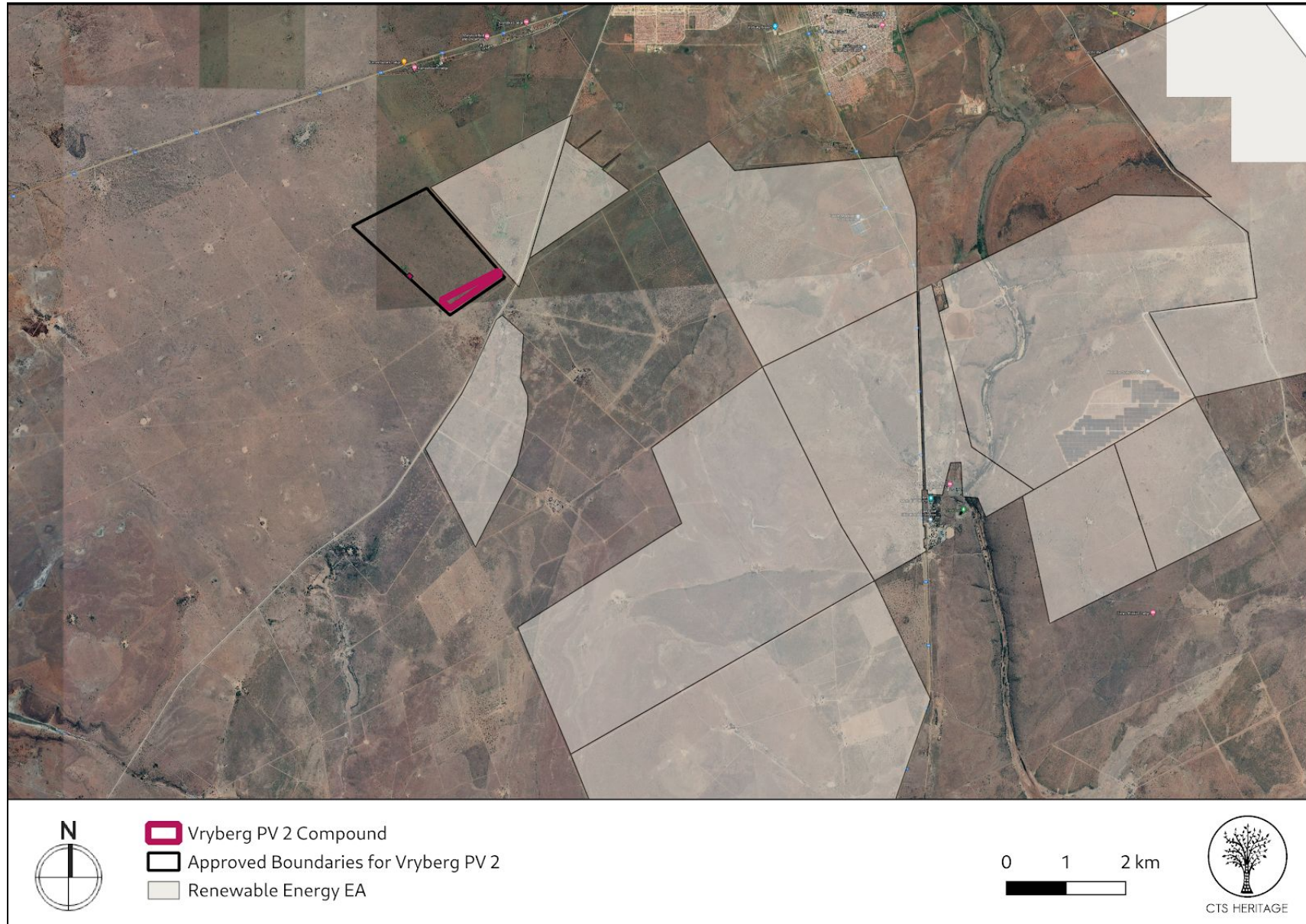
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**Figure 5. Cumulative Impact Map.** Map indicating all of the authorised renewable energy facilities (as of 2018) in proximity to the Vryburg 2 Solar Energy Facility





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## 8. Heritage Assessment

### Background

Vryburg Solar 2 (Pty) Ltd is proposing the construction and operation of a Battery Energy Storage (BESS) for the authorised Vryburg 2 Solar Energy Facility, with a capacity of up to 500MW/500MWh into the project description of the Environmental Authorisation (EA). The BESS which will have an extent of no more than 5ha will be developed within the authorised development footprint of Vryburg Solar 2, within the authorised 15ha construction compound/laydown area. The area proposed for the BESS development is located within the Compound area marked on the above maps. This area was thoroughly assessed for impacts to heritage resources in the Heritage Impact Assessment conducted by Van Schalkwyk (2018, SAHRIS NID 510838). The HIA by Van Schalkwyk is referred to below.

### Archaeology and Built Environment Heritage

Vryburg town was established in 1882 as the capital town of the independent Boer Republic of Stellaland. During its short history, the small state became a focal point for conflict between the British Empire and the South African Republic, the two major players vying for control of the territory. After a series of claims and annexations, British fears of Boer expansionism led to its demise and, among other factors, set the stage for the Second Boer War. Before the proclamation of the republic, the area was under the control of competing Korana and Tswana groups, while the United Kingdom laid claim to it as a part of the emerging protectorate of British Bechuanaland. Two of the indigenous groups were under the leadership of chiefs Mankoroane and Montšioa, whom the British regarded as "friendly," and two others under the leadership of chiefs Moshette (a Motswana) and Massouw (a Korana). When a feud erupted between Mankoroane and another chief, each side resorted to recruiting volunteers, promising them land in return for their assistance. After a settlement was negotiated with mediation from the Transvaal Republic, large portions of Mankoroane's land were given to Boer mercenaries who had fought on his adversary's side, and the new inhabitants decided to declare independence and establish the Republic of Stellaland. During the Second Boer War, a concentration camp was established at Vryburg, however the location

According to van Schalkwyk et al (2018, SAHRIS NID 510838) "Very little habitation of the central highveld area took place during Stone Age times. Tools dating to the Early Stone Age period are mostly found in the vicinity of larger watercourses, e.g. the Vaal River or the Harts River and especially in sheltered areas such as at the Taung fossil site. During Middle Stone Age (MSA) times (c. 150 000 – 30 000 BP), people became more mobile, occupying areas formerly avoided. In many cases, tools dating to this period are found on the banks of the many pans that occur all over." Van Schalkwyk (2018, SAHRIS NID 510838) notes that Later Stone Age artefacts and rock art are also known from the area. Iron Age people started to settle in the area in the 1500s. According to Van Schalkwyk (2018, SAHRIS NID 510838), "By the 16th century things changed, with the climate becoming warmer and wetter, creating condition that allowed Late Iron Age (LIA) farmers to occupy areas previously unsuitable, for example the treeless plains of the Free State and North West Province." including the proposed development area. "The earliest Iron Age settlers who moved into the North West Province region were Tswana-speakers such as the Tlhaping, Hurutshe, Fokeng, Kgatla and Rolong. In the region of the study area, it was mostly the booRapulana and booRatlou sections of the Rolong (Breutz 1959)."

Despite the overall archaeological sensitivity of the broader landscape, the archaeological survey conducted by Van Schalkwyk (2018, SAHRIS NID 510838) identified only three heritage resources of significance in his assessment for the authorised Vryburg PV projects. Two of these include Stone tools identified to occur on a low ridge to the east of the substation (SAHRIS Site ID 130950 and 130951). These artefacts mostly date to the Middle Stone Age, although some smaller ones might date to the Later Stone Age. Cores, tools and flakes (debitage) were identified, indicating that the tools were manufactured on site. The material used was mostly chert, although some quartzite was also identified. The density of the stone tool scatter seems to be quite consistent over the whole ridge, averaging at approximately 2 pieces per 2m<sup>2</sup>. The third site (SAHRIS Site ID 130952) is recorded as six graves occurring west of the substation. They were very old and only marked with low stone cairns. As they were located next to the laydown area for the construction of the substation, they were fenced off. According to the SAHRIS comment issued for this case, these human remains were successfully relocated under a permit in terms of section 36 of the NHRA in 2014. **None of these resources were located within the area proposed for the BESS development.**

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## Palaeontology

According to the SAHRIS Palaeosensitivity Map, the area proposed for the BESS development is underlain by sediments of high palaeontological sensitivity (Figure 4a). According to the extract from the CGS 2724 Christiana Map indicating that the development area for the Vryburg Solar 2 Facility as well as the development area for the BESS is underlain by Tertiary calcrete and Quaternary alluvium, sand and soils (T-Qc) (Figure 4b). The palaeontological impacts associated with the development of the Vryburg Solar facilities was assessed by Durand (2018). According to Durand (2018), the area proposed for the BESS development is underlain by Tertiary-aged calcrete (Figure 5). “Vast areas of hundreds of square kilometres of calcrete occur in the Northwest and are prevalent in the Vryburg area. The calcretes are associated with recent prehistoric (Tertiary to Quaternary) drainage lines and pans where evaporation and or the loss of CO<sub>2</sub> caused the precipitation of calcite from the water in the sands and soils of that area. During this cementation phase rocks and bones and even stone tools in the superficial sediments were trapped as part of the calcrete that formed.”

In his palaeontological assessment, Durand (2018) notes that “The study area is covered in natural vegetation with grass and shrubs and trees and is used for cattle farming. The soil cover in the study area is relatively thin and the underlying eroded bedrock is exposed in places. No distinct or remarkable fossils were found on this field trip. This however does not imply that Tertiary-aged fossils or stromatolites would not be discovered once the grass and soil are cleared and it is highly probable that they will be discovered in the study region as soon as excavations commence. Stromatolites of various kinds and sizes were found on the neighbouring farm Waterloo (Almond, 2013).” As such, although no palaeontological resources were identified within the area proposed for the BESS development during the field assessment, it remains likely that significant palaeontological heritage in the form of Tertiary-aged fossils or stromatolites will be impacted. As such, the attached Palaeontological Chance Finds Procedure must be implemented for the duration of excavations activities.

## Cumulative Impacts

The proposed BESS development will form part of the infrastructure required for the Vryburg Solar facilities development and is located in close proximity to the substation and operations and maintenance facilities associated with the Vryburg solar facilities development. Furthermore, the proposed BESS is located within an already approved solar facility development footprint which is also located within a belt of approved renewable energy facilities (Figure 5). 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 construction of the proposed BESS is therefore unlikely to result in unacceptable risk or loss, nor will the proposed BESS development result in a complete change to the sense of place of the area or result in an unacceptable increase in impact. No additional cumulative impacts have been identified in addition to those already covered in the EIA.

## Conclusion

There is no objection to the proposed development of Vryburg Solar 2 BESS on heritage grounds and no monitoring protocols are recommended. There are no disadvantages or advantages associated with the proposed amendment from a heritage perspective however, it should be noted that, although there were no other archaeological or heritage resources identified during the survey conducted for the already approved PV facility; some archaeological material, including artefacts and graves can be buried underground and as such, may not have been identified during the initial survey and site visits. In the case where the proposed development activities bring these materials to the surface, work must cease and SAHRA must be contacted immediately to determine a way forward. The following findings have been made:

- No archaeological resources were identified in the project area identified for the development of the BESS.
- No graves or burial grounds were identified in the project area identified for the development of the BESS. However, graves are subterranean in nature and might not have been identified during the initial site visit and survey.

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- Based on the known palaeontological sensitivity of the area, it remains likely that significant palaeontological heritage in the form of Tertiary-aged fossils or stromatolites will be impacted by the development. As such, the attached Palaeontological Chance Finds Procedure must be implemented for the duration of excavations activities.
- If concentrations of archaeological heritage material and human remains are uncovered during construction, all work must cease immediately and be reported to the South African Heritage Resources Agency (SAHRA) (021 642 4502) so that systematic and professional investigation/ excavation can be undertaken.

#### **RECOMMENDATION**

**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.

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**Table 2: Impact Assessment Table**

NATURE: Significant archaeological, built environment and palaeontological heritage resources may be impacted by the construction phase of the proposed development								
		Archaeology without Mitigation		Archaeology with Mitigation		Palaeontology without Mitigation		Palaeontology with Mitigation
MAGNITUDE	L (1)	No significant heritage resources were identified within the proposed development and no negative impact is anticipated from the proposed BESS development.	L (1)	No significant heritage resources were identified within the proposed development and no negative impact is anticipated from the proposed BESS development	L (1)	According to the PIA conducted for the Vryburg PV Facility, "The study area is covered in natural vegetation with grass and shrubs and trees and is used for cattle farming. The soil cover in the study area is relatively thin and the underlying eroded bedrock is exposed in places. No distinct or remarkable fossils were found on this field trip. This however does not imply that Tertiary-aged fossils or stromatolites would not be discovered once the grass and soil are cleared and it is highly probable that they will be discovered in the study region as soon as excavations commence. Stromatolites of various kinds and sizes were found on the neighbouring farm Waterloo (Almond, 2013)."	L (1)	According to the PIA conducted for the Vryburg PV Facility, "The study area is covered in natural vegetation with grass and shrubs and trees and is used for cattle farming. The soil cover in the study area is relatively thin and the underlying eroded bedrock is exposed in places. No distinct or remarkable fossils were found on this field trip. This however does not imply that Tertiary-aged fossils or stromatolites would not be discovered once the grass and soil are cleared and it is highly probable that they will be discovered in the study region as soon as excavations commence. Stromatolites of various kinds and sizes were found on the neighbouring farm Waterloo (Almond, 2013)."
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	L (1)	Probability is low	L (1)	Probability is low	L (1)	It is possible that fossils Abrahamskraal formation would be impacted	L (1)	It is possible that fossils Abrahamskraal formation would be impacted
SIGNIFICANCE	L	(1+5+1)x1=7	L	(1+5+1)x1=7	L	(1+5+1)x1=7	L	(1+5+1)x1=7
STATUS		Neutral		Neutral		Neutral		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:								

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- Based on the known palaeontological sensitivity of the area, it remains likely that significant palaeontological heritage in the form of Tertiary-aged fossils or stromatolites will be impacted by the development. As such, the attached Palaeontological Chance Finds Procedure must be implemented for the duration of excavations activities.

**RESIDUAL RISK:**

- If concentrations of archaeological heritage material and human remains are uncovered during construction, all work must cease immediately and be reported to the South African Heritage Resources Agency (SAHRA) (021 642 4502) so that systematic and professional investigation/ excavation can be undertaken.

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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
27202	9/2/103/0003	Tiger Kloof, Waterloo 730, District Vryburg	Building, Structures	Grade II
45516	WATER01	Waterloo 730 -01	Artefacts	Grade IIIa
45519	WATER03	Waterloo 730 -03	Artefacts	Grade IIIa
45520	WATER04	Waterloo 730 -04	Artefacts	Grade IIIa
45521	WATER05	Waterloo 730 -05	Artefacts	Grade IIIa
45522	WATER06	Waterloo 730 -06	Artefacts	Grade IIIa
45525	WATER08	Waterloo 730 -08	Artefacts	Grade IIIa
45528	WATER07	Waterloo 730 -07	Artefacts	Grade IIIa
45529	WATER09	Waterloo 730 -09	Artefacts	Grade IIIa
45804	WATR02	Waterloo PV 506 -02	Building	Grade IIIc
32418	Exhumation of graves at Eskom Mookodi Substation1	Exhumation of graves at Eskom Mookodi Substation	Burial Grounds & Graves	Grade IIIa
46715	MOOK010	Mookodi 010	Building	Grade IIIa
46713	MOOK008	Mookodi 008	Burial Grounds & Graves	Grade IIIa
45531	WATER10	Waterloo 730 -10	Structures	
45517	WATER02	Waterloo 730 -02	Artefacts	

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130096	2724BA/ Solar/ Farm Rosendal 673/ Site 1	Stone Age factory site	Archaeological	Grade IV
130097	2724BA/ Solar/ Farm Rosendal 673/ Site 2	Burial site	Burial Grounds & Graves	Grade IV
130724	2724DB/ Solar/ Farm Frankfort No 672/ Site V02	Low density scatter	Archaeological	Grade IV
130107	2724BA/ Solar/ Farm Rosendal 673/ Site 1	Archaeological site	Archaeological	Grade IIIc
130108	2724BA/ Solar/ Farm Rosendal 673/ Site 2	Archaeological site	Archaeological	Grade IIIc
130109	2724BA/ Solar/ Farm Rosendal 673/ Site 3	Archaeological site	Archaeological	Grade IIIc
130110	2624DC/ Solar/ Farm Rosendal 673/ Site 1	Ruins of calcrete structures	Archaeological	Grade IV
130111	2624DC/ Solar/ Farm Rosendal 673/ Site 2	Archaeological site	Archaeological	Grade IV
130112	2624DC/ Solar/ Farm Rosendal 673/ Site 3	Unmarked burial site	Burial Grounds & Graves	Grade IIIc
130787	2724DB/ Solar/ Farm Frankfort No 672/ Site V07	Low density scatter	Archaeological	Grade IIIc
130788	2724DB/ Solar/ Farm Frankfort No 672/ Site V08	Low density scatter	Archaeological	Grade IIIc
130195	2724BA/ Solar/ Farm Waterloo 730/ Site 018	Building	Structures	Grade IV
130196	2724BA/ Solar/ Farm Waterloo 730/ Site 019	Building	Structures	Grade IV
130198	2724BA/ Solar/ Farm Waterloo 730/ Site 020	Homestead	Structures	Grade IV
130199	2724BA/ Solar/ Farm Waterloo 730/ Site 021	Grave yard	Burial Grounds & Graves	Grade IV
130950	VBS001	VRYBURG SOLAR	Artefacts	Grade IV
130951	VBS002	VRYBURG SOLAR	Artefacts	Grade IV
130952	VBS003	VRYBURG SOLAR	Burial Grounds & Graves	Grade IIIa

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## APPENDIX 2

### Reference List with relevant AIAs and PIAs

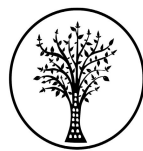
Heritage Impact Assessments				
Case ID	Report Type	Author/s	Date	Title
359	PIA Phase 1	John E Almond	01/01/2013	PALAEONTOLOGICAL HERITAGE ASSESSMENT: COMBINED DESKTOP & FIELD-BASED STUDY Proposed PV Solar Facility on a portion of the farm Waterloo 992 near Vryburg, Naledi Local Municipality, North-West Province
382	PIA Desktop	John E Almond	01/01/2013	PALAEONTOLOGICAL HERITAGE ASSESSMENT: DESKTOP STUDY Proposed PV Solar Facility on a portion of the farm Rosendal 673 near Vryburg, Naledi Local Municipality, North-West Province
4265	HIA Phase 1	David Morris	01/04/2014	Appendix D3 Vryburg WWTW Heritage Specialist Report
4826	Palaeontological Specialist Reports	John E Almond	30/11/2013	Proposed Tiger Skloof Photovoltaic Solar Energy Facility near Vryburg, Naledi Local Municipality, North-West Province
6471	Heritage Impact Assessment Specialist Reports	Johnny Van Schalkwyk	31/08/2014	BASIC HERITAGE ASSESSMENT FOR THE PROPOSED MOOKODI 132KV PHASE 2 POWER LINES DEVELOPMENT, NORTH WEST PROVINCE
8723	Palaeontological Specialist Reports	Elize Butler	10/04/2016	
8724	Palaeontological Specialist Reports	Elize Butler	10/04/2016	
9049	Palaeontological Specialist Reports	John Edward Almond		Palaentological Heritage Assessment: Combined Desktop & Field- Based Study Proposed Sonbesie Solar Plant on the Remaining Extent of the Farm Retreat 671, near Vryburg, Naledi local municipality, North-West Province
9051	Heritage Impact Assessment Specialist Reports	Johnny Van Schalkwyk		Cultural heritage Impact assessment for the Development of the Proposed Khubu Solar Power Plant in the Portion 5 of the Farm CHampions Kloof 731, Vryburg Region, North West Province
9708	Heritage Impact Assessment Specialist Reports	Wouter Fourie	26/05/2016	75MW SOLAR PHOTOVOLTAIC (PV) ENERGY FACILITY “ SENDAWO SOLAR 1 Heritage Impact Assessment
9720	Heritage Impact Assessment	Wouter Fourie	26/05/2016	75MW SOLAR PHOTOVOLTAIC (PV) ENERGY FACILITY “ SENDAWO SOLAR 2 Heritage Impact Assessment

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	Specialist Reports			
9721	Heritage Impact Assessment Specialist Reports	Wouter Fourie	26/05/2016	75MW SOLAR PHOTOVOLTAIC (PV) ENERGY FACILITY – SENDAWO SOLAR 3 Heritage Impact Assessment
9722	Heritage Impact Assessment Specialist Reports	Wouter Fourie	19/05/2016	SENDAWO POWERLINE ALTERNATIVES – SENDAWO PROJECTS Heritage Impact Assessment
9730		John Almond	07/01/2013	Palaeontological Heritage Assessment: Combined Desktop & Field-based Study Proposed PV Solar Facility on a portion of the farm Waterloo 992 near Vryburg, Naldi Local Municipality, North West Province
9755	AIA Phase 1	Lloyd Rossouw	04/11/2016	Phase 1 Archaeological Impact Assessment of two borrow pit areas on Farm 506IN near Vryburg, Northwest Province.
10095	Heritage Impact Assessment Specialist Reports	Stefan de Kock	15/09/2016	PROPOSED DEVELOPMENT OF THE AMDA DELTA PV (SOLAR ENERGY FACILITY) ON REMAINING EXTENT OF THE FARM KLONDIKE NO 670, AND OVERHEAD POWER LINE GRID CONNECTION TO THE MOOKODI MTS SUB-STATION ACROSS THE REMAINDER OF ERF 506 AND REMAINDER OF THE FARM ROSENDAL 6
10096	Heritage Impact Assessment Specialist Reports	Stefan de Kock	15/09/2016	PROPOSED DEVELOPMENT OF THE AMDA ECHO PV (SOLAR ENERGY FACILITY) ON REMAINING EXTENT OF THE FARM KLONDIKE NO 670, AND OVERHEAD POWER LINE GRID CONNECTION TO THE MOOKODI MTS SUB-STATION ACROSS THE REMAINDER OF ERF 506 AND REMAINDER OF THE FARM ROSENDAL 67
10098	Heritage Impact Assessment Specialist Reports	Stefan de Kock	15/09/2016	PROPOSED DEVELOPMENT OF THE AMDA FOXTROT PV (SOLAR ENERGY FACILITY) ON REMAINING EXTENT OF THE FARM KLONDIKE NO 670, AND OVERHEAD POWER LINE GRID CONNECTION TO THE MOOKODI MTS SUB-STATION ACROSS THE REMAINDER OF ERF 506 AND REMAINDER OF THE FARM ROSENDAL
1714	Heritage Impact Assessment Specialist Reports	Johnny Van Schalkwyk	06/03/2013	Mookodi Integration Project Phase 2 - Heritage Report - Basic Assessment
9053	Palaeontological Specialist Reports	John E Almond		Palaeontological Heritage Assessment: Combined Desktop & Field-Based Study Proposed Alpha Solar Power Plant on Portion 3 of Farm Middel Pan 605 near Vryburg, Naledi Local Municipality, North West Province
9054	Heritage Impact Assessment Specialist Reports	Johnny Van Schalkwyk		Cultural heritage Impact assessment for The Development of the proposed Meerkat Solar Power Plant on a portion of the farm Vyflings Pan 598IN, Vryburg Region, North West Province
9755	AIA Phase 1	Lloyd Rossouw	04/11/2016	Phase 1 Archaeological Impact Assessment of two borrow pit areas on Farm 506IN near Vryburg, Northwest Province.
7952	AIA Phase 1B	Neels Kruger	23/09/2015	ADDITIONAL ARCHAEOLOGICAL IMPACT STUDY FOR THE PROPOSED CAROCRAFT SOLAR PARK, NALEDI

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				LOCAL MUNICIPALITY, BOPHIRIMA DISTRICT MUNICIPALITY, NORTH WEST PROVINCE
12804	Heritage Impact Assessment Specialist Reports	Johnny Van Schalkwyk	03/08/2018	Gultural Heritage Impact Assessment for the Proposed Development of a 100 MW (115(MW DC) Solar Photovoltaic Facility (Vryburg Solar 1) and Associated 132kv Transmission Line near Vryburg, North West Province.
12807	Heritage Impact Assessment Specialist Reports	Johnny Van Schalkwyk	03/08/2018	Gultural Heritage Impact Assessment for the Proposed Development of a 100 MW (115(MW DC) Solar Photovoltaic Facility (Vryburg Solar 2) and Associated 132kv Transmission Line near Vryburg, North West Province.
12808	Heritage Impact Assessment Specialist Reports	Johnny Van Schalkwyk	03/08/2018	Gultural Heritage Impact Assessment for the Proposed Development of a 100 MW (115(MW DC) Solar Photovoltaic Facility (Vryburg Solar 3) and Associated 132kv Transmission Line near Vryburg, North West Province.
12804	PIA Phase 1	JF Durand	24/07/2018	Palaeontological Impact Assessment for the proposed construction of three Solar Photovoltaic (PV) Facilities (i.e. Vryburg Solar 1, Vryburg Solar 2 and Vryburg Solar 3) and associated electrical infrastructure, near Vryburg, in the North-West Province

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## APPENDIX 3 - Keys/Guides

### Key/Guide to Acronyms

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

### Full guide to Palaeosensitivity Map legend

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

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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 since 2016, 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 100 Heritage Impact Assessments and Screening Assessments throughout South Africa.

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