CTS HERITAGE

HERITAGE SCREENER

CTS Reference Number:	**CTS20_050_Geelstert 3**
SAHRIS Reference:	
Client:	**Savannah Environmental (Pty) Ltd**
Date:	**August 2020**
Title:	**PROPOSED DEVELOPMENT OF A GRID CONNECTION FOR THE PROPOSED GEELSTERT 1 AND GEELSTERT 2 SOLAR PV FACILITIES ON A SITE 11KM SOUTH-EAST OF AGGENEYS IN THE NORTHERN CAPE PROVINCE**

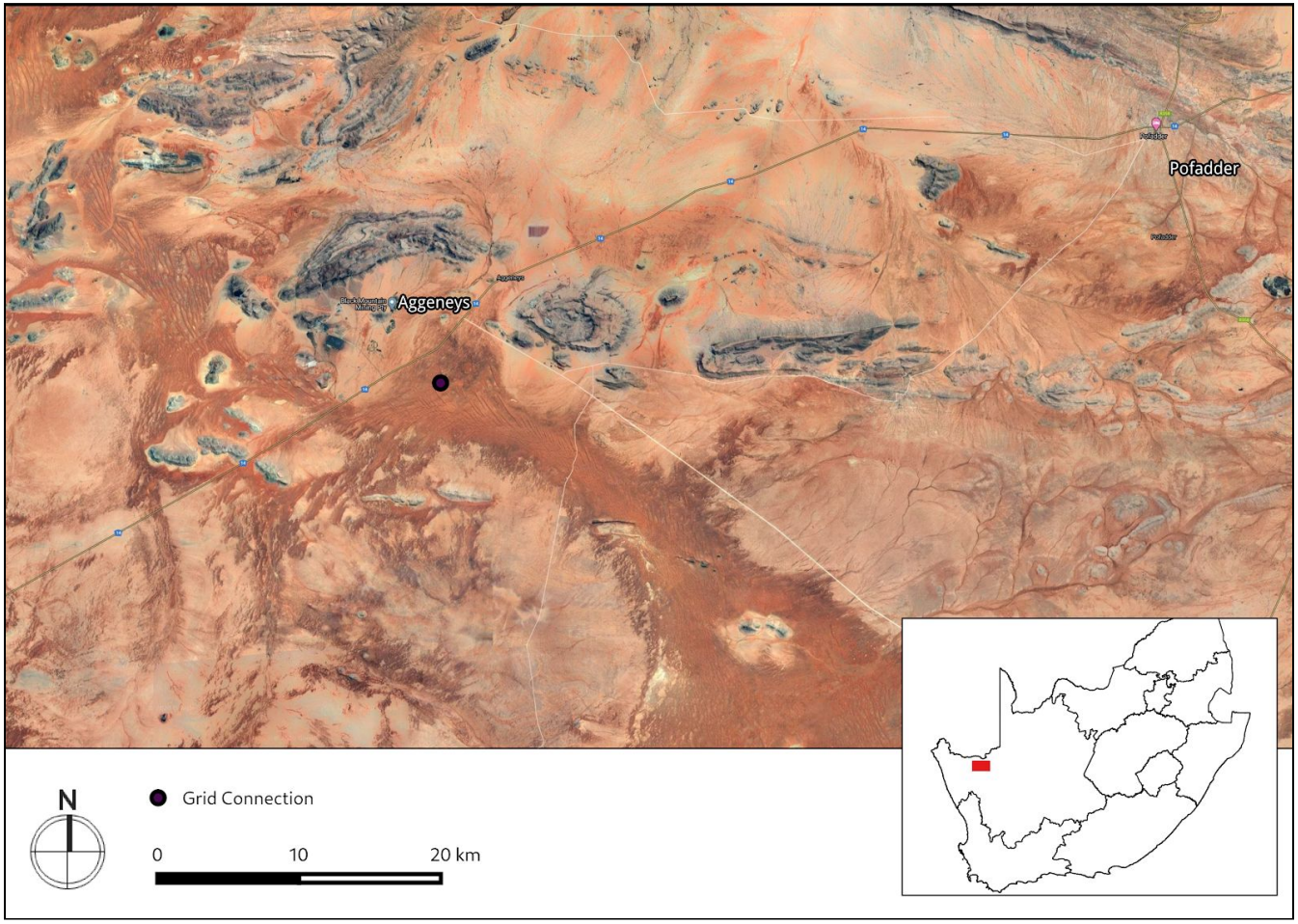

Figure 1a. Satellite map indicating the location of the proposed development in the Northern Cape

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.

CTS Heritage
16 Edison Way, Century City, Cape Town
Tel: +27 (0)87 073 5739 **Email:** info@ctsheritage.com **Web:** www.ctsheritage.com

CTS HERITAGE

1. Proposed Development Summary

ABO Wind Renewable Energies (Pty) Ltd is proposing the development of a grid connection for the proposed Geelstert 1 and Geelstert 2 solar PV facilities on a site 11km south-east of Aggeneys in the Northern Cape Province. The Geelstert Grid Connection will include the development of a collector substation and a double-circuit power line, of up to 220kV, to connect the proposed Geelstert 1 and Geelstert 2 solar PV facilities to the national grid. A 1km wide (extending to 2km at the Aggeneis Main Transmission Substation (MTS)) and 17.5km long corridor (known as the project development corridor) is being assessed to allow for the optimisation of the grid connection infrastructure to accommodate the environmental sensitivities identified within the corridor. The assessed grid connection corridor falls within the Northern Strategic Transmission Corridor and the Springbok Renewable Energy Development Zone (REDZ 8). The grid connection solution comprises of the following project-specific infrastructure, namely:

- A new Collector Substation/Switching Station of up to 1.25ha in extent, including:
    - Construction of a new platform with earth mat and civil works.
    - New feeder bay/s and busbar/s (up to 220kV) complete with protection equipment.
- A double-circuit power line of up to 220kV between the existing Aggeneis MTS and the Geelsert Collector Substation, complete with structures, foundations, conductor, fibre layout, insulation and assemblies.
- A 6m wide access road to access the Geelstert Collector Substation and 4m wide jeep tracks to provide access to and along the power line servitude.
- A single-circuit power line (of up to 220kV) to connect the authorised Aggeneys 1 and Aggeneys 2 Collector Substation to the proposed Geelstert Collector Substation, including a 6m wide access road along this power line.
- Works within the Aggeneis MTS HV yard:
    - Establish new feeder bay/s (up to 220kV), inclusive of line bays, busbars, bussection and protection equipment.
    - If grid connection on 132kV level is required by Eskom, a new transformer (up to 500MVA 400/132kV) would need to be installed.

2. Application References

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

CTS HERITAGE

3. Property Information

Latitude / Longitude	West Point: 29°18'9.74"S 18°47'55.86"E Mid point: 29°17'25.17"S 18°52'47.77"E East Point: 29°17'45.13"S 18°57'29.10"E
Erf number / Farm number	» Remaining Extent of the Farm Bloemhoek 61 » Remaining Extent of the Farm Aggeneys 56 » Remaining Extent of Portion 1 of the Farm Aggeneys 56 » Portion 2 of the Farm Aggeneys 56 » Portion 12 of the Farm Aggeneys 56 » Portion 13 of the Farm Aggeneys 56
Local Municipality	Khai-ma
District Municipality	Namakwa
Previous Magisterial District	Namakwaland
Province	Northern Cape
Current Use	Agriculture
Current Zoning	Agriculture

4. Nature of the Proposed Development

Total Area of development	17.5km in length and 1.5km wide
Depth of excavation (m)	Approximately 3m
Height of development (m)	up to 40m

5. Category of Development

x	**Triggers: Section 38(8) of the National Heritage Resources Act**
	Triggers: Section 38(1) of the National Heritage Resources Act
x	1. Construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier over 300m in length.

	2. Construction of a bridge or similar structure exceeding 50m in length.
	3. Any development or activity that will change the character of a site-
	a) 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):

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

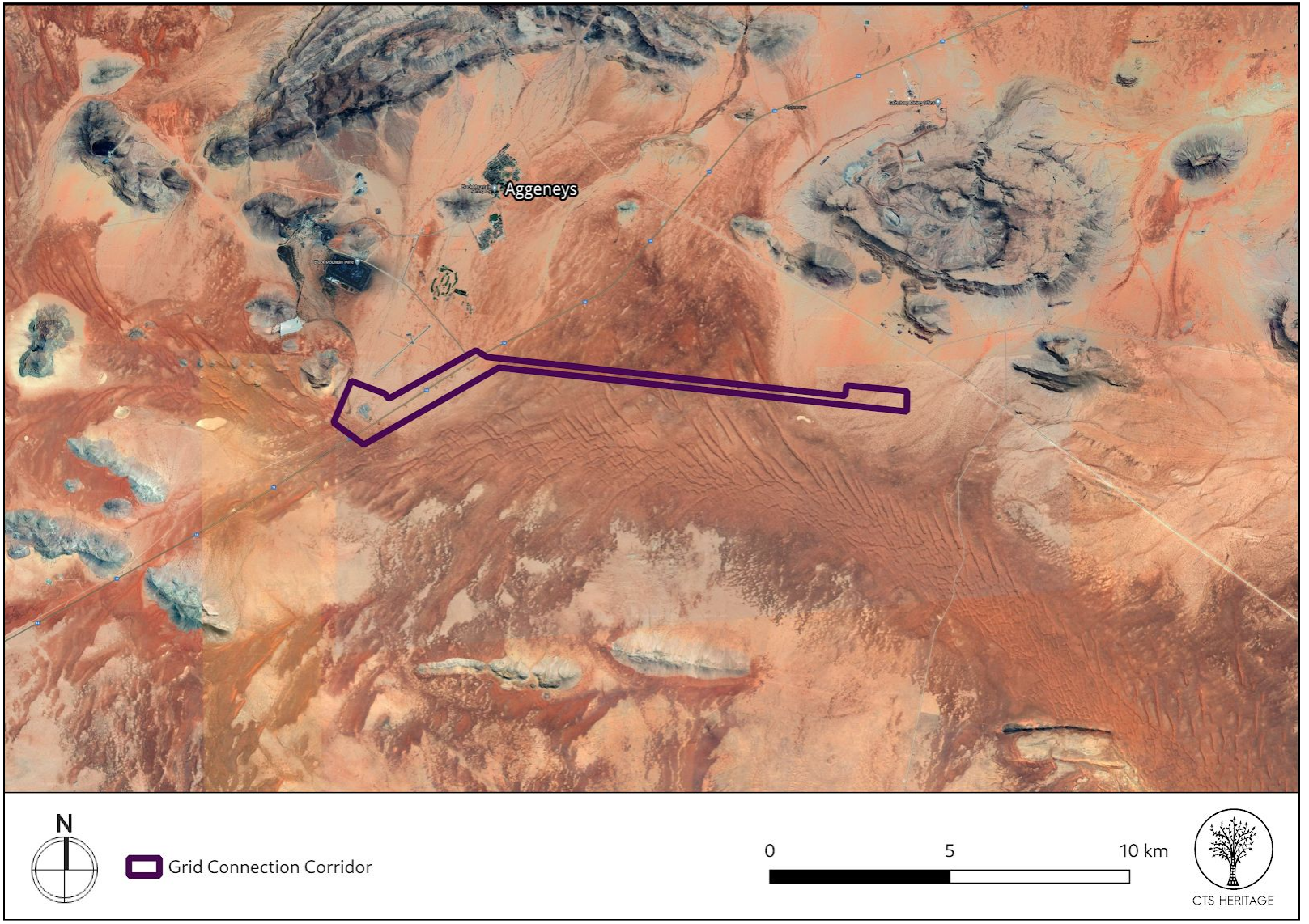

Figure 1b. Overview Map. Satellite image (2020) indicating the proposed grid connection corridor

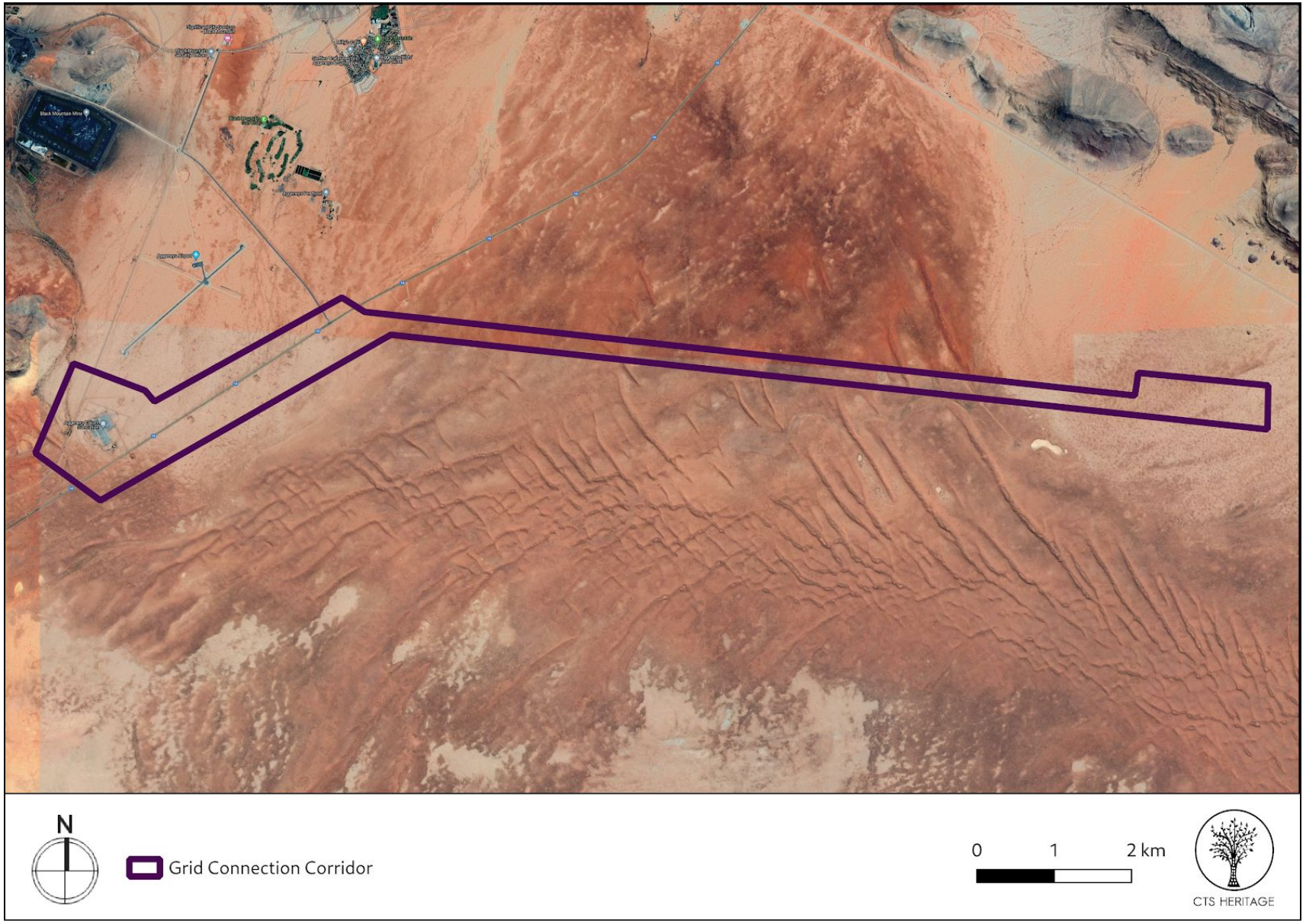

Figure 1c. Overview Map. Satellite image (2020) indicating the proposed grid connection corridor

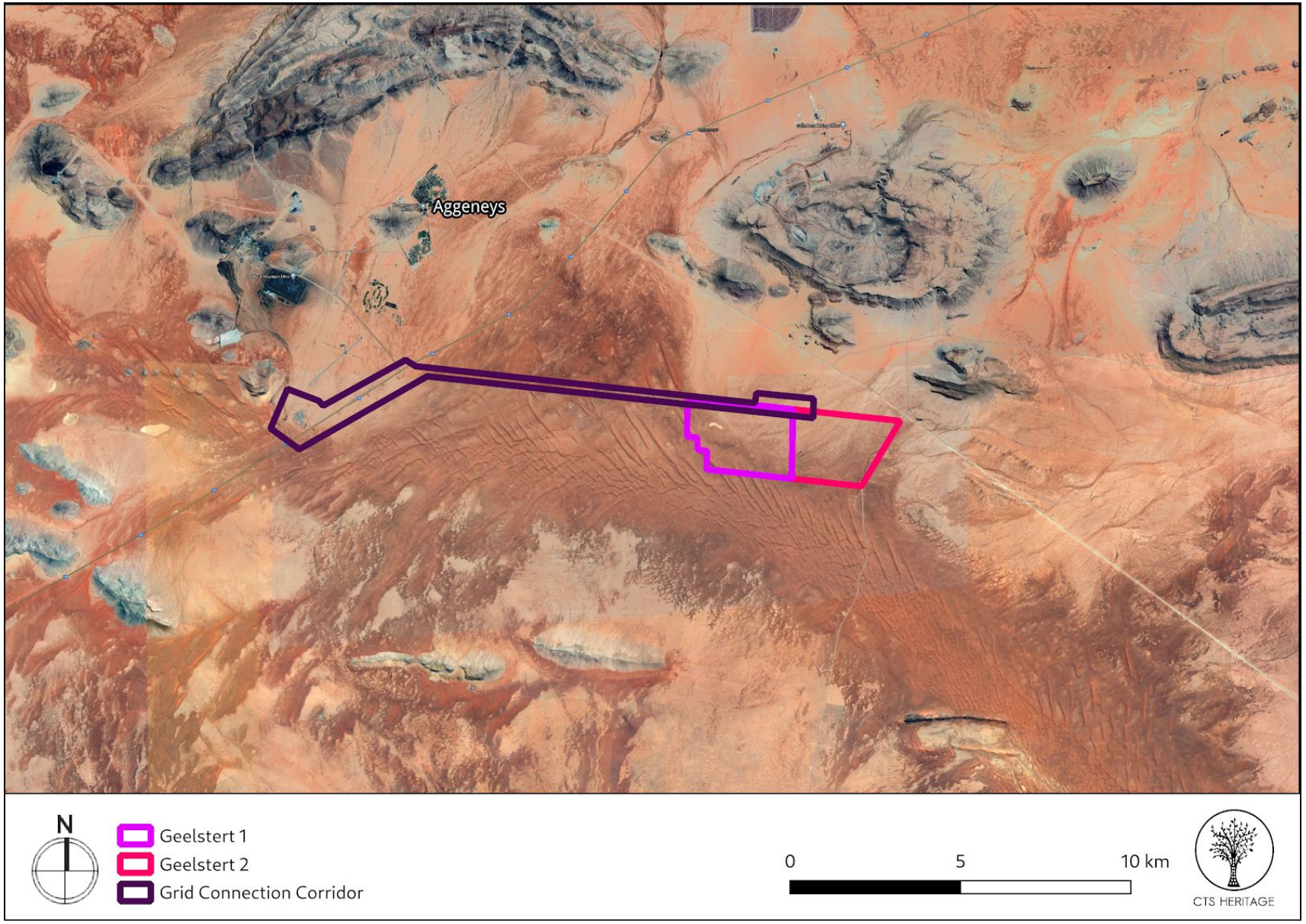

Figure 1d. Overview Map. Satellite image (2020) indicating the proposed grid connection corridor in relation to the proposed Geelstert 1 and Geelstert 2 solar PV facilities.

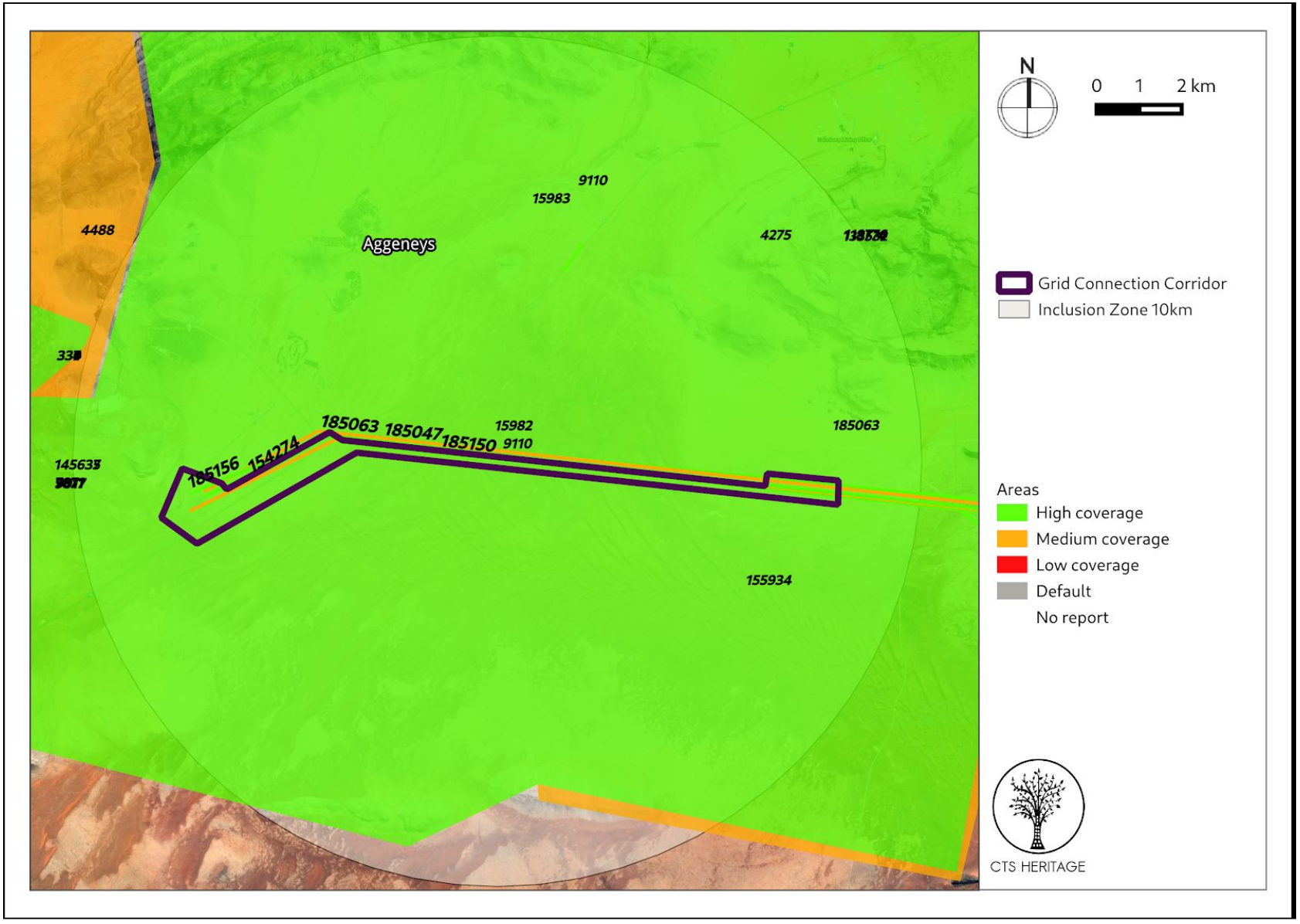

Figure 2. Previous HIAs Map. Previous Heritage Impact Assessments covering the proposed grid connection corridor with SAHRIS NIDS indicated. Please see Appendix 2 for full reference list.

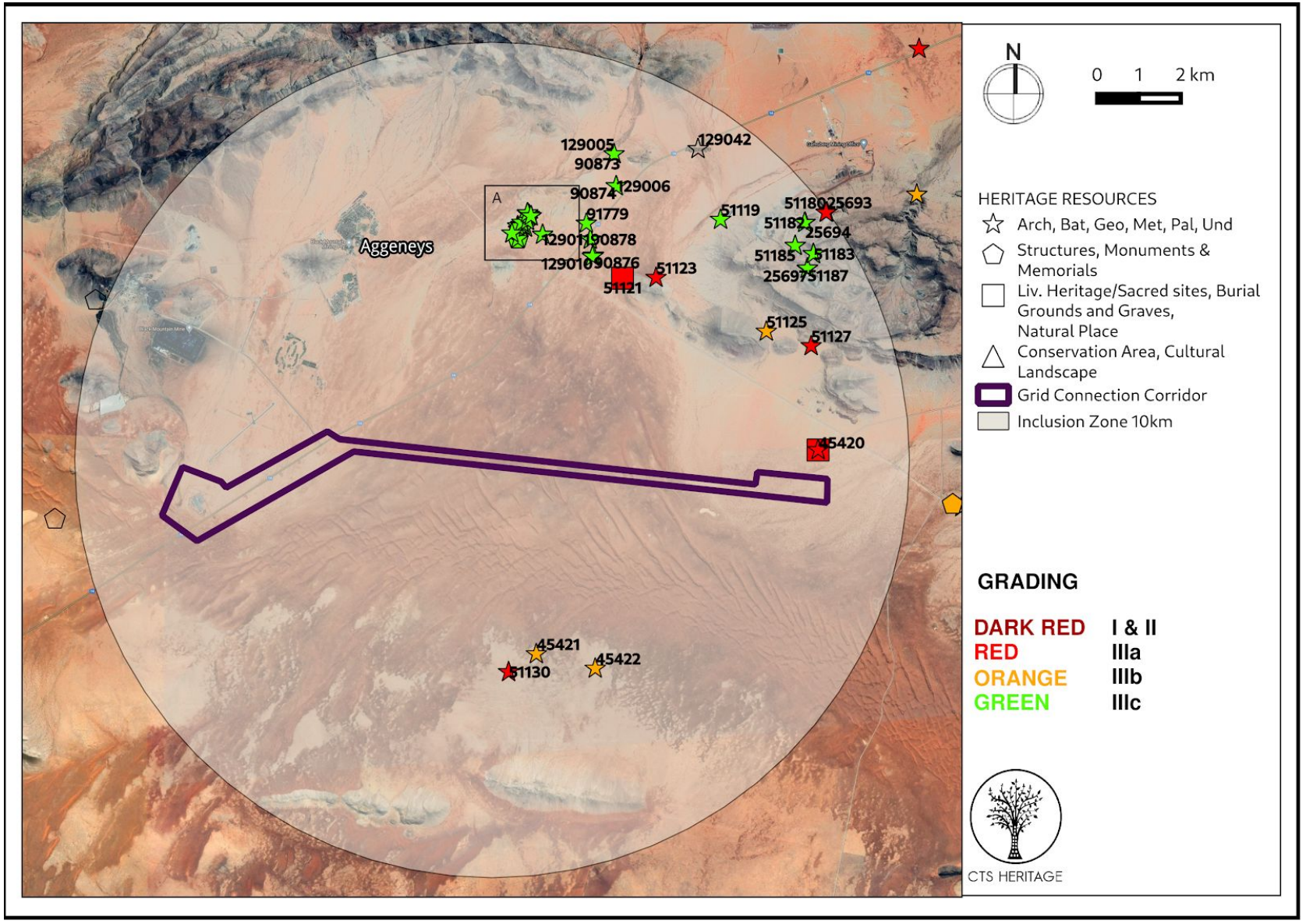

Figure 3. Heritage Resources Map. Heritage Resources previously identified within the study area, with SAHRIS Site IDs indicated in the insets below. Please See Appendix 4 for full description of heritage resource types.

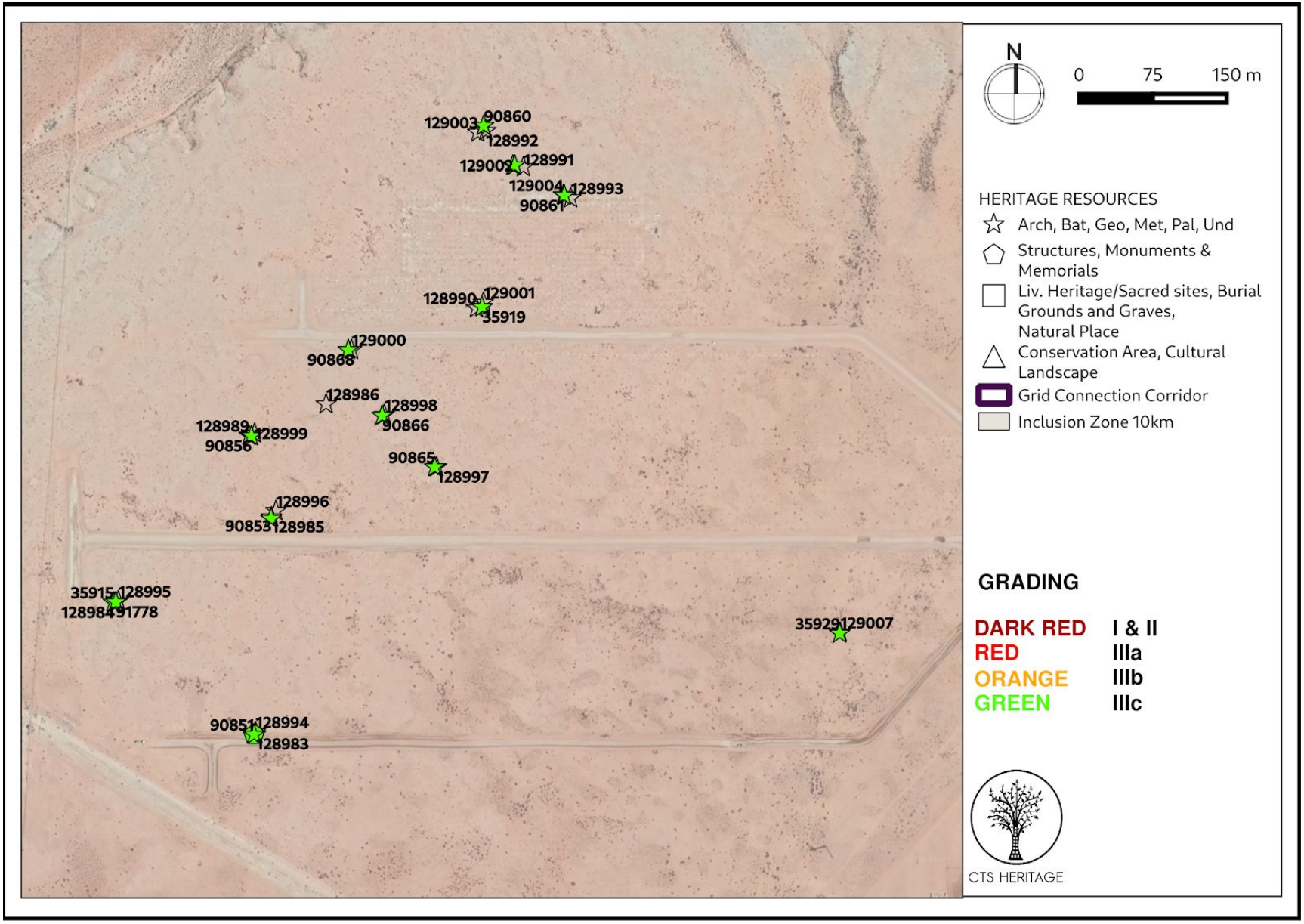

Figure 3a. Heritage Resources Map showing Inset A

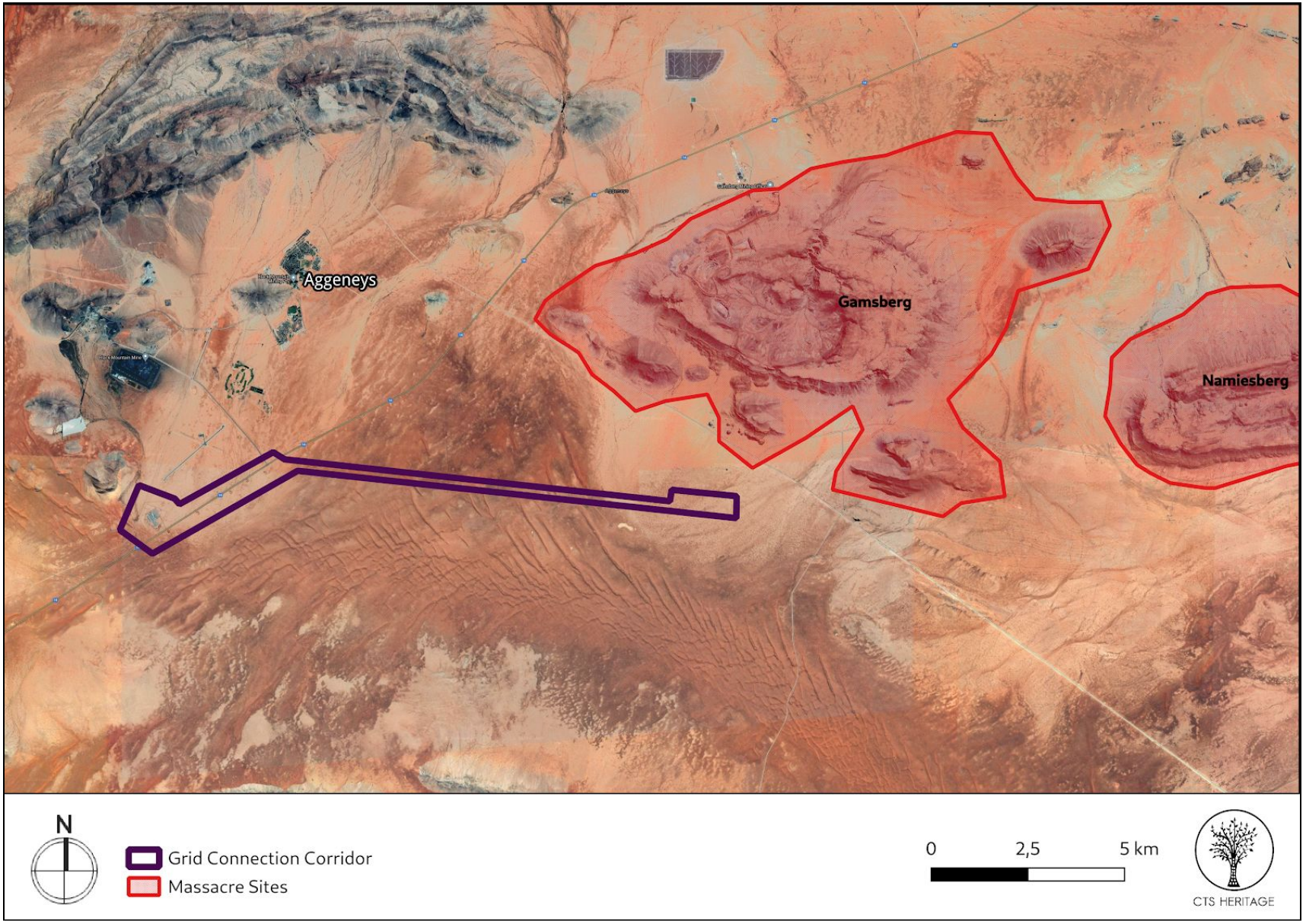

Figure 3b. Heritage Resources Map showing the Gamsberg and Namiesberg Massacre sites

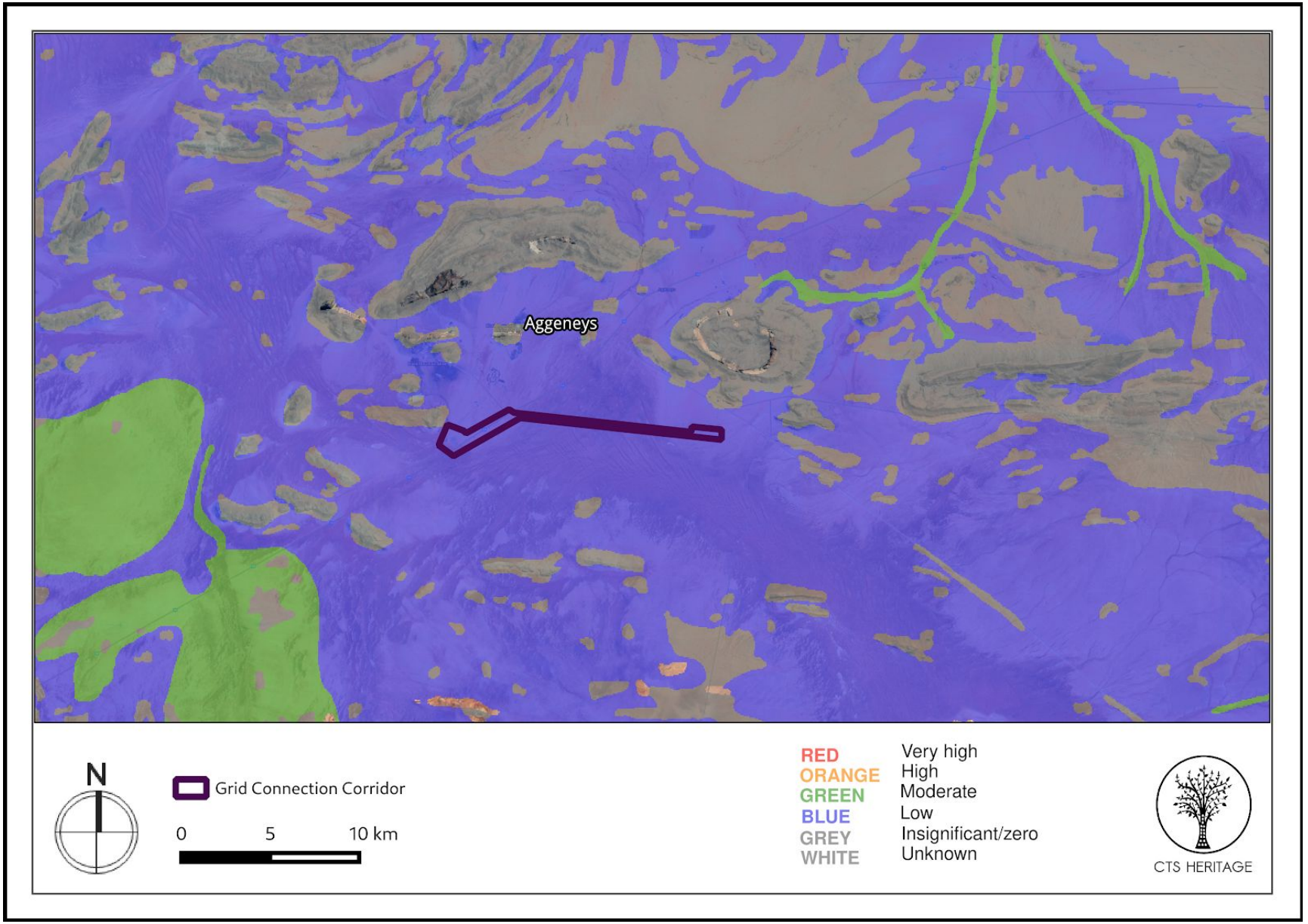

Figure 4a. Palaeosensitivity Map. Indicating fossil sensitivity underlying the study area. Please See Appendix 3 for a full guide to the legend.

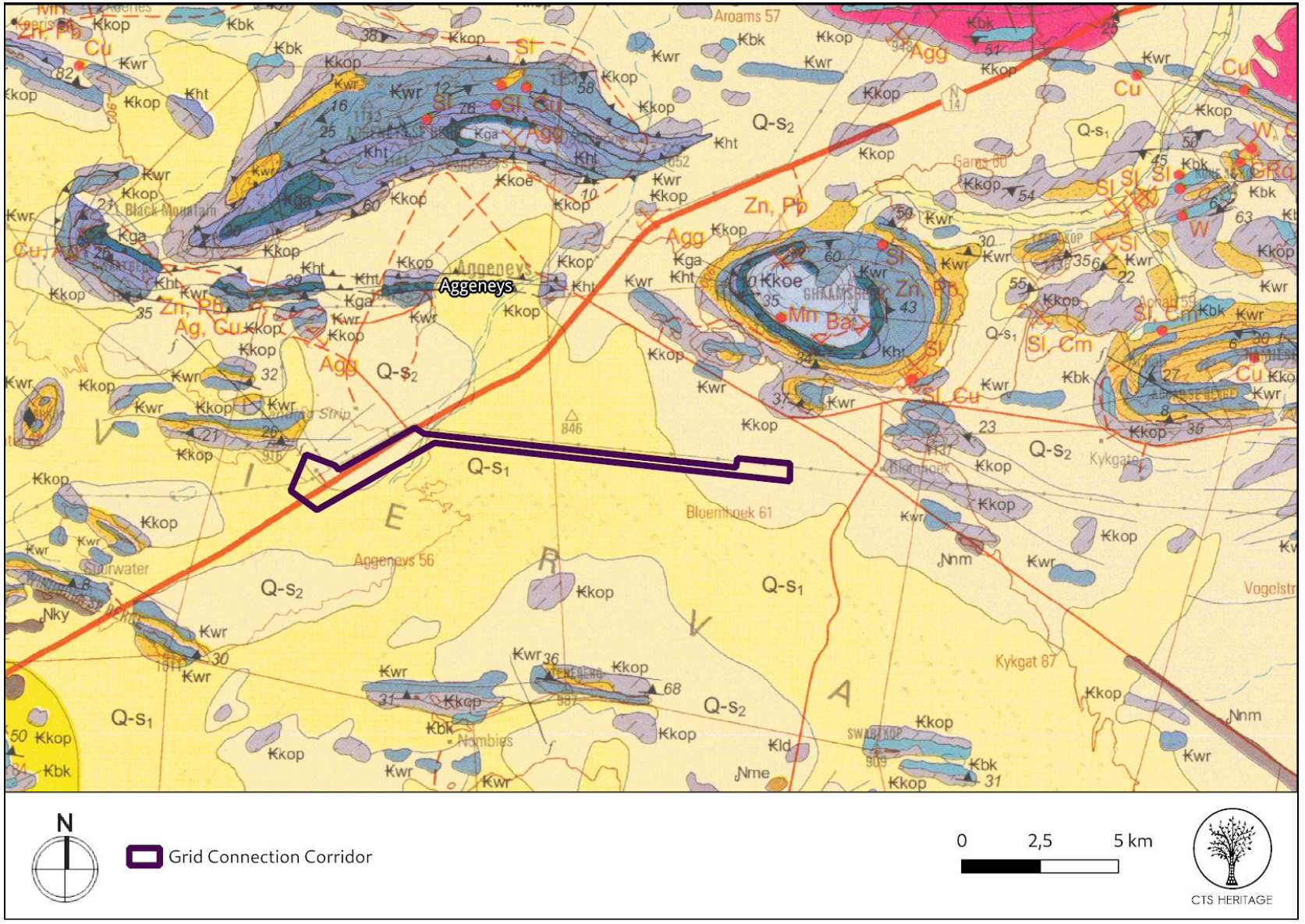

Figure 4b. Geology Map. Extract from the CGS 2918 Pofadder Map indicating that the development area is underlain by sediments Q-s_1 and Q-s_2 (Quaternary Sands) with obvious granite intrusions that form part of the Aggeneys sub-group located outside of the project area

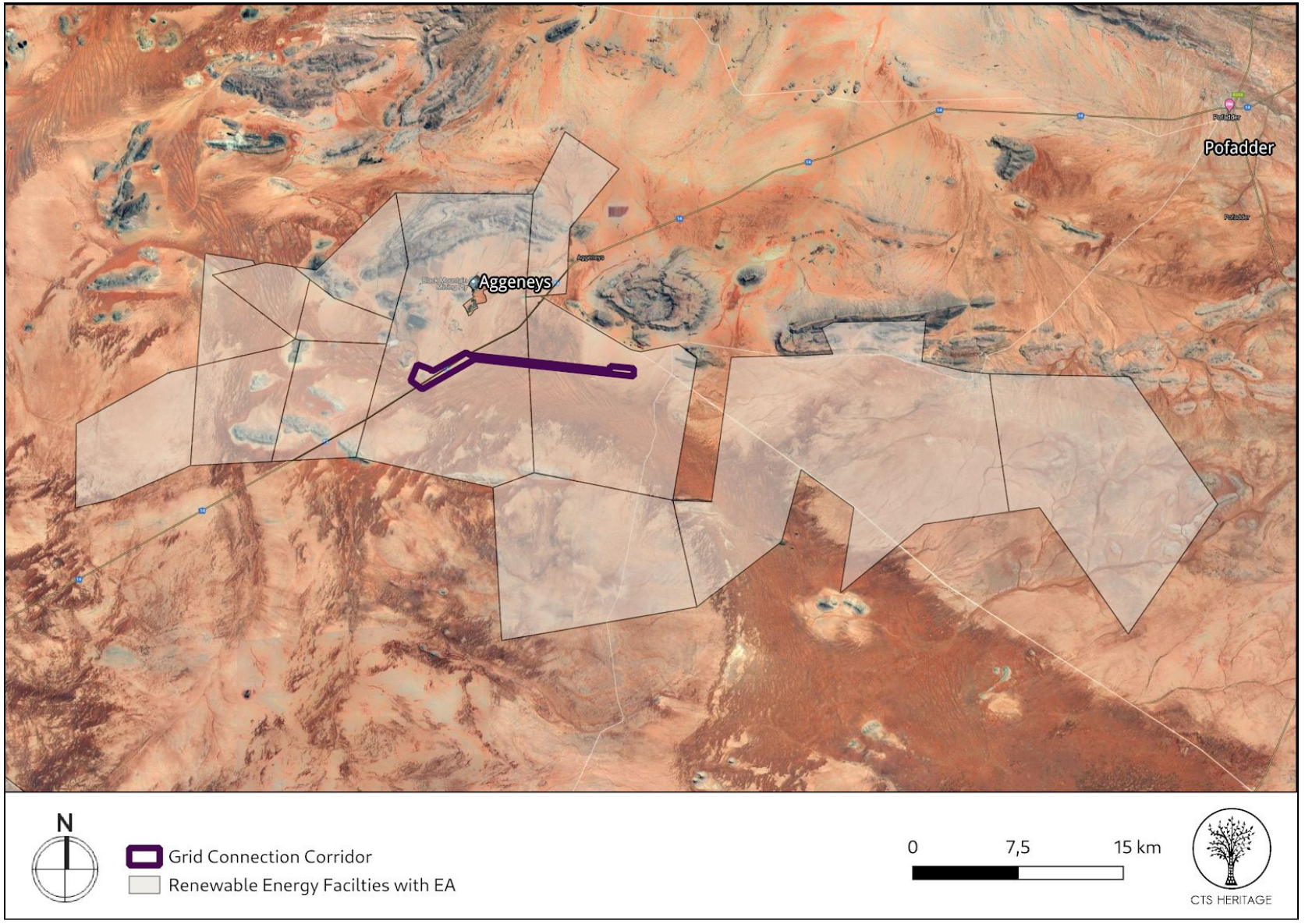

Figure 5. Cumulative Impact Map. Indicating other Renewable Energy projects that have been granted Environmental Authorisation (EA). Each project will have associated OHL infrastructure.

Figure 6. Image of Site. From the N14 facing east towards the development area (GoogleStreet View - 2010)

8. Heritage Assessment

Background

This application is for the proposed establishment of a grid connection just outside of Aggeneys, in an area that has previously been assessed for impacts to heritage resources. Aggeneys is a mining town established in 1976 on a farm of that name, situated between Pofadder and Springbok in the Northern Cape. The area proposed for development has previously been thoroughly assessed for impacts to heritage resources by Morris (2013; SAHRIS NID 155934) and this desktop assessment refers extensively to this work. The area proposed for development is described by Morris (2013) as “arid, comprising relatively flat drainage plains with inselbergs such as the Aggeneys Mountains, Black Mountain and Gamsberg rising above the plains in the wider landscape. In the immediate vicinity of the proposed development the predominant topographic feature is the band of dunes running east to west defining the Koa Valley, a fossil relic of a major Miocene drainage line from the interior. The landscape is on the whole sparsely vegetated… (and) includes parts of dune fields and… the adjacent plains to the north and south…”

Cultural Landscape and Built Environment Heritage

The area in general is dominated by heritage associated with copper mining, including the adjacent Black Mountain Mine which is still mined for copper deposits. Prior to 1652, the indigenous peoples (the Khoisan or Nama) of the area extracted raw or "native copper" from the gneiss and granite hills that make up the surrounding Namaqualand Copper belt. This copper was beaten into decorative items, worn as bangles and neck adornments. Early settlers in the Cape Colony heard rumours of mountains in the north-west that were fabulously rich in copper. Governor Simon van der Stel was inclined to believe these tales when, in 1681, a group of Namas visited the Castle in Cape Town and brought along some pure copper. Van der Stel himself led a major expedition in 1685 and reached the fabled mountains on 21 October. Three shafts were sunk and revealed a rich lode of copper ore - the shafts exist to this day. For almost 200 years nothing was done about the discovery, largely because of its remote location. The explorer James Alexander was the first to follow up on van der Stel's discovery. In 1852 he examined the old shafts, discovered some other copper outcrops and started mining operations. Prospectors, miners and speculators rushed to the area, but many companies collapsed when the logistical difficulties became apparent. The first miners were Cornish, and brought with them the expertise of centuries of tin-mining in Cornwall. The ruins of the buildings they constructed as well as the stonework of the bridges and culverts of the railway built to transport the ore to Port Nolloth, can still be seen. The Namaqualand Railway started operating in 1876 and lasted for 68 years, carrying ore to Port Nolloth and returning with equipment and provisions. The historical built environment heritage resources associated with the Namaqualand Copper Mining Landscape form a significant part of the cultural landscape of this area.

Additional built environment heritage resources that are known from this area include corbelled buildings and built structures associated with the colonial frontier. Based on the information available, no such built environment or cultural landscape resources fall within the area proposed for development. However, Webley and Halkett (2012, SAHRIS NID 9110) note that appreciation has started emerging regarding the “genocide against the Bushmen in this area, with certain mountainous areas (like Gamsberg and Namiesberg located

within very close proximity to the proposed development area - Figure 3b) being likely massacre sites". This has resulted in moves to include the Gamsberg in a potential /Xam and Khomani Heartland World Heritage Site. According to Morris (2013), "the southern/south eastern side of Gamsberg was the site of an incident in which a group of San were cornered and shot – part of what historians now characterise as a genocide against the indigenous people of the region. Some evidence suggests that this most likely took place in the kloof known as 'Inkruip' ('Creep in')."

Archaeology

Prior to colonial settlement, this area was occupied by Khoe and San people, as evidenced by the number of Khoe and San names still evident in the landscape (such as Aggeneys). According to Morris (2013, SAHRIS NID 155934), Later Stone Age (LSA) resources are the predominant archaeological trace known from this broader area, with Early (ESA) and Middle Stone Age (MSA) resources occuring in much lower densities and all known archaeological resources associated with rocky outcrops and duns sands. A number of detailed archaeological assessments have been conducted in the broader area by Halkett and Webley (2012, SAHRIS NID 9110) for a proposed solar energy facility, Smith (2012, SAHRIS NID 334) and Morris (2011, SAHRIS NID 7871). Halkett and Webley (2012) noted that "Stone artefacts scatters from the Middle Stone Age are sparsely distributed across the study area and are found on gravel pavements between the vegetation; The absence of associated archaeological material, and lack of discrete individual sites reduces the significance of the material overall; Further mitigation of sites is considered unnecessary in this case. There are no buildings of heritage significance on the site." Smith (2012) noted that "Tracks, dry pans and sub-surface indications using spring-hare and aardvark holes all produced widely scattered material with no concentrations of note." Similar conclusions were reached by Morris (2011). The specific area proposed for development was assessed by Morris (2013; SAHRIS NID 155934). Morris (2013) found "extremely low to zero incidence of any form of artefact whatsoever, whether Stone Age or colonial in age, over most of the area". Significant heritage resources identified by Morris (2013) are all mapped in Figures 3a to 3c and include Later Stone Age artefact scatters including stone tools, pottery and ostrich eggshell flask fragments and LSA grinding grooves, possible unmarked burials, colonial era stone walling and glass and porcelain fragments

As per the findings of Morris (2013), it is predicted that "features such as rock outcrops or the immediate footslopes of hills might be places where Stone Age and probably also colonial era traces would occur, if present. Previous experience has shown that the flat plains away from such features are almost entirely bereft of heritage traces. The dunes may also have been a focus of past human activity." Furthermore, the area immediately adjacent to the area proposed for the grid connection corridor in this application was assessed by Orton (2019, SAHRIS NID 523679, 522885 and 523680). Orton (2019) identified no heritage resources within the footprint investigated, although several isolated stone artefacts attributable to background scatter were noted. As such, based on the location of the proposed grid connection corridor in the flat plains and the fact that no known heritage resources have been identified within the development footprint (despite the completion of a foot survey by Morris (2013)), it is very unlikely that the proposed development will impact on significant

archaeological resources.

Palaeontology

The area proposed for development is overlain with Quaternary cover sands (of low palaeontological sensitivity), and is underlain by granites of the Koeipoort Formation and quartzite of the Wortel Formation (of zero palaeontological sensitivity). The general area has been subject to numerous palaeontological impact assessments. Butler (2016, SAHRIS NID 406396) notes that "The broader area near Aggeneys is underlain by the Mid-Proterozoic (Mokolian) basement rocks of the Namaqua-Natal Metamorphic Province (Bushmanland Group) as well as Cenozoic superficial deposits. The Proterozoic granite-gneiss basement rocks of the Namaqua-Natal Metamorphic Province do not contain any fossils because they are igneous in origin or too highly metamorphosed and their palaeontological sensitivity is similarly low. The low palaeontological sensitivity of the Cenozoic superficial deposits can be attributed to the scarcity of fossil heritage in these deposits. In Palaeontological terms the significance is thus rated as LOW (negative). Consequently, pending the discovery of significant new fossil material here, no further specialist studies are considered to be necessary." Pether reaches a similar conclusion in his assessment (2012, SAHRIS NID 15982) noting of the general area that the "bedrock underlying the property is unfossiliferous and of no palaeontological interest." As such, it is very unlikely that the proposed development will impact on significant palaeontological heritage resources.

Conclusion

Based on the existing heritage information available for the proposed development in addition to the fieldwork conducted by Morris (2013), it is unlikely that the proposed grid connection will negatively impact on significant heritage resources. There is no heritage objection to the proposed development. Furthermore, due to the number of Renewable Energy Facility projects in the immediate vicinity of this development that have already been granted Environmental Authorisation (EA, Figure 5), each of which require their own grid connection infrastructure, it is likely that this project will have low levels of cumulative impact significance for Heritage (archaeology, palaeontology and cultural landscape). That being said, due to the general heritage sensitivity of the broader context, it is recommended that:

- If concentrations of historical and pre-colonial archaeological heritage material and/or human remains (including graves and burials) are uncovered during construction, all work in the vicinity must cease immediately and be reported to the South African Heritage Resources Agency (SAHRA) so that systematic and professional investigation/excavation can be undertaken. Phase 2 mitigation in the form of test-pitting/sampling or systematic excavations and collections of the pre-colonial shell middens and associated artefacts will then be conducted to establish the contextual status of the sites and possibly remove the archaeological deposit before development activities continue.

- A person must be trained as a site monitor to report any archaeological sites found during the development. Construction managers/foremen and/or the Environmental Control Officer (ECO) should be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites.
- Should substantial fossil remains such as vertebrate bones and teeth, plant-rich fossil lenses, fossil wood or dense fossil burrow assemblages be exposed during construction, the responsible ECO/EO/Environmental Representative should safeguard these, preferably in situ, and alert SAHRA, i.e. The South African Heritage Resources Authority, as soon as possible (Contact details: Mr P. Hine P.O. Box 4637, Cape Town 8000. Tel: 021 462 4502. Email: phine@sahra.org.za) so that appropriate action can be taken by a professional palaeontologist, at the Proponent's expense. Mitigation would normally involve the scientific recording and judicious sampling or collection of fossil material as well as associated geological data (e.g. stratigraphy, sedimentology, taphonomy) by a suitably qualified palaeontologist.

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.

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		**Palaeontology**
MAGNITUDE	**L (1)**	A number of archaeological sites are known from the broader area, however these sites are located well-outside of the footprint of the development and as such, the likelihood of impact is low.	**L (1)**	Various palaeontological assessments have noted of the general area that the "bedrock underlying the property is unfossiliferous and of no palaeontological interest." The palaeontological sensitivity of the area is LOW according to the SAHRIS Palaeosensitivity Map
DURATION	**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.
PROBABILITY	**L (1)**	Probability is low	**L (1)**	Probability is low
SIGNIFICANCE	**L**	(1+5+1)x1=7	**L**	(1+5+1)x1=7
STATUS		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
IRREPLACEABLE LOSS OF RESOURCES?	**L**	Possible	**L**	Possible
CAN IMPACTS BE MITIGATED		Yes		Yes

MITIGATION:

- A person must be trained as a site monitor to report any archaeological sites found during the development. Construction managers/foremen and/or the Environmental Control Officer (ECO) should be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites.
- Any substantial fossil remains (e.g. vertebrate bones and teeth, shells) encountered during excavation should be reported to SAHRA for possible mitigation by a professional palaeontologist (Contact details: SAHRA, 111 Harrington Street, Cape Town. PO Box 4637, Cape Town 8000, South Africa. Phone: +27 (0)21 462 4502. Fax: +27 (0)21 462 4509. Web: www.sahra.org.za).

RESIDUAL RISK:

- If concentrations of historical and pre-colonial archaeological heritage material and/or human remains (including graves and burials) are uncovered during construction, all work must cease immediately and be reported to the South African Heritage Resources Agency (SAHRA) so that systematic and professional investigation/excavation can be undertaken. Phase 2 mitigation in the form of test-pitting/sampling or systematic excavations and collections of the pre-colonial shell middens and associated artefacts will then be conducted to establish the contextual status of the sites and possibly remove the archaeological deposit before development activities continue
- Should substantial fossil remains such as vertebrate bones and teeth, plant-rich fossil lenses, fossil wood or dense fossil burrow assemblages be exposed during construction, the responsible ECO/EO/Environmental Representative should safeguard these, preferably in situ, and alert SAHRA, i.e. The South African Heritage Resources Authority, as soon as possible (Contact details: Mr P. Hine P.O. Box 4637, Cape Town 8000. Tel: 021 462 4502. Email: cscheermeyer@sahra.org.za) so that appropriate action can be taken by a professional palaeontologist, at the Proponent's expense. Mitigation would normally involve the scientific recording and judicious sampling or collection of fossil material as well as associated geological data (e.g. stratigraphy, sedimentology, taphonomy) by a suitably qualified palaeontologist.

CTS HERITAGE

APPENDIX 1

List of heritage resources within 10km of the development area

Site ID	Site no	Full Site Name	Site Type	Grading
44272	212/0-88/1 AGG 138	Farm 212/0 & 88/1 Aggeneys 138	Artefacts	Grade IIIc
44271	212/0-88/1 AGG 137	Farm 212/0 & 88/1 Aggeneys 137	Artefacts	Grade IIIc
44270	212/0-88/1 AGG 136	Farm 212/0 & 88/1 Aggeneys 136	Archaeological	Grade IIIc
44269	212/0-88/1 AGG 135	Farm 212/0 & 88/1 Aggeneys 135	Archaeological	Grade IIIc
44268	212/0-88/1 AGG 134	Farm 212/0 & 88/1 Aggeneys 134	Archaeological	Grade IIIc
44267	212/0-88/1 AGG 133	Farm 212/0 & 88/1 Aggeneys 133	Archaeological	Grade IIIc
44266	212/0-88/1 AGG 132	Farm 212/0 & 88/1 Aggeneys 132	Archaeological	Grade IIIc
44265	212/0-88/1 AGG 131	Farm 212/0 & 88/1 Aggeneys 131	Archaeological	Grade IIIb
44264	212/0-88/1 AGG 130	Farm 212/0 & 88/1 Aggeneys 130	Archaeological	Grade IIIc
44263	212/0-88/1 AGG 129	Farm 212/0 & 88/1 Aggeneys 129	Archaeological	Grade IIIc
44262	212/0-88/1 AGG 128	Farm 212/0 & 88/1 Aggeneys 128	Archaeological	Grade IIIb
44261	212/0-88/1 AGG 127	Farm 212/0 & 88/1 Aggeneys 127	Archaeological	Grade IIIc
44260	212/0-88/1 AGG 126	Farm 212/0 & 88/1 Aggeneys 126	Archaeological	Grade IIIb
44259	212/0-88/1 AGG 125	Farm 212/0 & 88/1 Aggeneys 125	Archaeological	Grade IIIc
44258	212/0-88/1 AGG 124	Farm 212/0 & 88/1 Aggeneys 124	Archaeological	Grade IIIb
44247	212/0-88/1 AGG 123	Farm 212/0 & 88/1 Aggeneys 123	Artefacts	Grade IIIb
44246	212/0-88/1 AGG 118	Farm 212/0 & 88/1 Aggeneys 118	Archaeological	Grade IIIb
44243	212/0-88/1 AGG 122	Farm 212/0 & 88/1 Aggeneys 122	Archaeological	Grade IIIb
44241	212/0-88/1 AGG 121	Farm 212/0 & 88/1 Aggeneys 121	Archaeological	Grade IIIc
44240	212/0-88/1 AGG 120	Farm 212/0 & 88/1 Aggeneys 120	Archaeological	Grade IIIc
44238	212/0-88/1 AGG 119	Farm 212/0 & 88/1 Aggeneys 119	Archaeological	Grade IIIc
44233	212/0-88/1 AGG 117	Farm 212/0 & 88/1 Aggeneys 117	Structures	Grade IIIb

CTS HERITAGE

Site ID	Site no	Full Site Name	Site Type	Grading
44232	212/0-88/1 AGG 116	Farm 212/0 & 88/1 Aggeneys 116	Artefacts	Grade IIIb
44228	212/0-88/1 AGG 114	Farm 212/0 & 88/1 Aggeneys 114	Archaeological	Grade IIIb
44224	212/0-88/1 AGG 113	Farm 212/0 & 88/1 Aggeneys 113	Archaeological	Grade IIIc
128984	2918BB/70MWSF/2012/L02	70MW Solar Facility-SIte L02	Artefacts	Ungraded
128983	2918BB/70MWSF/2012/L01	70MW Solar Facility-SIte L01	Artefacts	Ungraded
129042	2918BC/SI3PF/2016/014	Sol Invictus 3 Pv Facility- Site 014	Artefacts	Ungraded
90878	AROA028	Aroams 57/ 028	Archaeological	Grade IIIc
90877	AROA027	Aroams 57/ 027	Artefacts	Grade IIIc
90876	AROA026	Aroams 57/ 026	Artefacts	Grade IIIc
90875	AROA025	Aroams 57/ 025	Artefacts	Grade IIIc
90874	AROA024	Aroams 57/ 024	Artefacts	Grade IIIc
90873	AROA023	Aroams 57/ 023	Artefacts	Grade IIIc
90872	AROA022	Aroams 57/ 022	Artefacts	Grade IIIc
90871	AROA021	Aroams 57/ 021	Artefacts	Grade IIIc
90870	AROA020	Aroams 57/ 020	Artefacts	Grade IIIc
90869	AROA019	Aroams 57/ 019	Artefacts	Grade IIIc
90868	AROA018	Aroams 57/ 018	Artefacts	Grade IIIc
90867	AROA017	Aroams 57/ 017	Artefacts	Grade IIIc
90866	AROA016	Aroams 57/ 016	Artefacts	Grade IIIc
90865	AROA015	Aroams 57/ 015	Artefacts	Grade IIIc
90861	AROA011	Aroams 57/ 011	Artefacts	Grade IIIc
90851	AROA001	Aroams 57/ 001	Artefacts	Grade IIIc
90864	AROA014	Aroams 57/ 014	Artefacts	Grade IIIc
90863	AROA013	Aroams 57/ 013	Artefacts	Grade IIIc

CTS HERITAGE

Site ID	Site no	Full Site Name	Site Type	Grading
90862	AROA012	Aroams 57/ 012	Artefacts	Grade IIIc
90860	AROA010	Aroams 57/ 010	Artefacts	Grade IIIc
90859	AROA009	Aroams 57/ 009	Artefacts	Grade IIIc
90858	AROA008	Aroams 57/ 008	Artefacts	Grade IIIc
90856	AROA006	Aroams 57/ 006	Artefacts	Grade IIIc
90854	AROA004	Aroams 57/ 004	Artefacts	Grade IIIc
90853	AROA003	Aroams 57/ 003	Artefacts	Grade IIIc
90852	AROA002	Aroams 57/ 002	Artefacts	Grade IIIc
91779	ASEF002	Aggeneys Solar Energy Facility 002	Artefacts	Grade IIIc
91778	ASEF001	Aggeneys Solar Energy Facility 001	Artefacts	Grade IIIc
45422	BLOEM03	Bloemhoek 03	Artefacts	Grade IIIb
51128	GAMS08	Gamsberg 08	Artefacts	Grade IIIa
35930	ARO018	Aggeneys Orlight 018	Artefacts	Grade IIIc
35929	ARO017	Aggeneys Orlight 017	Artefacts	Grade IIIc
51127	GAMS07	Gamsberg 07	Artefacts	Grade IIIa
35928	ARO016	Aggeneys Orlight 016	Artefacts	Grade IIIc
35927	ARO015	Aggeneys Orlight 015	Artefacts	Grade IIIc
35926	ARO014	Aggeneys Orlight 014	Artefacts	Grade IIIc
51125	GAMS06	Gamsberg 06	Artefacts	Grade IIIb
35925	ARO013	Aggeneys Orlight 013	Artefacts	Grade IIIc
51123	GAMS05	Gamsberg 05	Artefacts	Grade IIIa
51121	GAMS04	Gamsberg 04	Burial Grounds & Graves	Grade IIIa
35919	ARO012	Aggeneys Orlight 012	Artefacts	Grade IIIc
35918	ARO011	Aggeneys Orlight 011	Artefacts	Grade IIIc

CTS HERITAGE

Site ID	Site no	Full Site Name	Site Type	Grading
51119	GAMS03	Gamsberg 03	Artefacts	Grade IIIc
35917	ARO010	Aggeneys Orlight 010	Artefacts	Grade IIIc
35916	ARO009	Aggeneys Orlight 009	Artefacts	Grade IIIc
35915	ARO008	Aggeneys Orlight 008	Artefacts	Grade IIIc
35914	ARO007	Aggeneys Orlight 007	Structures	Grade IIIc
35913	ARO006	Aggeneys Orlight 006	Artefacts	Grade IIIc
25697	GI5	Gamsberg Inselberg 5	Archaeological, Artefacts	Grade IIIb
25696	GI4	Gamsberg Inselberg 4	Archaeological, Artefacts	Grade IIIb
25695	GI3	Gamsberg Inselberg 3	Archaeological, Artefacts	Grade IIIb
25694	GI2	Gamsberg Inselberg 2	Archaeological, Artefacts	Grade IIIb
25693	GI1	Gamsberg Inselberg 1	Archaeological, Artefacts	Grade IIIb
45196	212/0-88/1 AGG 147	Farm 212/0 & 88/1 Aggeneys 147	Structures, Artefacts	Grade IIIb
44289	212/0-88/1 AGG 143	Farm 212/0 & 88/1 Aggeneys 143	Artefacts	Grade IIIc
44286	212/0-88/1 AGG 142	Farm 212/0 & 88/1 Aggeneys 142	Artefacts	Grade IIIb
44282	212/0-88/1 AGG 140	Farm 212/0 & 88/1 Aggeneys 140	Artefacts	Grade IIIc
44279	212/0-88/1 AGG 139	Farm 212/0 & 88/1 Aggeneys 139	Artefacts	Grade IIIa
44229	212/0-88/1 AGG 115	Farm 212/0 & 88/1 Aggeneys 115	Artefacts	Grade IIIb
44172	212/0-88/1 AGG 093	Farm 212/0 & 88/1 Aggeneys 093	Artefacts	Grade IIIb
44284	212/0-88/1 AGG 141	Farm 212/0 & 88/1 Aggeneys 141	Artefacts	Grade IIIb
44223	212/0-88/1 AGG 112	Farm 212/0 & 88/1 Aggeneys 112	Artefacts	Grade IIIc
44219	212/0-88/1 AGG 110	Farm 212/0 & 88/1 Aggeneys 110	Artefacts	Grade IIIc
44212	212/0-88/1 AGG 109	Farm 212/0 & 88/1 Aggeneys 109	Artefacts	Grade IIIc
44210	212/0-88/1 AGG 106	Farm 212/0 & 88/1 Aggeneys 106	Artefacts	Grade IIIc
44203	212/0-88/1 AGG 111	Farm 212/0 & 88/1 Aggeneys 111	Artefacts	Grade IIIa

CTS HERITAGE

Site ID	Site no	Full Site Name	Site Type	Grading
44197	212/0-88/1 AGG 108	Farm 212/0 & 88/1 Aggeneys 108	Artefacts	Grade IIIc
44195	212/0-88/1 AGG 107	Farm 212/0 & 88/1 Aggeneys 107	Artefacts	Grade IIIc
51190	GAMS18	Gamsberg 18	Rock Art	Grade IIIb
44192	212/0-88/1 AGG 105	Farm 212/0 & 88/1 Aggeneys 105	Artefacts	Grade IIIb
44189	212/0-88/1 AGG 104	Farm 212/0 & 88/1 Aggeneys 104	Artefacts	Grade IIIc
51188	GAMS17	Gamsberg 17	Artefacts	Grade IIIc
51187	GAMS16	Gamsberg 16	Artefacts	Grade IIIc
51185	GAMS15	Gamsberg 15	Artefacts	Grade IIIc
44182	212/0-88/1 AGG 103	Farm 212/0 & 88/1 Aggeneys 103	Artefacts	Grade IIIc
44181	212/0-88/1 AGG 102	Farm 212/0 & 88/1 Aggeneys 102	Artefacts	Grade IIIc
44180	212/0-88/1 AGG 101	Farm 212/0 & 88/1 Aggeneys 101	Artefacts	Grade IIIc
44179	212/0-88/1 AGG 100	Farm 212/0 & 88/1 Aggeneys 100	Artefacts	Grade IIIb
44178	212/0-88/1 AGG 099	Farm 212/0 & 88/1 Aggeneys 099	Artefacts	Grade IIIc
44177	212/0-88/1 AGG 098	Farm 212/0 & 88/1 Aggeneys 098	Artefacts	Grade IIIb
51182	GAMS13	Gamsberg 13	Artefacts	Grade IIIc
44176	212/0-88/1 AGG 097	Farm 212/0 & 88/1 Aggeneys 097	Artefacts	Grade IIIb
44175	212/0-88/1 AGG 096	Farm 212/0 & 88/1 Aggeneys 096	Archaeological	Grade IIIc
51180	GAMS12	Gamsberg 12	Artefacts	Grade IIIa
44174	212/0-88/1 AGG 095	Farm 212/0 & 88/1 Aggeneys 095	Artefacts	Grade IIIc
44173	212/0-88/1 AGG 094	Farm 212/0 & 88/1 Aggeneys 094	Artefacts	Grade IIIb
51178	GAMS11	Gamsberg 11	Stone walling	Grade IIIa
44171	212/0-88/1 AGG 092	Farm 212/0 & 88/1 Aggeneys 092	Artefacts	Grade IIIb
44170	212/0-88/1 AGG 091	Farm 212/0 & 88/1 Aggeneys 091	Stone walling	Grade IIIb
44169	212/0-88/1 AGG 090	Farm 212/0 & 88/1 Aggeneys 090	Artefacts	Grade IIIb

CTS HERITAGE

Site ID	Site no	Full Site Name	Site Type	Grading
51133	GAMS10	Gamsberg 10	Archaeological	Grade IIIa
51130	GAMS09	Gamsberg 09	Artefacts	Grade IIIa
35931	ARO019	Aggeneys Orlight 019	Archaeological	Grade IIIc
129011	2918BB/70MWSF/2012/017	70MW Solar Facility-SIte 017	Artefacts	Ungraded
129010	2918BB/70MWSF/2012/016	70MW Solar Facility-SIte 016	Artefacts	Ungraded
129008	2918BB/70MWSF/2012/015	70MW Solar Facility-SIte 015	Artefacts	Ungraded
129007	2918BB/70MWSF/2012/014	70MW Solar Facility-SIte 014	Artefacts	Ungraded
129006	2918BB/70MWSF/2012/013	70MW Solar Facility-SIte 013	Artefacts	Ungraded
129005	2918BB/70MWSF/2012/012	70MW Solar Facility-SIte 012	Artefacts	Ungraded
129004	2918BB/70MWSF/2012/011	70MW Solar Facility-SIte 011	Artefacts	Ungraded
129003	2918BB/70MWSF/2012/010	70MW Solar Facility-SIte 010	Artefacts	Ungraded
129002	2918BB/70MWSF/2012/009	70MW Solar Facility-SIte 009	Artefacts	Ungraded
129001	2918BB/70MWSF/2012/008	70MW Solar Facility-SIte 008	Artefacts	Ungraded
129000	2918BB/70MWSF/2012/007	70MW Solar Facility-SIte 007	Artefacts	Ungraded
128999	2918BB/70MWSF/2012/006	70MW Solar Facility-SIte 006	Artefacts	Ungraded
128998	2918BB/70MWSF/2012/005	70MW Solar Facility-SIte 005	Artefacts	Ungraded
128997	2918BB/70MWSF/2012/004	70MW Solar Facility-SIte 004	Artefacts	Ungraded
128996	2918BB/70MWSF/2012/003	70MW Solar Facility-SIte 003	Artefacts	Ungraded
128995	2918BB/70MWSF/2012/002	70MW Solar Facility-SIte 002	Artefacts	Ungraded
128994	2918BB/70MWSF/2012/001	70MW Solar Facility-SIte 001	Artefacts	Ungraded
128993	2918BB/70MWSF/2012/L011	70MW Solar Facility-SIte L011	Artefacts	Ungraded
128992	2918BB/70MWSF/2012/L010	70MW Solar Facility-SIte L010	Artefacts	Ungraded
128991	2918BB/70MWSF/2012/L09	70MW Solar Facility-SIte L09	Artefacts	Ungraded
128990	2918BB/70MWSF/2012/L08	70MW Solar Facility-SIte L08	Artefacts	Ungraded

CTS HERITAGE

Site ID	Site no	Full Site Name	Site Type	Grading
128989	2918BB/70MWSF/2012/L06	70MW Solar Facility-SIte L06	Artefacts	Ungraded
128986	2918BB/70MWSF/2012/L04	70MW Solar Facility-SIte L04	Artefacts	Ungraded
128985	2918BB/70MWSF/2012/L03	70MW Solar Facility-SIte L03	Artefacts	Ungraded
45421	BLOEM02	Bloemhoek 02	Artefacts	Grade IIIb
45420	BLOEM01	Bloemhoek 01	Artefacts, Stone walling, Burial Grounds & Graves	Grade IIIa
51183	GAMS14	Gamsberg 14	Artefacts	Grade IIIc
44309	212/0-88/1 AGG 073	Farm 212/0 & 88/1 Aggeneys 073	Stone walling	Grade IIIb
44293	212/0-88/1 AGG 146	Farm 212/0 & 88/1 Aggeneys 146	Stone walling	Grade IIIb
44291	212/0-88/1 AGG 145	Farm 212/0 & 88/1 Aggeneys 145	Artefacts	Ungraded
44290	212/0-88/1 AGG 144	Farm 212/0 & 88/1 Aggeneys 144	Artefacts	Grade IIIc

CTS HERITAGE

APPENDIX 2

Reference List with relevant AIAs and PIAs within 10km of the development area

Heritage Impact Assessments				
Nid	**Report Type**	**Author/s**	**Date**	**Title**
15982	PIA Phase 1	John Pether	23/04/2012	BRIEF PALAEONTOLOGICAL IMPACT ASSESSMENT PROPOSED ORLIGHT SA DEVELOPMENT OF A SOLAR PHOTOVOLTAIC POWER PLANT NEAR AGGENEYS, NORTHERN CAPE PROVINCE Portion 1 of Farm Aroams 57 RD
9110	HIA Phase 1	Lita Webley, Dave Halkett	01/04/2012	Heritage Impact Assessment: Proposed Aggeneys Photo-voltaic Solar Power Plant on Portion 1 of the Farm Aroams 57, Northern Cape Province
9110	HIA Phase 1	Lita Webley, Dave Halkett	01/04/2012	Heritage Impact Assessment: Proposed Aggeneys Photo-voltaic Solar Power Plant on Portion 1 of the Farm Aroams 57, Northern Cape Province
4275	AIA Phase 1	Cobus Dreyer	11/07/2005	Archaeological Investigation of the Proposed Alterations to the Telkom Lattice Mast at Gamsberg (Ghaamsberg) near Aggeneys, Northern Cape
185063	Heritage Impact Assessment Specialist Reports	Timothy Hart, Lita Webley, Dave Halkett, Natalie Kendrick	23/11/2015	Heritage Impact Assessment for the Proposed Khai-Ma WEF on farm portions south of Pofadder in the NC Province
155934	HIA Phase 1	David Morris	01/04/2013	HERITAGE IMPACT ASSESSMENT: PROPOSED AGGENEYS PHOTOVOLTAIC SOLAR ENERGY FACILITY AT BLOEMHOEK NEAR AGGENEYS, NORTHERN CAPE PROVINCE
133532	Heritage Statement	David Morris	01/01/2010	Cultural Heritage Assessment: Gamsberg - Supplementary observations to a previous specialist report on archaeological resources.
118776	PIA Desktop	John Pether	20/03/2013	Environmental and Social Impact Assessment [ESIA] for the Gamsberg Zinc Mine and Associated Infrastructure, Northern Cape Province PALAEONTOLOGICAL IMPACT ASSESSMENT Desktop Study
118774	HIA Phase 1	David Morris	01/03/2013	Archaeological and Cultural Heritage Investigation for the Environmental and Social Impact Assessment (ESIA) for the Gamsberg Zinc Mine and Associated Infrastructure in Northern Cape, South Africa
15983	PIA Phase 1	John Pether	23/04/2012	BRIEF PALAEONTOLOGICAL IMPACT ASSESSMENT PROPOSED ORLIGHT SA DEVELOPMENT OF A SOLAR PHOTOVOLTAIC POWER PLANT NEAR AGGENEYS, NORTHERN CAPE PROVINCE

				Portion 1 of Farm Aroams 57 RD
154274	Heritage Impact Assessment Specialist Reports	Jayson Orton	23/01/2014	HERITAGE IMPACT ASSESSMENT FOR THE PROPOSED NAMIES WIND ENERGY FACILITY NEAR AGGENEYS, NORTHERN CAPE
45091	AIA Desktop	Lita Webley, Dave Halkett	14/06/2012	AIA: PROPOSED CONSTRUCTION OF A 66KV LINE LINKING THE PROPOSED AGGENEYS PHOTO-VOLTAIC SOLAR POWER PLANT WITH THE AGGENEIS SUBSTATION, NORTHERN CAPE
1974	HIA Phase 1	Lita Webley, Dave Halkett	01/04/2012	HERITAGE IMPACT ASSESSMENT: PROPOSED AGGENEYS PHOTO-VOLTAIC SOLAR POWER PLANT ON PORTION 1 OF THE FARM AROAMS 57, NORTHERN CAPE PROVINCE
185156	Heritage Impact Assessment Specialist Reports	Timothy Hart, Lita Webley, Dave Halkett, Natalie Kendrick	24/11/2014	Heritage Impact Assessment for the Proposed Korana Wind Energy Facility on Farm Portions Namies South 2/212 and Poortjies 1/209 South of Pofadder in the NC Province
185150	Heritage Impact Assessment Specialist Reports	Timothy Hart, Lita Webley, Dave Halkett, Natalie Kendrick	24/11/2014	Heritage Impact Assessment for the Proposed Poortjies Wind Energy Facility on Two Farm Portions South of Pofadder, NC Province
185063	Heritage Impact Assessment Specialist Reports	Timothy Hart, Lita Webley, Dave Halkett, Natalie Kendrick	23/11/2015	Heritage Impact Assessment for the Proposed Khai-Ma WEF on farm portions south of Pofadder in the NC Province
185047	Heritage Impact Assessment Specialist Reports	Lita Webley, Natalie Kendrick, Timothy Hart, Dave Halkett	24/11/2014	Heritage Impact Assessment for the Korana Solar Energy Facility on a Farm Namies South 212 / Portion2; Khai-Ma Municipality
518879	HIA	Piet de Bie	03/12/2018	Phase 1 Heritage Impact Assessment for the proposed construction of a 800m section of gravel road and associated infrastructure at the Black Mountain Decline on the Farm Zuurwater 62 , Khai-Ma Local Municipality, NC Province.
521207	Heritage Scoping Assessment	Jenna Lavin	22/02/2019	Proposed development of a new haul road at Black Mountain Mine, near Aggeneys in the Northern Cape Province
523679	HIA	Jayson Orton	16/05/2019	HERITAGE IMPACT ASSESSMENT: PROPOSED AGGENEYS 1 – 100MW SOLAR PV FACILITY AND ASSOCIATED INFRASTRUCTURE NEAR AGGENEYS, NAMAKWALAND MAGISTERIAL DISTRICT,

				NORTHERN CAPE
522885	HIA	Jayson Orton	17/04/2019	Heritage Impact Assessment for the Proposed Aggeneys 2 - 100 MW Solar PV Facility and Associated Infrastructure Near Aggeneys, Namakwaland Magisterial District, Northern Cape
523680	HIA	Jayson Orton	16/05/2019	HERITAGE IMPACT ASSESSMENT: PROPOSED GRID CONNECTION INSFRASTRUCTURE FOR AGGENEYS 1 SOLAR PHOTOVOLTAIC FACILITY, NAMAKWALAND MAGISTERIAL DISTRICT, NORTHERN CAPE

CTS HERITAGE

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.

CTS HERITAGE

APPENDIX 4 - Methodology

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

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

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

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

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

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

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

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

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

DETERMINATION OF THE PALAEONTOLOGICAL SENSITIVITY

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

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

DETERMINATION OF THE COVERAGE RATING ASCRIBED TO A REPORT POLYGON

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

Low coverage will be used for:

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

Medium coverage will be used for

- reports for which a field survey was undertaken but the area was not extensively covered. This may apply to instances where some impediments did not allow for full coverage such as thick vegetation, etc.
- reports for which the entire property was mapped, but only a specific area was surveyed thoroughly. This is differentiated from low ratings listed above when these surveys cover up to around 50% of the property.

High coverage will be used for

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

RECOMMENDATION GUIDE

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

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

This recommendation is made when:

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

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

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

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

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

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

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

APPENDIX 5 -Summary of Specialist Expertise

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

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

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