

HERITAGE IMPACT ASSESSMENT

In terms of Section 38(8) of the NHRA for the

Proposed development of the Aggeneys PV BESS near Aggeneys in the Northern Cape

SAHRA Case No: 125

Prepared by CTS Heritage



CTS HERITAGE

For

WSP

November 2022



CTS HERITAGE

EXECUTIVE SUMMARY

1. Site Name:

Aggeneys PV BESS

2. Location:

The proposed BESS facility will be located off the N14, on Portion 1 of the Farm Aroams 57 RD, approximately 3 km east of the of Aggeneys in the Northern Cape Province. The proposed BESS facility is located within the Springbok Renewable Energy Development Zone (REDZ) 8.

3. Locality Plan:

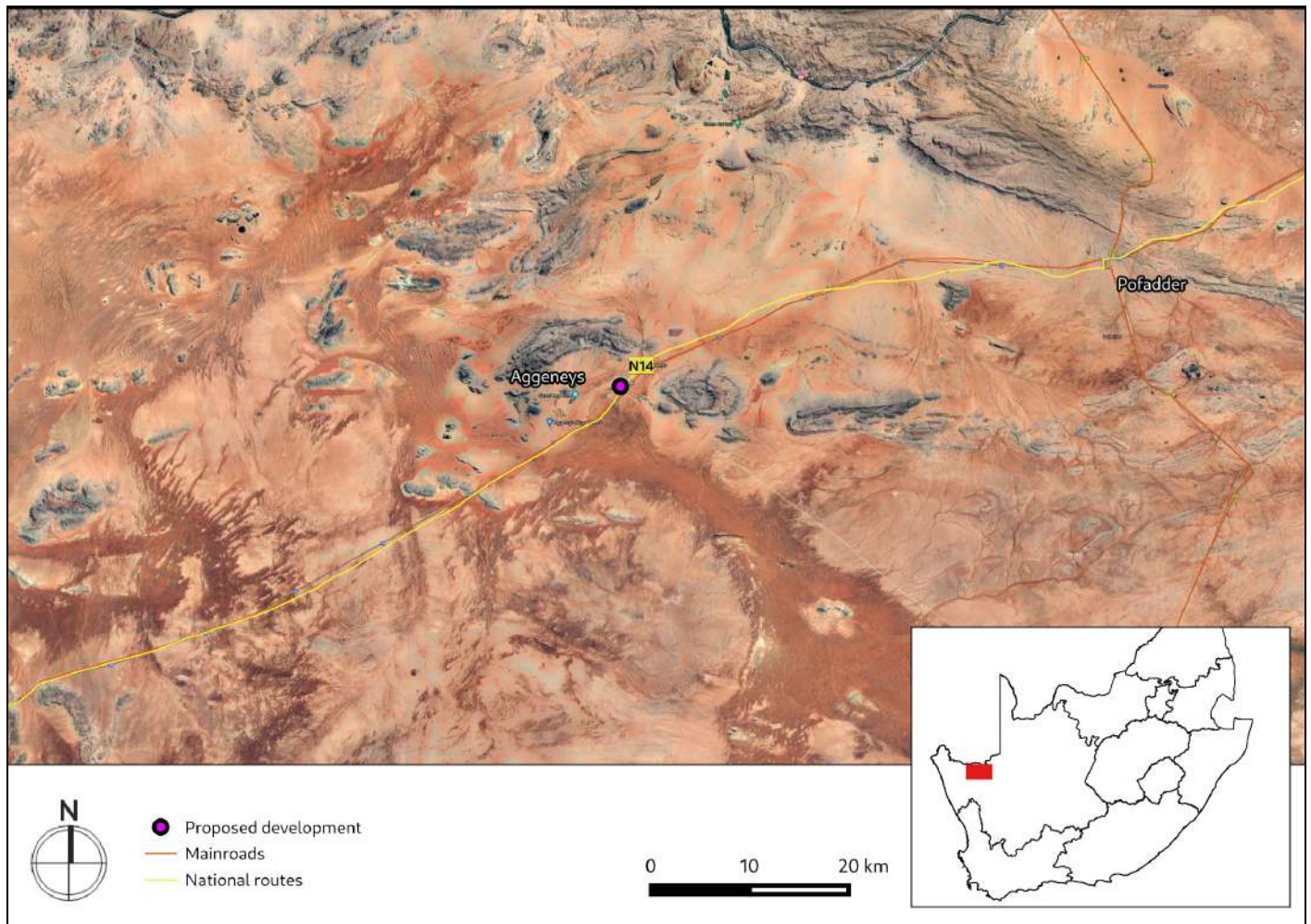


Figure 1: Location of the proposed development area



CTS HERITAGE

4. Description of Proposed Development:

The Aggeneys Battery Energy Storage System (BESS) project entails the construction and operation of a 153MW/612MWh BESS facility and associated infrastructure, at the authorised Aggeneys Solar Energy Facility (SEF) Substation near Aggeneys in the Northern Cape Province. The proposed BESS facility will be located off the N14, on Portion 1 of the Farm Aroams 57 RD, approximately 3 km east of the Aggeneys in the Northern Cape Province. The proposed BESS facility is located within the Springbok Renewable Energy Development Zone (REDZ) 8.

The proposed BESS comprises a number of DC Battery Enclosures, Converter Stations, associated auxiliary transformers and an HV substation. Each DC Battery Enclosure is approximately 10 x 2 x 4 m (l x b x h), and houses a number of Liquid cooled Lithium-ion batteries or Vanadium Redox Flow Batteries. The enclosure is equipped with a fire detection system, and gas detection and prevention mechanism.

A typical 153MW/612MWh BESS system comprises a number of DC Battery Enclosures at a capacity of 2.81 MW. The proposed system has a 4 hour discharge time, with a usable energy of 0.7 MW, hence for a 153MW/612MWh BESS system, approximately 215 battery enclosures are required.

Each Converter Station comprises of 2 converters (~4200 kW, ~1500VDC, - 690Vac) feeding into a single MV transformer (690V/(22kV-33kV)), with the dimensions of each converter measuring 3.0 x 2.0 x 2.2m. A single converter is fed from approximately 7 Battery Enclosures.

The BESS is supplied by a number of outdoor auxiliary transformers ((22kV-33kV)/(220-380V)) to provide auxiliary power to the plant. The MV transformers feed the HV substation which steps the voltage from 22kV to 66kV through one or more HV transformers, in the HV substation connecting to the Eskom grid.

The onsite HV substation has been constructed with a footprint of approximately 6 200m² and encloses the 22kV/66kV HV power transformer. A lightning mast with a maximum height of 24m, tower sections, earthing switches, circuit breakers, surge arrestors, busbars and other miscellaneous substation equipment, including a substation building containing MV switchgear, control and protection equipment will also form part of the onsite substation.

In the maps included in this report, Alternative 2 as mapped will be regarded as the preferred location and Alternative 1 will be considered a laydown area.



CTS HERITAGE

5. Heritage Resources Identified:

Site Name	Description	Type	Period	Density	Co-ordinates		Grading	Mitigation
001	Quartz core	Artefacts	MSA	0 to 5	-29.244342	18.891737	NCW	NA
002	Quartz core	Artefacts	MSA	0 to 5	-29.243881	18.888147	NCW	NA
003	Quartz flake, slight retouch	Artefacts	LSA	0 to 5	-29.241904	18.884195	NCW	NA
004	Quartz flake	Artefacts	MSA	0 to 5	-29.244698	18.892406	NCW	NA

6. Anticipated Impacts on Heritage Resources:

No impacts to significant heritage resources are anticipated.

7. Recommendations:

There is no objection to the proposed development on heritage grounds and the following is recommended:

- No mitigation is required prior to construction operations commencing.
- Should any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources be found during the proposed development, SAHRA APM Unit (Natasha Higgitt/Phillip Hine 021 462 5402) must be alerted.
- If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Mimi Seetelo 012 320 8490), must be alerted immediately as per section 36(6) of the NHRA. A professional archaeologist must be contracted as soon as possible to inspect the findings. A Phase 2 rescue excavation operation may be required subject to permits issued by SAHRA.
- The above recommendations must be included in the Environmental Management Plan (EMP) for the project

8. Author/s and Date:

Jenna Lavin

November 2022



CTS HERITAGE

Details of Specialist who prepared the HIA

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

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

Since 2016, Jenna has drafted over 100 Heritage Impact Assessments throughout South Africa.



CTS HERITAGE

CONTENTS

1. INTRODUCTION	6
1.1 Background Information on Project	6
1.2 Description of Property and Affected Environment	7
2. METHODOLOGY	9
2.1 Purpose of HIA	9
2.2 Summary of steps followed	9
2.3 Assumptions and uncertainties	9
2.4 Constraints & Limitations	11
2.5 WSP Impact Assessment Methodology	11
3. HISTORY AND EVOLUTION OF THE SITE AND CONTEXT	14
3.1 Desktop Assessment	14
4. IDENTIFICATION OF HERITAGE RESOURCES	23
4.1 Summary of findings of Specialist Reports	23
4.2 Heritage Resources identified	26
4.3 Mapping and spatialisation of heritage resources	27
5. ASSESSMENT OF THE IMPACT OF THE DEVELOPMENT	28
5.1 Assessment of impact to Heritage Resources	28
5.2 Sustainable Social and Economic Benefit	30
5.3 Proposed development alternatives	30
5.4 Cumulative Impacts	30
6. RESULTS OF PUBLIC CONSULTATION	32
7. CONCLUSION	32
8. RECOMMENDATIONS	33
APPENDICES	
1 Heritage Screening Assessment	



1. INTRODUCTION

1.1 Background Information on Project

The Aggeneys Battery Energy Storage System (BESS) project entails the construction and operation of a 153MW/612MWh BESS facility and associated infrastructure, at the authorised Aggeneys Solar Energy Facility (SEF) Substation near Aggeneys in the Northern Cape Province. The proposed BESS facility will be located off the N14, on Portion 1 of the Farm Aroams 57 RD, approximately 3 km east of the Aggeneys in the Northern Cape Province. The proposed BESS facility is located within the Springbok Renewable Energy Development Zone (REDZ) 8.

The proposed BESS comprises a number of DC Battery Enclosures, Converter Stations, associated auxiliary transformers and an HV substation. Each DC Battery Enclosure is approximately 10 x 2 x 4 m (l x b x h), and houses a number of Liquid cooled Lithium-ion batteries or Vanadium Redox Flow Batteries. The enclosure is equipped with a fire detection system, and gas detection and prevention mechanism.

A typical 153MW/612MWh BESS system comprises a number of DC Battery Enclosures at a capacity of 2.81 MW. The proposed system has a 4 hour discharge time, with a usable energy of 0.7 MW, hence for a 153MW/612MWh BESS system, approximately 215 battery enclosures are required.

Each Converter Station comprises of 2 converters (~4200 kW, ~1500VDC, - 690Vac) feeding into a single MV transformer (690V/(22kV-33kV)), with the dimensions of each converter measuring 3.0 x 2.0 x 2.2m. A single converter is fed from approximately 7 Battery Enclosures.

The BESS is supplied by a number of outdoor auxiliary transformers ((22kV-33kV)/(220-380V)) to provide auxiliary power to the plant. The MV transformers feed the HV substation which steps the voltage from 22kV to 66kV through one or more HV transformers, in the HV substation connecting to the Eskom grid.

The onsite HV substation has been constructed with a footprint of approximately 6 200m² and encloses the 22kV/66kV HV power transformer. A lightning mast with a maximum height of 24m, tower sections, earthing switches, circuit breakers, surge arrestors, busbars and other miscellaneous substation equipment, including a substation building containing MV switchgear, control and protection equipment will also form part of the onsite substation.

In the maps included in this report, Alternative 2 as mapped will be regarded as the preferred location and Alternative 1 will be considered a laydown area.



CTS HERITAGE

1.2 Description of Property and Affected Environment

The proposed development of a Battery Energy Storage (BESS) facility is located adjacent to the existing Aggeneys Solar PV farm and will serve this development directly. The current solar PV facility spans 110 hectares and has a rated capacity of 46MW¹. The area assessed for the placement of the BESS is located within a triangle of ground between an existing jeep track and the boundary fence of the solar PV facility. An Eskom overhead line and servitude separates the two options surveyed. Besides the solar facility there are various industrial activities directly opposite the study site to the south west on the other side of the gravel road with concrete production towers and construction housing.

The terrain is level and consists of red Kalahari sands in a semi-desert area covered with patches of grassland. Cattle have been allowed to graze here in the past as noted by dung deposits on the study site but it is not clear whether this activity has persisted after the establishment of the solar PV facility.

¹<https://bterenewables.com/aggeneys-solar-pv/>



Figure 1.1: The proposed development area relative to Aggeney's. Alternative 2 as mapped will be regarded as the preferred location and Alternative 1 will be considered a laydown area.



2. METHODOLOGY

2.1 Purpose of HIA

The purpose of this Heritage Impact Assessment (HIA) is to satisfy the requirements of section 38(8), and therefore section 38(3) of the National Heritage Resources Act (Act 25 of 1999).

2.2 Summary of steps followed

- A Desktop Study was conducted of relevant reports previously written (please see the reference list for the age and nature of the reports used)
- An archaeologist conducted an assessment of archaeological resources likely to be disturbed by the proposed development. The archaeologist conducted his site visit 2 November 2022
- The identified resources were assessed to evaluate their heritage significance
- Alternatives and mitigation options were discussed with the Environmental Assessment Practitioner

2.3 Assumptions and uncertainties

- The *significance* of the sites and artefacts is determined by means of their historical, social, aesthetic, technological and scientific value in relation to their uniqueness, condition of preservation and research potential. It must be kept in mind that the various aspects are not mutually exclusive, and that the evaluation of any site is done with reference to any number of these.
- It should be noted that archaeological and palaeontological deposits often occur below ground level. Should artefacts or skeletal material be revealed at the site during construction, such activities should be halted, and it would be required that the heritage consultants are notified for an investigation and evaluation of the find(s) to take place.

However, despite this, sufficient time and expertise was allocated to provide an accurate assessment of the heritage sensitivity of the area.

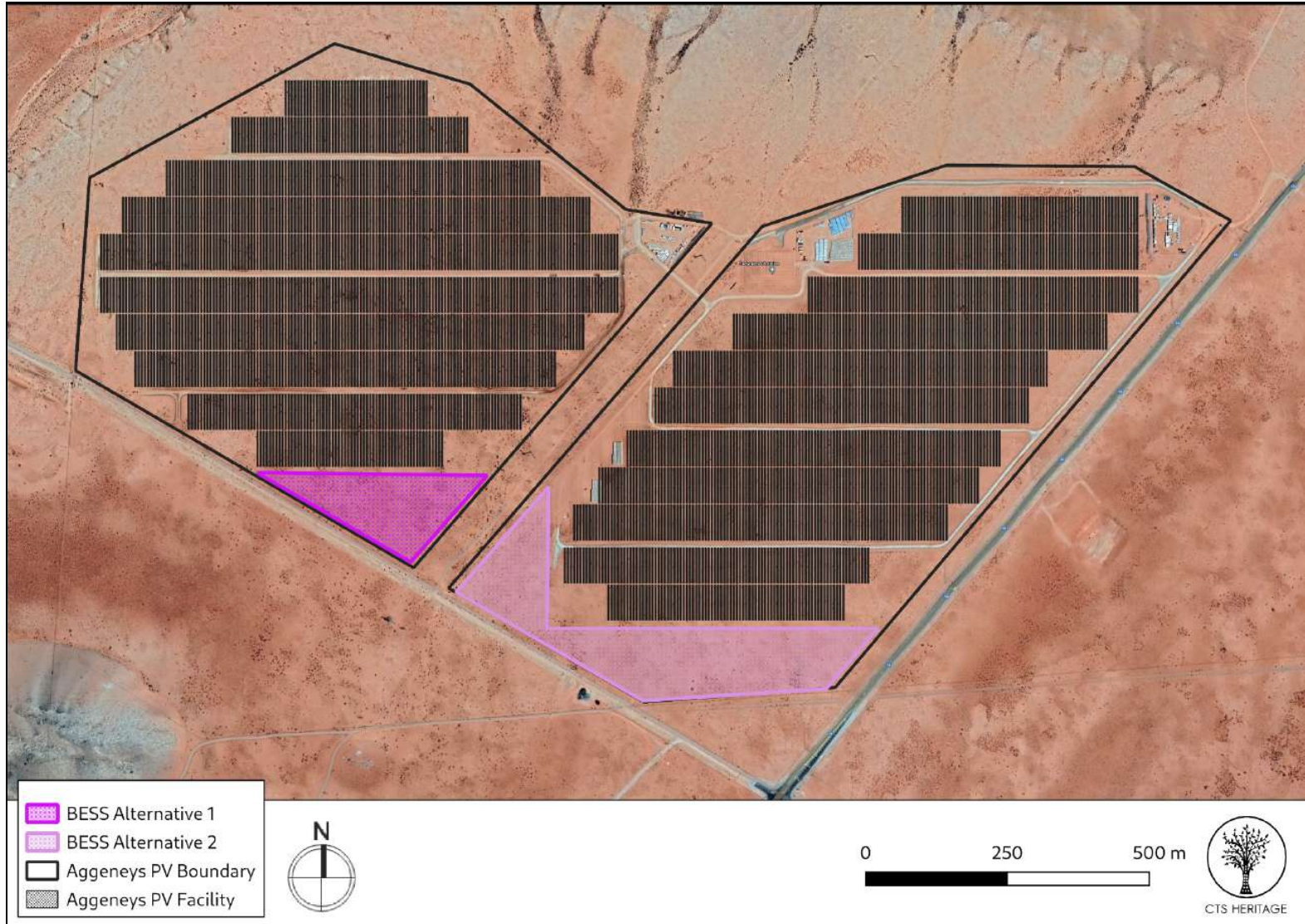


Figure 1.2: The proposed development area including the approved PV Facilities. . Alternative 2 as mapped will be regarded as the preferred location and Alternative 1 will be considered a laydown area.

2.4 Constraints & Limitations

There was very little vegetation cover present on site and the study area is very small. It did not warrant a full survey given the very small area requiring assessment and the fact that a full HIA had been conducted for the solar PV farm. The assessment supported the findings we made in our desktop screening study which found that this area has no heritage sensitivities.

2.5 WSP Impact Assessment Methodology

Assessments of Impacts and Mitigation

The assessment of impacts and mitigation evaluates the likely extent and significance of the potential impacts on identified receptors and resources against defined assessment criteria, to develop and describe measures that will be taken to avoid, minimise or compensate for any adverse environmental impacts, to enhance positive impacts, and to report the significance of residual impacts that occur following mitigation.

The key objectives of the risk assessment methodology are to identify any additional potential environmental issues and associated impacts likely to arise from the proposed project, and to propose a significance ranking. Issues / aspects will be reviewed and ranked against a series of significance criteria to identify and record interactions between activities and aspects, and resources and receptors to provide a detailed discussion of impacts. The assessment considers direct¹, indirect², secondary³ as well as cumulative impacts.

A standard risk assessment methodology is used for the ranking of the identified environmental impacts pre-and post-mitigation (i.e. residual impact). The significance of environmental aspects is determined and ranked by considering the criteria presented in Table 1 below.

Impact Mitigation

The impact significance without mitigation measures will be assessed with the design controls in place. Impacts without mitigation measures in place are not representative of the proposed development's actual extent of impact and are included to facilitate understanding of how and why mitigation measures were identified. The residual impact is what remains following the application of mitigation and management measures and is thus the final level of impact associated with the development. Residual impacts also serve as the focus of management and monitoring activities during Project implementation to verify that actual impacts are the same as those predicted in this report.

The mitigation measures chosen are based on the mitigation sequence/hierarchy which allows for consideration of five (5) different levels, which include avoid/prevent, minimise, rehabilitate/restore, offset and no-go in that order. The idea is that when project impacts are considered, the first option should be to avoid or prevent the



impacts from occurring in the first place if possible, however, this is not always feasible. If this is not attainable, the impacts can be allowed, however they must be minimised as far as possible by considering reducing the footprint of the development for example so that little damage is encountered. If impacts are unavoidable, the next goal is to rehabilitate or restore the areas impacted back to their original form after project completion. Offsets are then considered if all the other measures described above fail to remedy high/significant residual negative impacts. If no offsets can be achieved on a potential impact, which results in full destruction of any ecosystem for example, the no-go option is considered so that another activity or location is considered in place of the original plan.

Table 2: Impact Assessment Criteria and Scoring System

CRITERIA	SCORE 1	SCORE 2	SCORE 3	SCORE 4	SCORE 5
Impact Magnitude (M) The degree of alteration of the affected environmental receptor	Very low: No impact on processes	Low: Slight impact on processes	Medium: Processes continue but in a modified way	High: Processes temporarily cease	Very High: Permanent cessation of processes
Impact Extent (E) The geographical extent of the impact on a given environmental receptor	Site: Site only	Local: Inside activity area	Regional: Outside activity area	National: National scope or level	International: Across borders or boundaries
Impact Reversibility (R) The ability of the environmental receptor to rehabilitate or restore after the activity has caused environmental change	Reversible: Recovery without rehabilitation		Recoverable: Recovery with rehabilitation		Irreversible: Not possible despite action
Impact Duration (D) The length of permanence of the impact on the environmental receptor	Immediate: On impact	Short term: 0-5 years	Medium term: 5-15 years	Long term: Project life	Permanent: Indefinite
Probability of Occurrence (P) The likelihood of an impact occurring in the absence of pertinent environmental management measures or mitigation	Improbable	Low Probability	Probable	Highly Probability	Definite
Significance (S) is determined by combining the above criteria:	$S=(E+D+R+M) \times P$ Significance=(Extent+Duration+Reversibility+Magnitude) x Probability				



IMPACT SIGNIFICANCE RATING					
Total Score	4 to 15	16 to 30	31 to 60	61 to 80	81 to 100
Environmental Significance Rating (Negative (-))	Very low	Low	Moderate	High	Very High
Environmental Significance Rating (Positive (+))	Very low	Low	Moderate	High	Very High

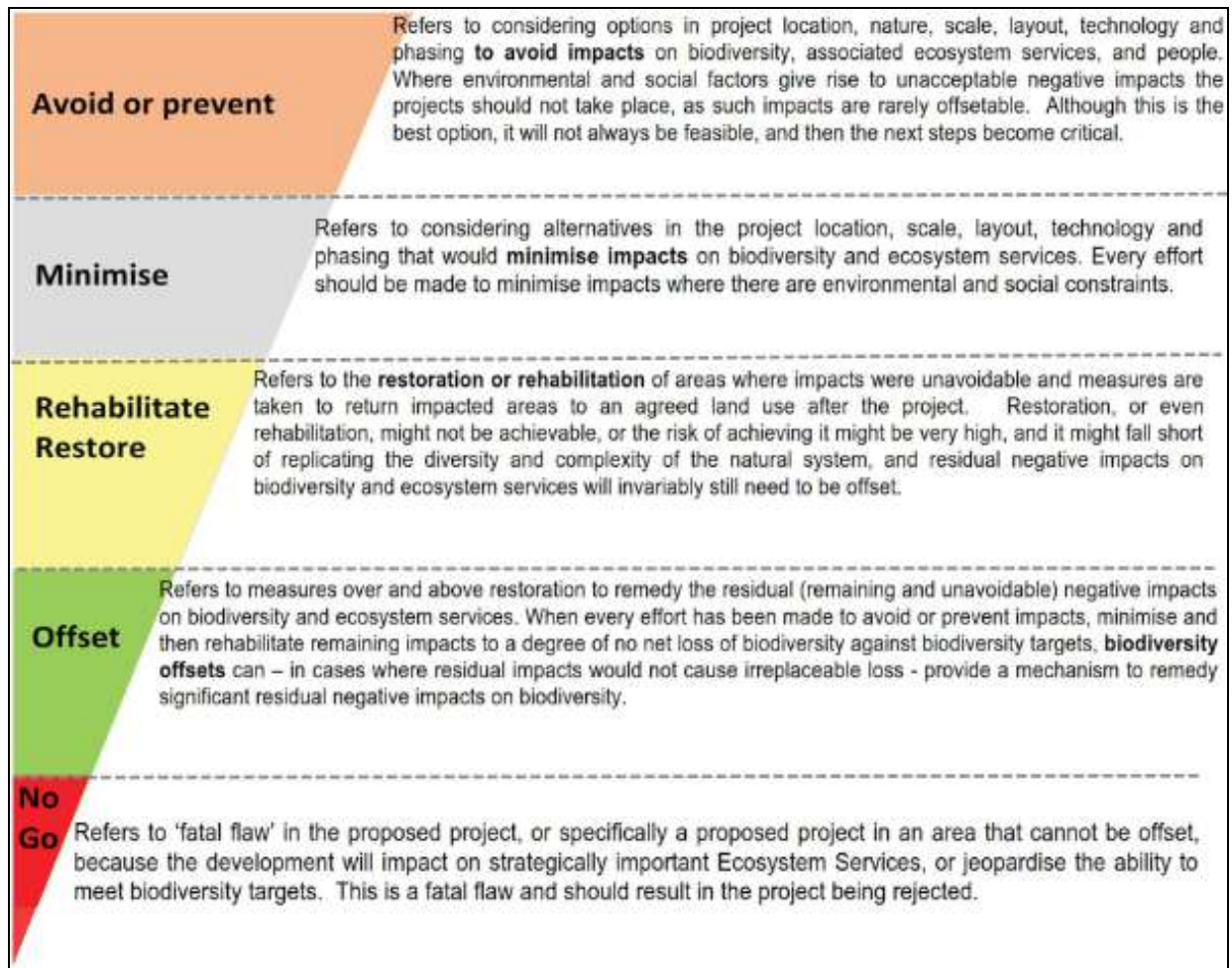


Figure 2: Mitigation Sequence Hierarchy



CTS HERITAGE

3. HISTORY AND EVOLUTION OF THE SITE AND CONTEXT

3.1 Desktop Assessment

This application is for the proposed establishment of a BESS associated with an approved PV facility 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. Aggeneys 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 relict 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 Aggeneys 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 3d) 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’).” The location of the massacre site relative to the proposed BESS alternatives is mapped in Figure 2.2. Due to the approved PV infrastructure on site and the location of the development away from the Ghamsberg, it is not anticipated that the proposed BESS development will negatively impact any significant cultural landscape heritage resources.



Figure 2.1: View of the Gamsberg taken from the development area



CTS HERITAGE

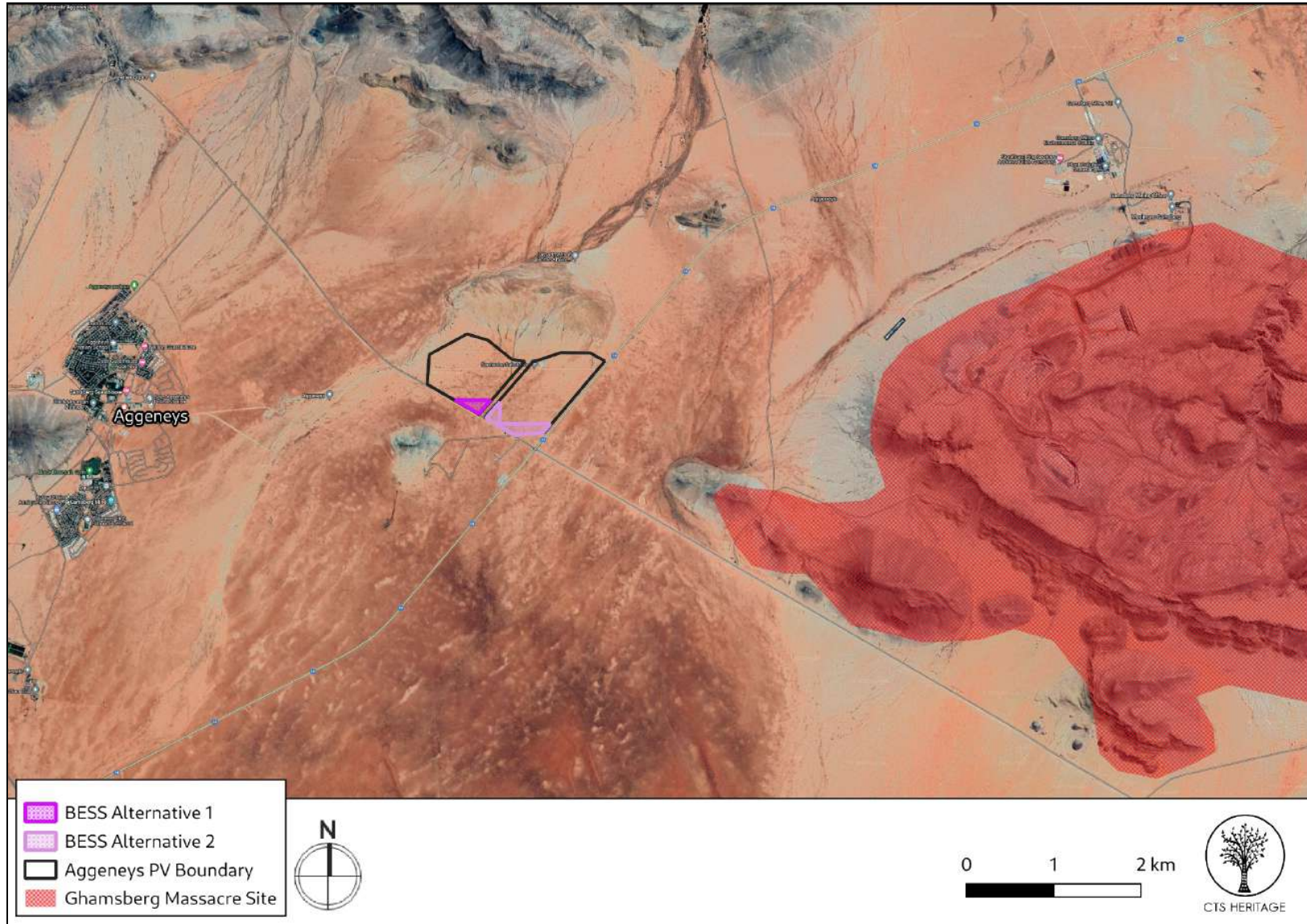


Figure 2.2: The proposed development area relative to the estimated boundaries of the Gamsberg and Namiesberg Massacre sites



CTS HERITAGE

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 occurring 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) assessed the area proposed for development and 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.”

The specific area proposed for development was also assessed by Orton (2015) who described the proposed development area as “very flat and the surface ranges from quite sandy to a mixture of sand and gravel. Larger lumps of quartzite in places hint at the likelihood that bedrock is just beneath the surface. There is generally very little vegetation and in places large expanses of open sand and gravel occur. In places there are small clumps of denser vegetation which occur in seasonally wetter areas. A few barely discernible ephemeral drainage lines were found to cross the site. Archaeological visibility on the ground surface was excellent. Orton (2015) found that “The archaeological resources present on the site are deemed to have very low cultural significance for their scientific value and are considered un-gradeable.” All of the heritage resources identified by both Orton (2015) and Webley and Halkett (2012) and located within the study area are mapped in Figure 3. Orton (2015) concludes by noting that “Only scattered archaeological artefacts of very low significance are present in the study area. No archaeological occupation sites were found. Because no significant archaeology is present in the study area no further archaeological studies are required. The development may proceed as planned within the proposed footprint. It is considered highly unlikely that any significant archaeological material would still be present in the area.” As such, it is not anticipated that the proposed BESS development will negatively impact on any significant archaeological resources.



CTS HERITAGE

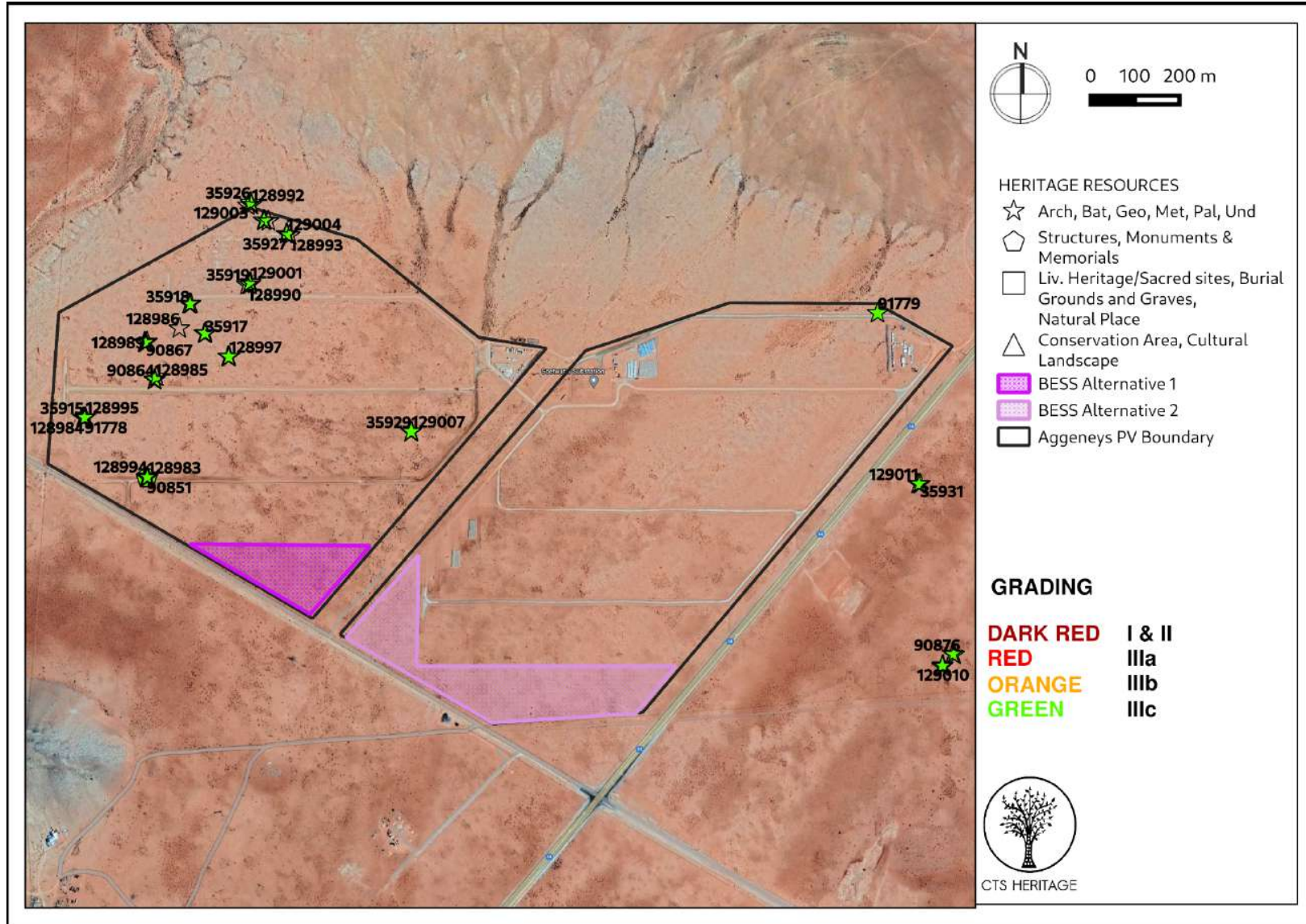


Figure 2.4. Heritage Resources Map. Heritage Resources previously identified within the study area, with SAHRIS Site IDs indicated in the insets below. Please See Appendix 4 for full description of heritage resource types.

Cedar Tower Services (Pty) Ltd t/a CTS Heritage
238 Queens Road, Simons Town
Email info@ctsheritage.com Web <http://www.ctsheritage.com>

Palaeontology

According to the SAHRIS Palaeosensitivity Map, the proposed development area is underlain by sediments of low to zero palaeontological sensitivity. The geology in this general area is largely overlain with Quaternary cover sands (of low palaeontological sensitivity). Towards the west, these coversands are underlain by granites of the Koeipoort Formation and quartzite of the Wortel Formation (of zero palaeontological sensitivity). The general area near to Aggeneys 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 not anticipated that the proposed BESS development will negatively impact on any significant palaeontological resources.

Table 1: Explanation of symbols for the geological map and approximate ages

Symbol	Colour	Group/Formation	Notes
Q-S1	Pale Yellow	Quaternary to Recent alluvium.	Located along river courses within the development area
Q-S2	Paler Yellow	Quaternary to Recent alluvium.	Located along river courses within the development area



CTS HERITAGE

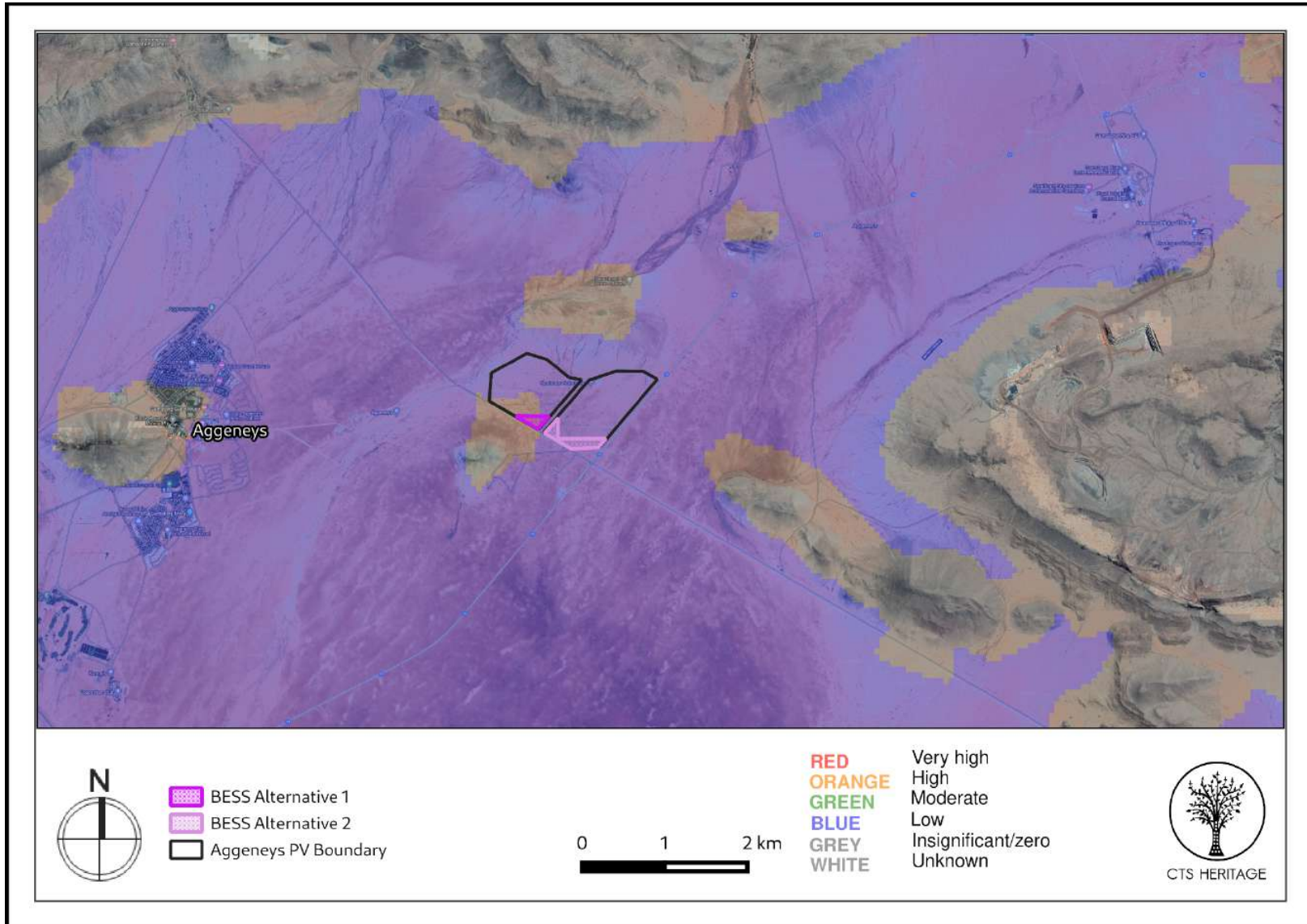


Figure 3.1: Palaeontological sensitivity of the proposed development area (low sensitivity)



CTS HERITAGE

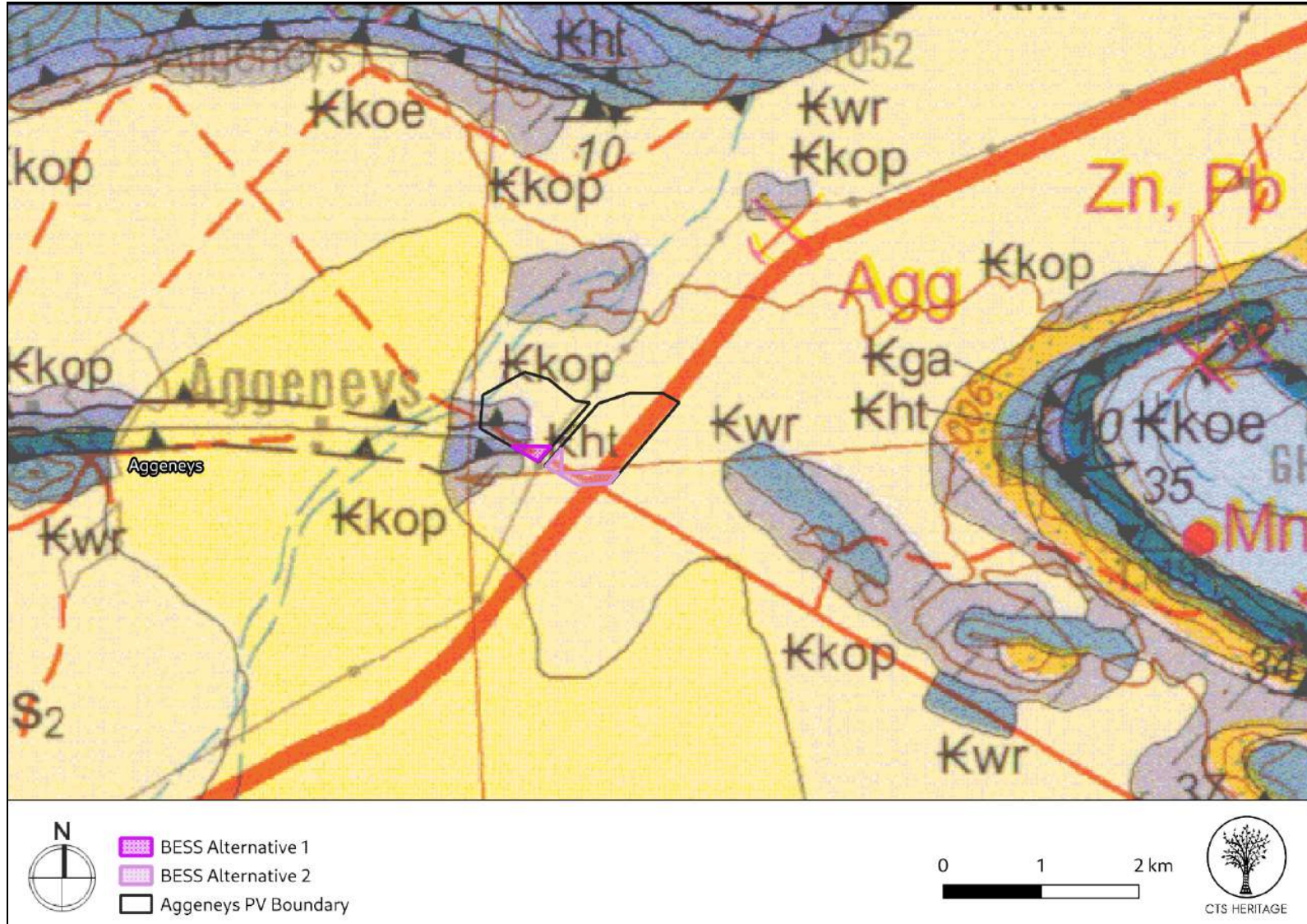


Figure 3.2. Geology Map. Extract from the CGS 2918 Pofadder Map indicating that the development area is underlain by sediments Q-s₁ and Q-s₂ (Quaternary Sands) with obvious granite intrusions that form part of the Aggeneys sub-group located outside of the project area



4. IDENTIFICATION OF HERITAGE RESOURCES

4.1 Summary of findings of Specialist Reports

Cultural Landscape Impacts

As noted above, 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 close proximity to the proposed development area - Figure 3d) being likely massacre sites”. This has resulted in moves to include the Gamsberg and Namiesberg 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’).”

These significant sites of massacre have very high local or even Provincial significance and should be graded IIIA or even Grade II. However, due to continued mining of the Gamsberg for Iron Ore since the opening of Black Mountain Mine in 2014, the context of these significant massacre sites is all but completely eroded. As the proposed BESS is located within the footprint of an approved PV facility, no additional impact on the sense of place associated with the Gamsberg and Namiesberg Massacre sites is anticipated.

Archaeology

An archaeologist conducted an assessment of the area proposed for development in November 2022. The area proposed for the BESS is located within the footprint of an existing PV facility and is dominated by Kalahari Sands. Only four archaeological artefacts were identified during the field assessment. These have been graded as Not Conservation-Worthy (NCW) based on their limited nature and lack of associated context. No further recording of the archaeology here is recommended before destruction.

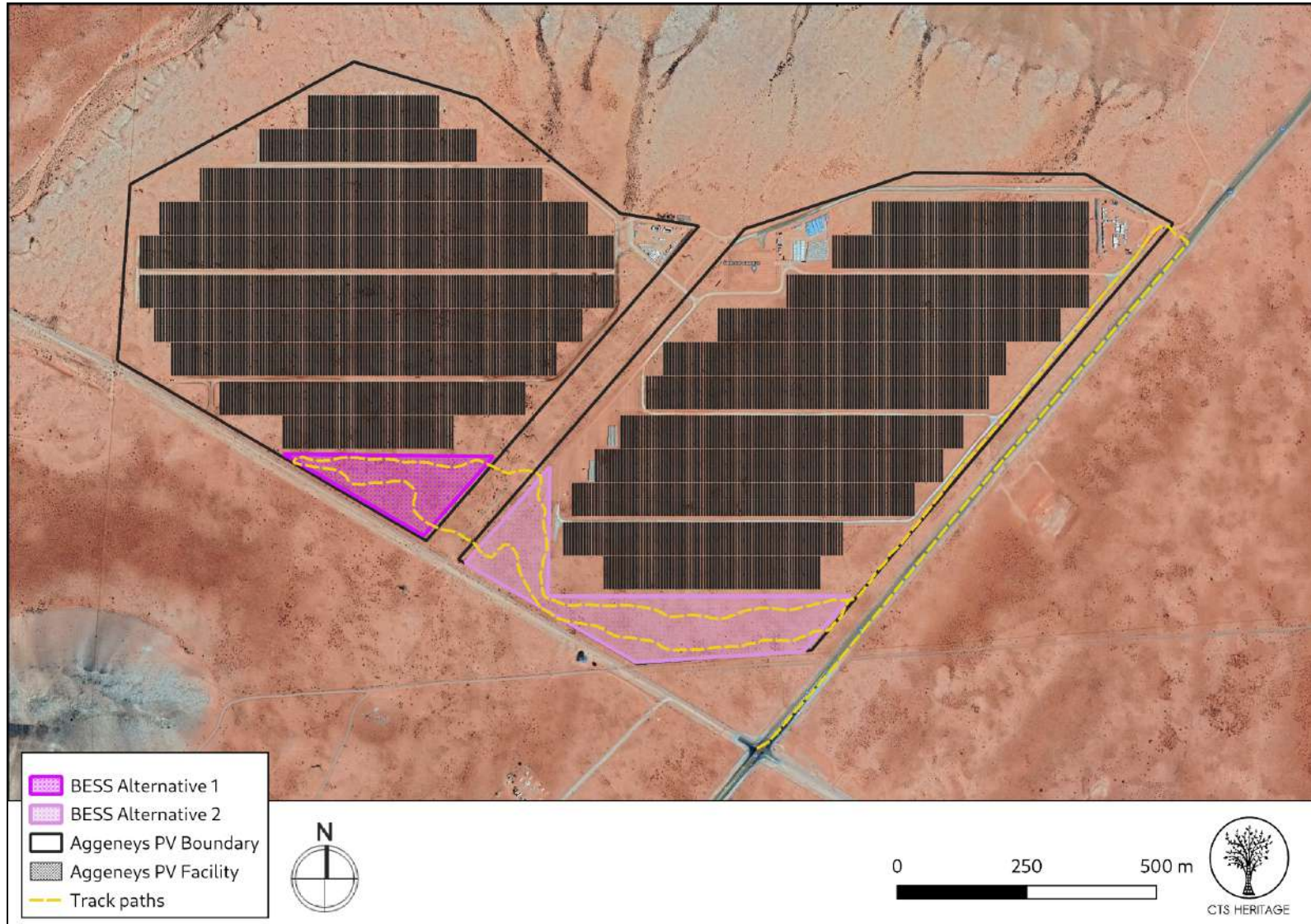


Figure 4. Track paths of archaeologist during the field assessment



CTS HERITAGE



Figure 5.1 Contextual images of the site



Figure 5.2 Contextual images of the site



Figure 5.3 Contextual images of the site

Cedar Tower Services (Pty) Ltd t/a CTS Heritage
238 Queens Road, Simons Town
Email info@ctsheritage.com Web <http://www.ctsheritage.com>

4.2 Heritage Resources identified

Only one archaeological observation was identified during the field assessment (BLOEM04). At BLOEM04 the presence of LSA debris was recorded on the shore of a small pan. The material had no context except for the pan as a possible water source during the recent LSA. Six microlithic retouched stone tool debris was located and consist of chips and chunks. The raw material used was Banded ironstone and Quartzite. The density of the scatter was approximately 5 per 500m². This find is rated as not conservation worthy and is of low significance.

Table 2: Observations identified during the field assessment

Site Name	Description	Type	Period	Density	Co-ordinates		Grading	Mitigation
001	Quartz core	Artefacts	MSA	0 to 5	-29.244342	18.891737	NCW	NA
002	Quartz core	Artefacts	MSA	0 to 5	-29.243881	18.888147	NCW	NA
003	Quartz flake, slight retouch	Artefacts	LSA	0 to 5	-29.241904	18.884195	NCW	NA
004	Quartz flake	Artefacts	MSA	0 to 5	-29.244698	18.892406	NCW	NA



Figure 6.1: Observation 001 and 002



Figure 6.2: Observation 003 and 004

4.3 Mapping and spatialisation of heritage resources

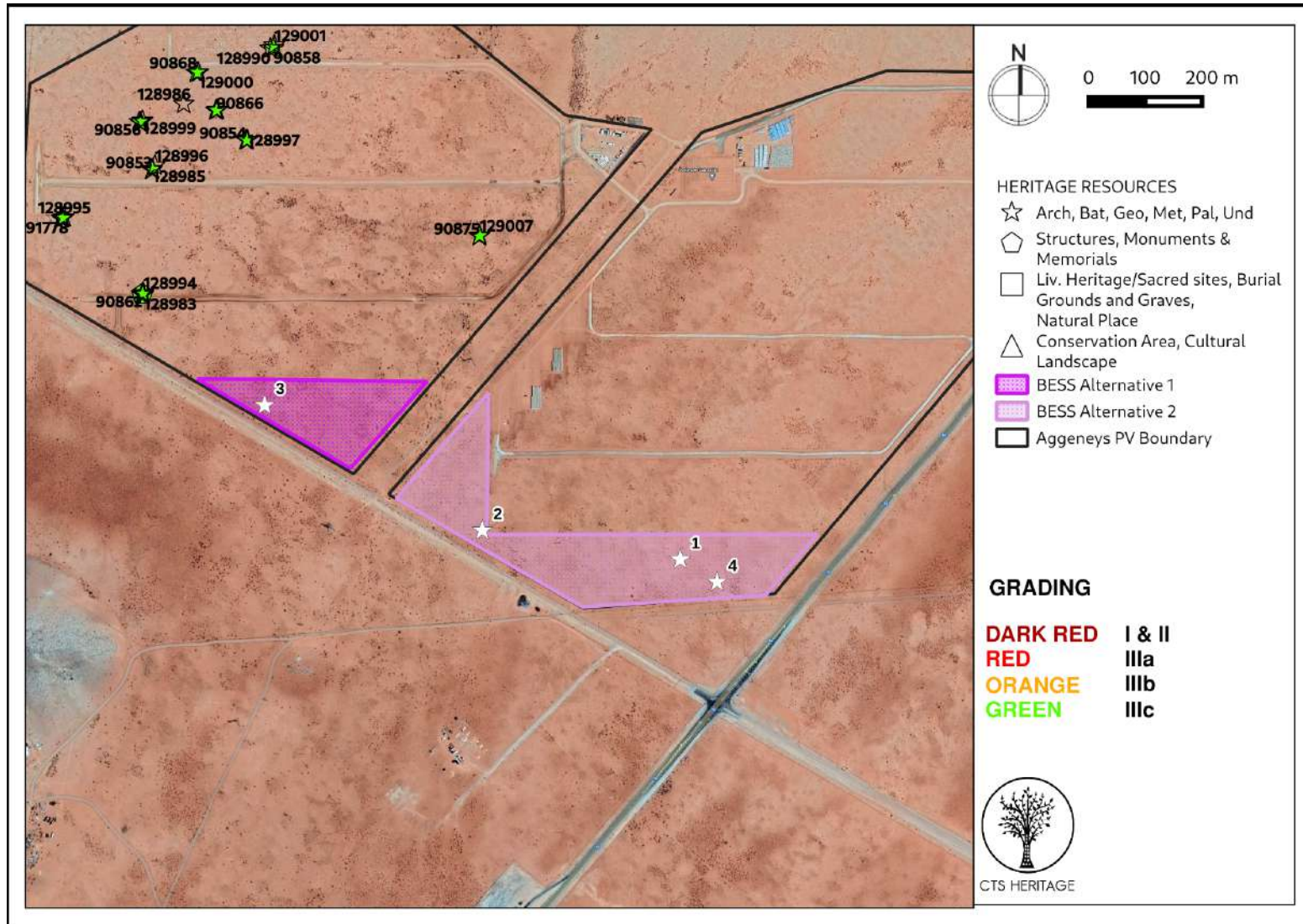


Figure 7: Heritage resources in the vicinity of the proposed development



CTS HERITAGE

5. ASSESSMENT OF THE IMPACT OF THE DEVELOPMENT

5.1 Assessment of impact to Heritage Resources

Based on the assessment completed, the area proposed for development has a low archaeological sensitivity and it is not foreseen that the proposed development will impact on significant archaeological heritage. The only archaeological observations identified during the field assessment of the area proposed for development were determined to be not conservation-worthy. It is also noted that the 2012 assessment by Webley and Halkett was conducted prior to the classification of low to no heritage sensitivity of generally dispersed and low density archaeological material as 'not conservation-worthy' (NCW). This grading level has become commonly used only in the last decade and it is unlikely that they would have graded most of their open site scatters as Grade III C today in this context.

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). Pether notes in his assessment (2012, SAHRIS NID 15982) 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.

Significant massacre sites are located in close proximity to the proposed development - the Gamsberg and Namiesberg Massacre sites. These significant sites of massacre have very high local or even Provincial significance and should be graded IIIA or even Grade II. However, due to continued mining of the Gamsberg for Iron Ore since the opening of Black Mountain Mine in 2014, the context of these significant massacre sites is all but completely eroded. As the proposed BESS is located within the footprint of an approved PV facility, no additional impact on the sense of place associated with the Gamsberg and Namiesberg Massacre sites is anticipated.



CTS HERITAGE

Table 3: Impacts of the proposed PV facility and associated infrastructure to heritage resources

CRITERIA	Alternative 1	Alternative 2
Impact Magnitude (M) The degree of alteration of the affected environmental receptor	1	1
Impact Extent (E) The geographical extent of the impact on a given environmental receptor	1	1
Impact Reversibility (R) The ability of the environmental receptor to rehabilitate or restore after the activity has caused environmental change	5	5
Impact Duration (D) The length of permanence of the impact on the environmental receptor	5	5
Probability of Occurrence (P) The likelihood of an impact occurring in the absence of pertinent environmental management measures or mitigation	1	1
Significance (S) is determined by combining the above criteria: $S=(E+D+R+M) \times P$	12	12
Mitigation Recommendations	<p>Should any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources be found during the proposed development, SAHRA APM Unit (Natasha Higgitt/Phillip Hine 021 462 5402) must be alerted.</p> <p>If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Mimi Seetelo 012 320 8490), must be alerted immediately as per section 36(6) of the NHRA. A professional archaeologist must be contracted as soon as possible to inspect the findings. A Phase 2 rescue excavation operation may be required subject to permits issued by SAHRA.</p>	



5.2 Sustainable Social and Economic Benefit

According to the client, programs would be aligned to the current BTE Renewables programs for Aggeneys solar and KKII.

- Intentional focus on the development of youth through skills development programs and development to ensure employability.
- Based on analysis and consultation on the ground targeted ECD programs to address learning gaps at foundation phase.
- Alignment to the BTE end strategy which seeks out youth and female owned enterprises for development and acceleration.

As the proposed BESS forms part of an existing and approved PV facility, the anticipated socio-economic benefits to be derived from the project outweigh any negative impacts anticipated to heritage resources.

5.3 Proposed development alternatives

In the maps included in this report, Alternative 2 as mapped will be regarded as the preferred location and Alternative 1 will be considered a laydown area. There is no objection to the development as proposed from a heritage perspective.

5.4 Cumulative Impacts

Cumulative impact in terms of heritage was assessed by reviewing the renewable energy facilities that are proposed within 20km of the proposed development area and includes the previously assessed and authorised renewable energy facilities that fall within the development area assessed in this HIA. Furthermore, the area immediately adjacent to Aggeneys has been severely compromised through extensive ongoing mining activities which have come to characterise this landscape.

At this stage, there is the potential for the cumulative impact of numerous proposed solar energy facilities and their BESS infrastructure to negatively impact the cultural landscape due to a change in the landscape character from natural wilderness to semi-industrial, however, due to the remoteness of the area the impact on the experience of the cultural landscape is not foreseen to be significant. In addition, it is preferable to have renewable energy facility development focussed in an area such as a REDZ.



CTS HERITAGE

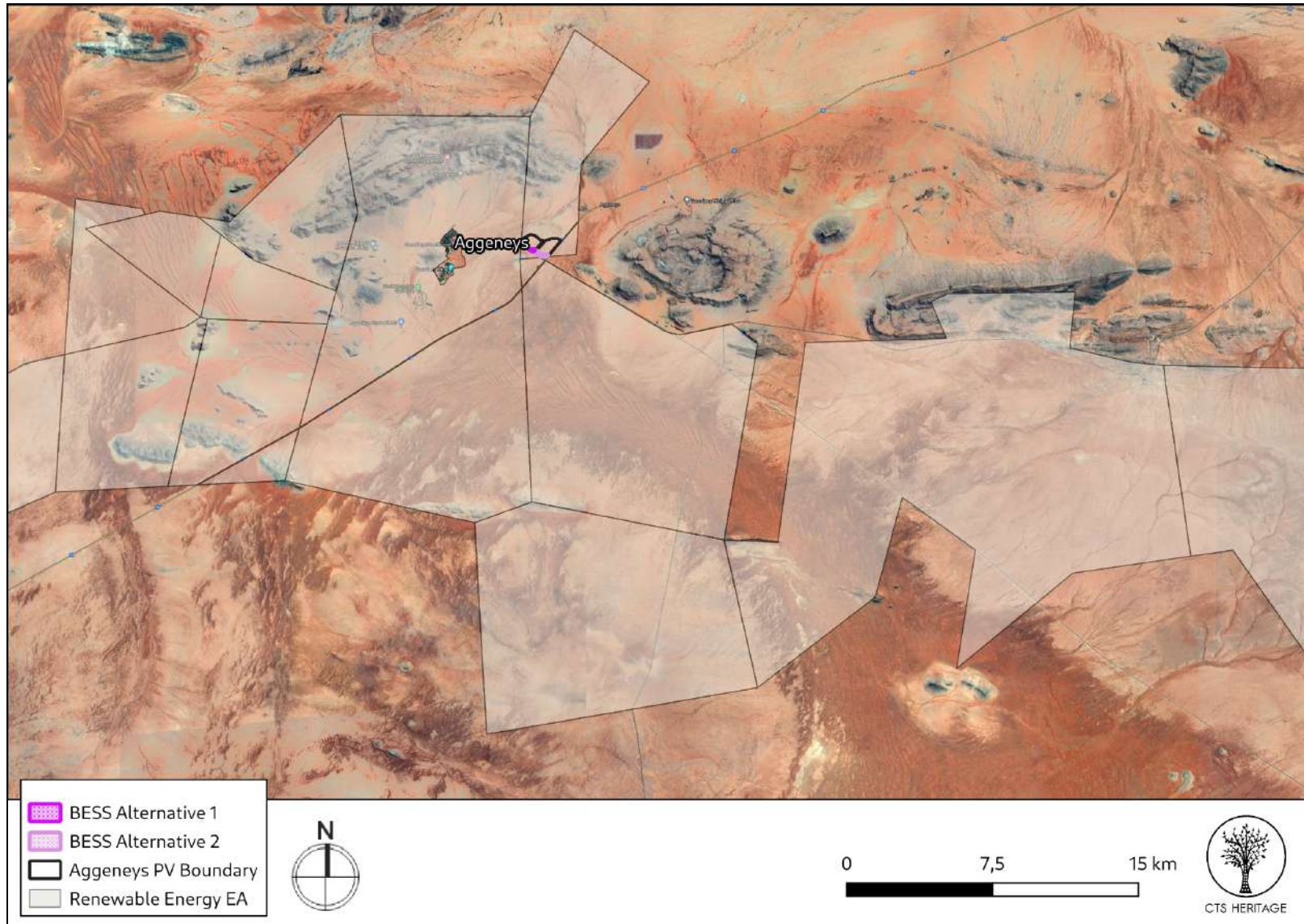


Figure 8: Approved REF projects within 20km of the proposed development area

Cedar Tower Services (Pty) Ltd t/a CTS Heritage
238 Queens Road, Simons Town
Email info@ctsheritage.com Web <http://www.ctsheritage.com>



6. RESULTS OF PUBLIC CONSULTATION

The public consultation process will be undertaken by the EAP during the EIA. No heritage-related comments have been received to-date. SAHRA is required to comment on this HIA and make recommendations prior to the granting of the Environmental Authorisation.

7. CONCLUSION

Based on the assessment completed, the area proposed for development has a low archaeological sensitivity and it is not foreseen that the proposed development will impact on significant archaeological heritage.

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). Pether notes in his assessment (2012, SAHRIS NID 15982) 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.

Significant massacre sites are located in close proximity to the proposed development - the Gamsberg and Namiesberg Massacre sites. These significant sites of massacre have very high local or even Provincial significance and should be graded IIIA or even Grade II. However, due to continued mining of the Gamsberg for Iron Ore since the opening of Black Mountain Mine in 2014, the context of these significant massacre sites is all but completely eroded. As the proposed BESS is located within the footprint of an approved PV facility, no additional impact on the sense of place associated with the Gamsberg and Namiesberg Massacre sites is anticipated.

In addition, the proposed development is located within an identified REDZ and Strategic Transmission Corridor. Due to the REDZ, there are a number of similar existing and/or proposed PV facilities in the area and as such, there is the potential for the cumulative impact of proposed solar energy facilities to negatively impact the cultural landscape due to a change in the landscape character from natural wilderness to semi-industrial, however, due to the remoteness of the area the impact on the experience of the cultural landscape is not foreseen to be significant.

No significant heritage resources were identified during this HIA. Therefore, no further mitigation is required, and from a heritage point of view, there is no objection to the proposed development in this area.



CTS HERITAGE

8. RECOMMENDATIONS

There is no objection to the proposed development on heritage grounds and the following is recommended:

- No mitigation is required prior to construction operations commencing.
- Should any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources be found during the proposed development, SAHRA APM Unit (Natasha Higgitt/Phillip Hine 021 462 5402) must be alerted.
- If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Mimi Seetelo 012 320 8490), must be alerted immediately as per section 36(6) of the NHRA. A professional archaeologist must be contracted as soon as possible to inspect the findings. A Phase 2 rescue excavation operation may be required subject to permits issued by SAHRA.
- The above recommendations must be included in the Environmental Management Plan (EMP) for the project



CTS HERITAGE

9. REFERENCES

Heritage Impact Assessments				
Nid	Report Type	Author/s	Date	Title
15982	PIA Phase 1	John Pether	23/04/2012	BRIEF PALAEOLOGICAL 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 PALAEOLOGICAL 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 PALAEOLOGICAL 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	01/04/2012	HERITAGE IMPACT ASSESSMENT: PROPOSED AGGENEYS PHOTO-VOLTAIC



CTS HERITAGE

		Halkett		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 INFRASTRUCTURE FOR AGGENEYS 1 SOLAR PHOTOVOLTAIC FACILITY, NAMAKWALAND MAGISTERIAL DISTRICT, NORTHERN CAPE



CTS HERITAGE

APPENDICES



CTS HERITAGE

APPENDIX 1: Heritage Screening Assessment

HERITAGE SCREENER

CTS Reference Number:	CTS22_077
SAHRA Case No.	125
Client:	WSP
Date:	November 2022
Title:	Proposed development of the Aggeneys PV BESS near Aggeneys in the Northern Cape

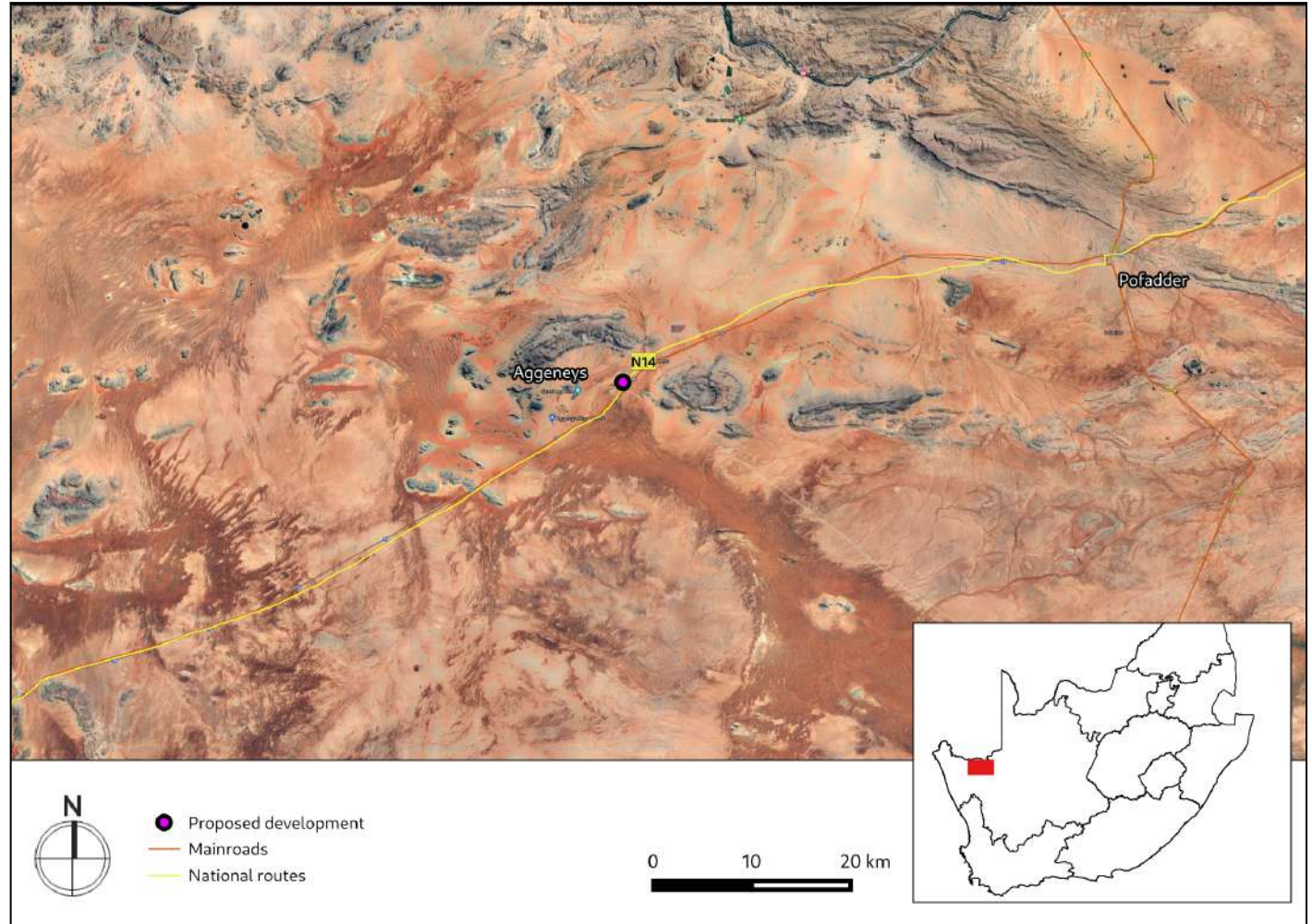


Figure 1a. Satellite map indicating the location of the proposed development in the Northern Cape

CTS Heritage Recommendation	<p>RECOMMENDATION</p> <p>Based on the information available, it is likely that the proposed grid connection corridor will impact on significant archaeological heritage and as such, it is recommended that a Heritage Impact Assessment is conducted that complies with section 38(3) of the NHRA for the proposed development with special focus on impacts to significant archaeological heritage.</p>
-----------------------------	---



1. Proposed Development Summary

The Aggeneys Battery Energy Storage System (BESS) project entails the construction and operation of a 153MW/612MWh BESS facility and associated infrastructure, at the authorised Aggeneys Solar Energy Facility (SEF) Substation near Aggeneys in the Northern Cape Province. The proposed BESS facility will be located off the N14, on Portion 1 of the Farm Aroams 57 RD, approximately 3 km east of the Aggeneys in the Northern Cape Province. The proposed BESS facility is located within the Springbok Renewable Energy Development Zone (REDZ) 8.

The proposed BESS comprises a number of DC Battery Enclosures, Converter Stations, associated auxiliary transformers and an HV substation. Each DC Battery Enclosure is approximately 10 x 2 x 4 m (l x b x h), and houses a number of Liquid cooled Lithium-ion batteries or Vanadium Redox Flow Batteries. The enclosure is equipped with a fire detection system, and gas detection and prevention mechanism.

A typical 153MW/612MWh BESS system comprises a number of DC Battery Enclosures at a capacity of 2.81 MW. The proposed system has a 4 hour discharge time, with a usable energy of 0.7 MW, hence for a 153MW/612MWh BESS system, approximately 215 battery enclosures are required.

Each Converter Station comprises of 2 converters (~4200 kW,~1500VDC, - 690Vac) feeding into a single MV transformer (690V/(22kV-33kV)), with the dimensions of each converter measuring 3.0 x 2.0 x 2.2m. A single converter is fed from approximately 7 Battery Enclosures.

The BESS is supplied by a number of outdoor auxiliary transformers ((22kV-33kV)/(220-380V)) to provide auxiliary power to the plant. The MV transformers feed the HV substation which steps the voltage from 22kV to 66kV through one or more HV transformers, in the HV substation connecting to the Eskom grid.

The onsite HV substation has been constructed with a footprint of approximately 6 200m² and encloses the 22kV/66kV HV power transformer. A lightning mast with a maximum height of 24m, tower sections, earthing switches, circuit breakers, surge arrestors, busbars and other miscellaneous substation equipment, including a substation building containing MV switchgear, control and protection equipment will also form part of the onsite substation.

2. Application References

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

3. Property Information

Latitude / Longitude	BESS 1: 29°14'32.19"S, 18°53'7.41"E BESS 2: 29°14'40.83"S, 18°53'27.65"E
Erf number / Farm number	Portion 1 of the Farm Aroams 57 RD
Local Municipality	Khai-Ma Local Municipality



CTS HERITAGE

District Municipality	Namakwa District Municipality
Current Zoning	Renewable Energy Plant (Solar)

4. Nature of the Proposed Development

Total Area	5ha
Depth of excavation (m)	<3m
Height of development (m)	Main equipment: Up to 4m Light poles: maximum height 4.8m

5. Category of Development

x	Triggers: Section 38(8) of the National Heritage Resources Act
	Triggers: Section 38(1) of the National Heritage Resources Act
	1. Construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier over 300m in length.
	2. Construction of a bridge or similar structure exceeding 50m in length.
	3. Any development or activity that will change the character of a site-
x	a) exceeding 5 000m ² in extent
	b) involving three or more existing erven or subdivisions thereof
	c) involving three or more erven or divisions thereof which have been consolidated within the past five years
	4. Rezoning of a site exceeding 10 000m ²
	5. Other (state):

6. Additional Infrastructure Required for this Development

NA

CTS Heritage

238 Queens Road, Simons Town

Email: info@ctsheritage.com Web: www.ctsheritage.com

7. Mapping (please see Appendix 3 and 4 for a full description of our methodology and map legends. Alternative 2 will be regarded as preferred location and Alternative 1 will be considered laydown area)

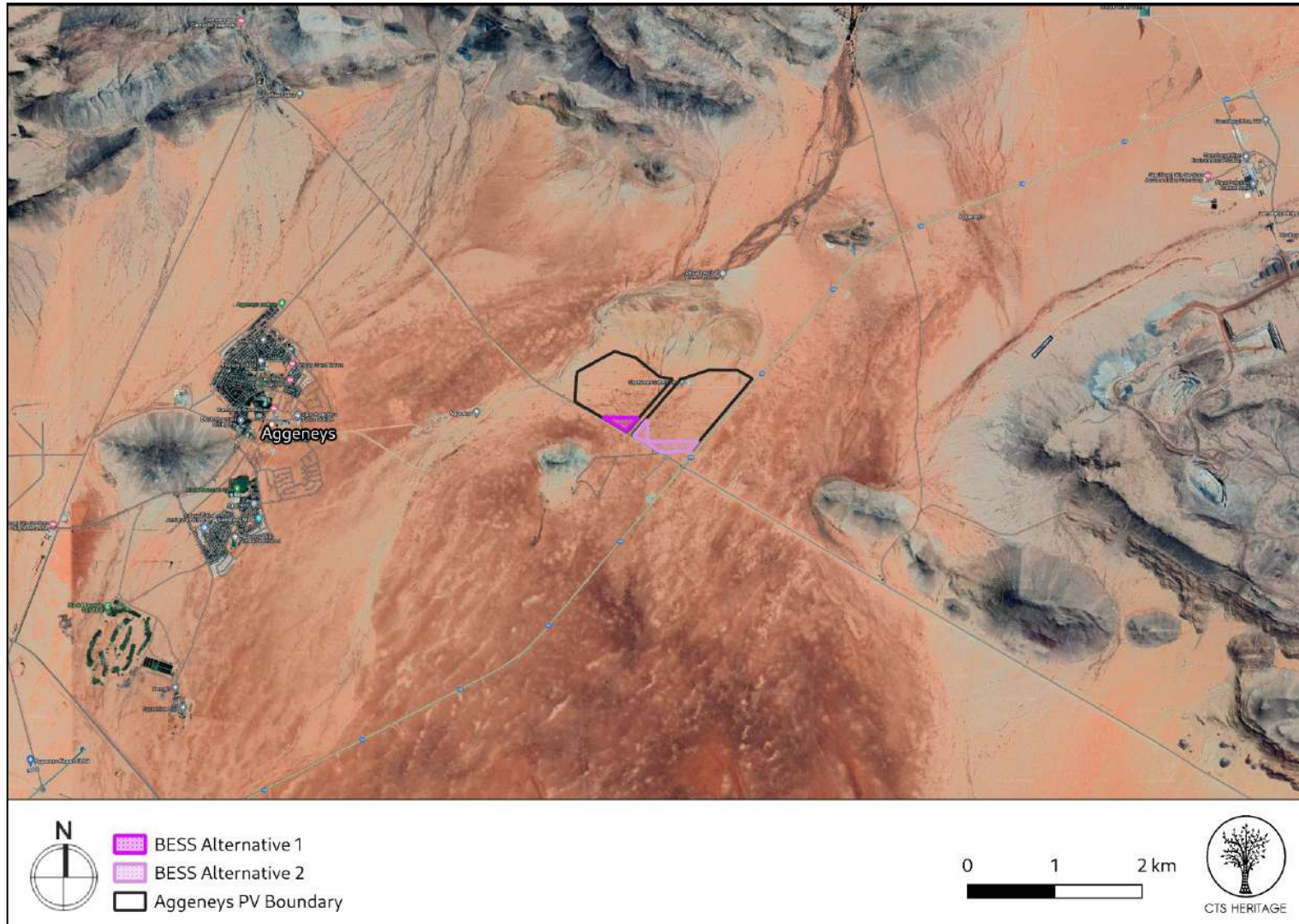


Figure 1b. Overview Map. Satellite image (2022) indicating the proposed development area. Alternative 2 will be regarded as preferred location and Alternative 1 will be considered laydown area

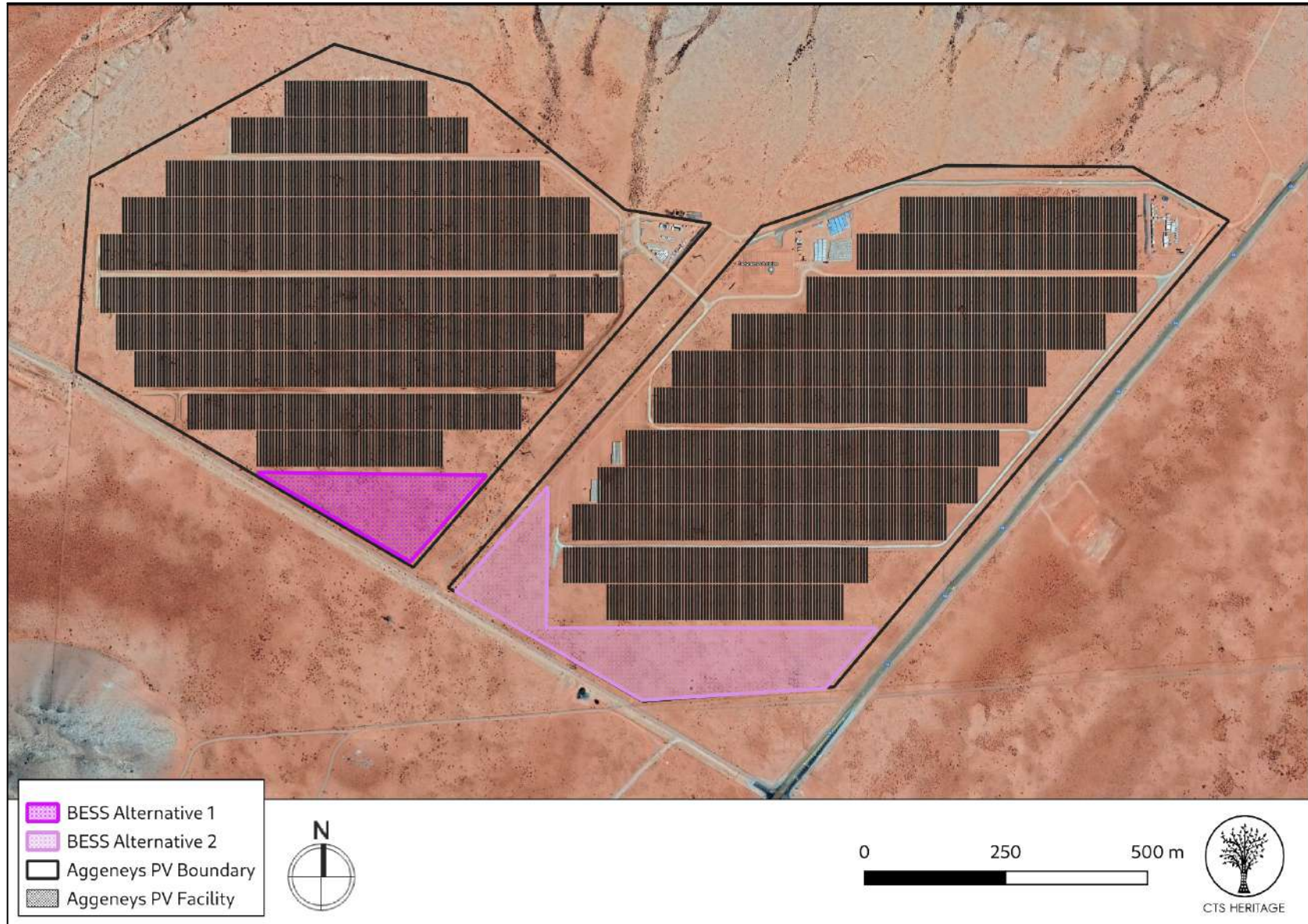


Figure 1c. Overview Map. Satellite image (2022) indicating the proposed development area in the Northern Cape. Alternative 2 will be regarded as preferred location and Alternative 1 will be considered laydown area.

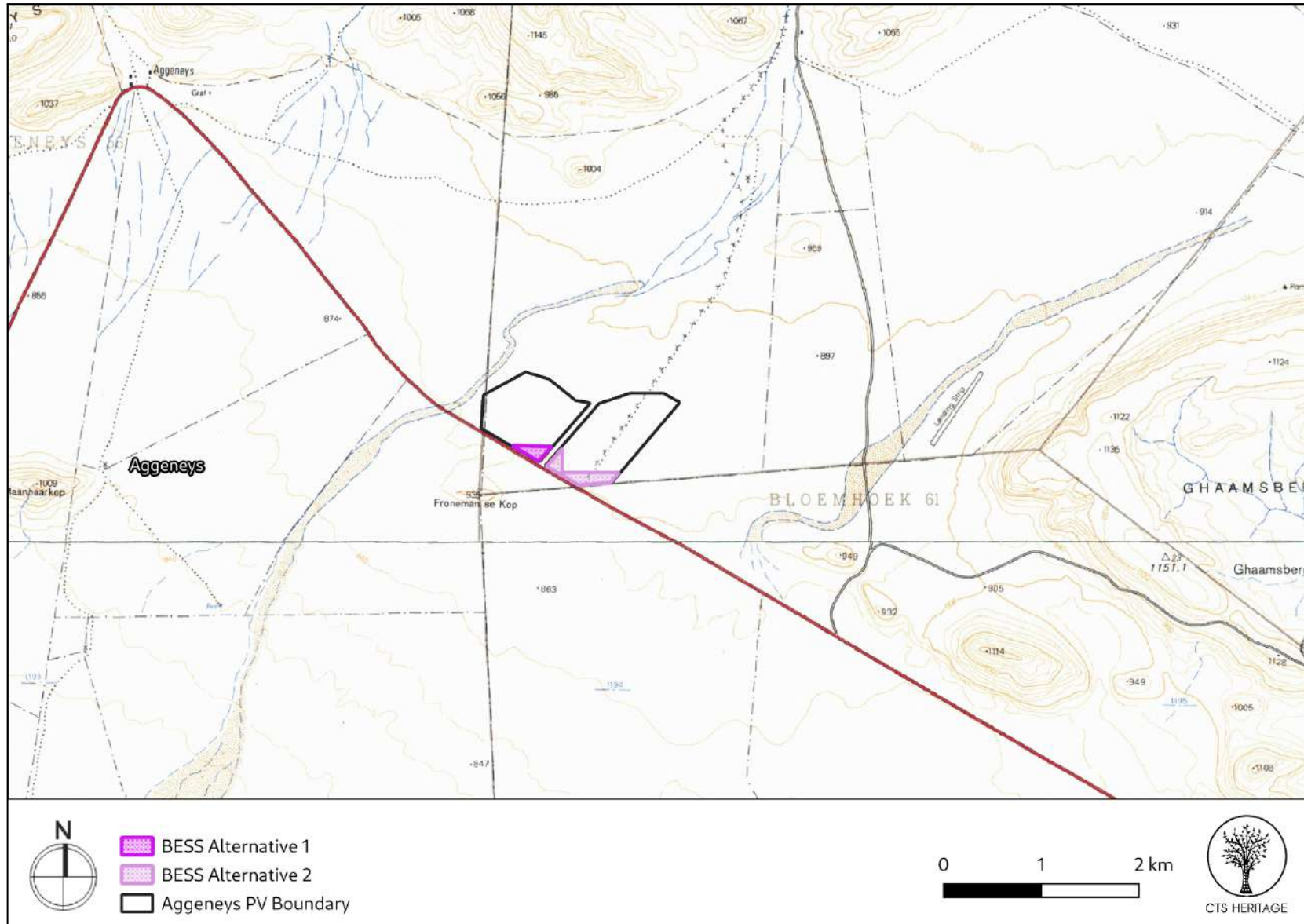


Figure 1d. Overview Map. Extract from the 1:50 000 Topo map indicating the proposed development area. Alternative 2 will be regarded as preferred location and Alternative 1 will be considered laydown area

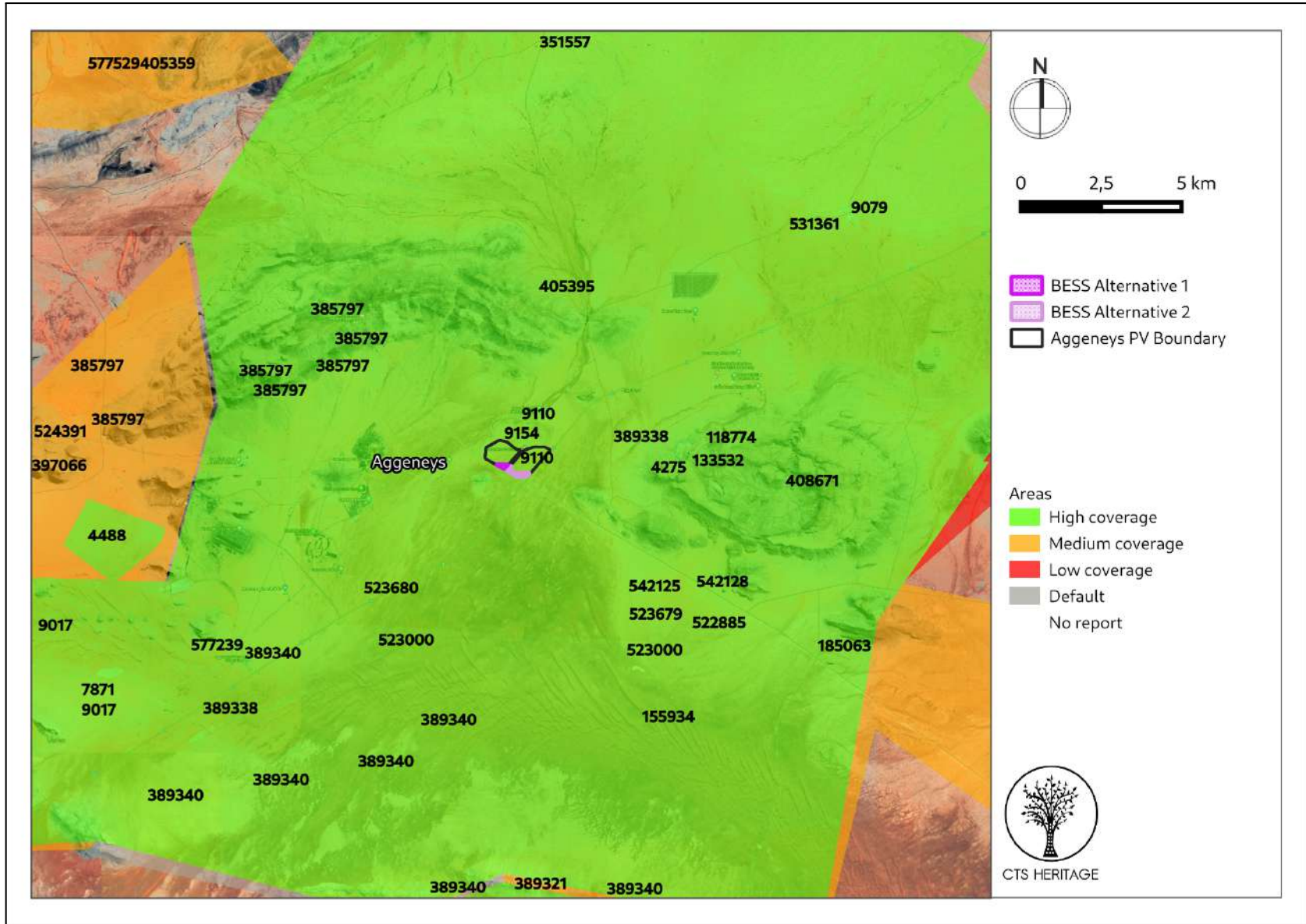


Figure 2a. Previous HIAs Map. Previous Heritage Impact Assessments covering the proposed development area with SAHRIS NIDS indicated. Please see Appendix 2 for a full reference list.

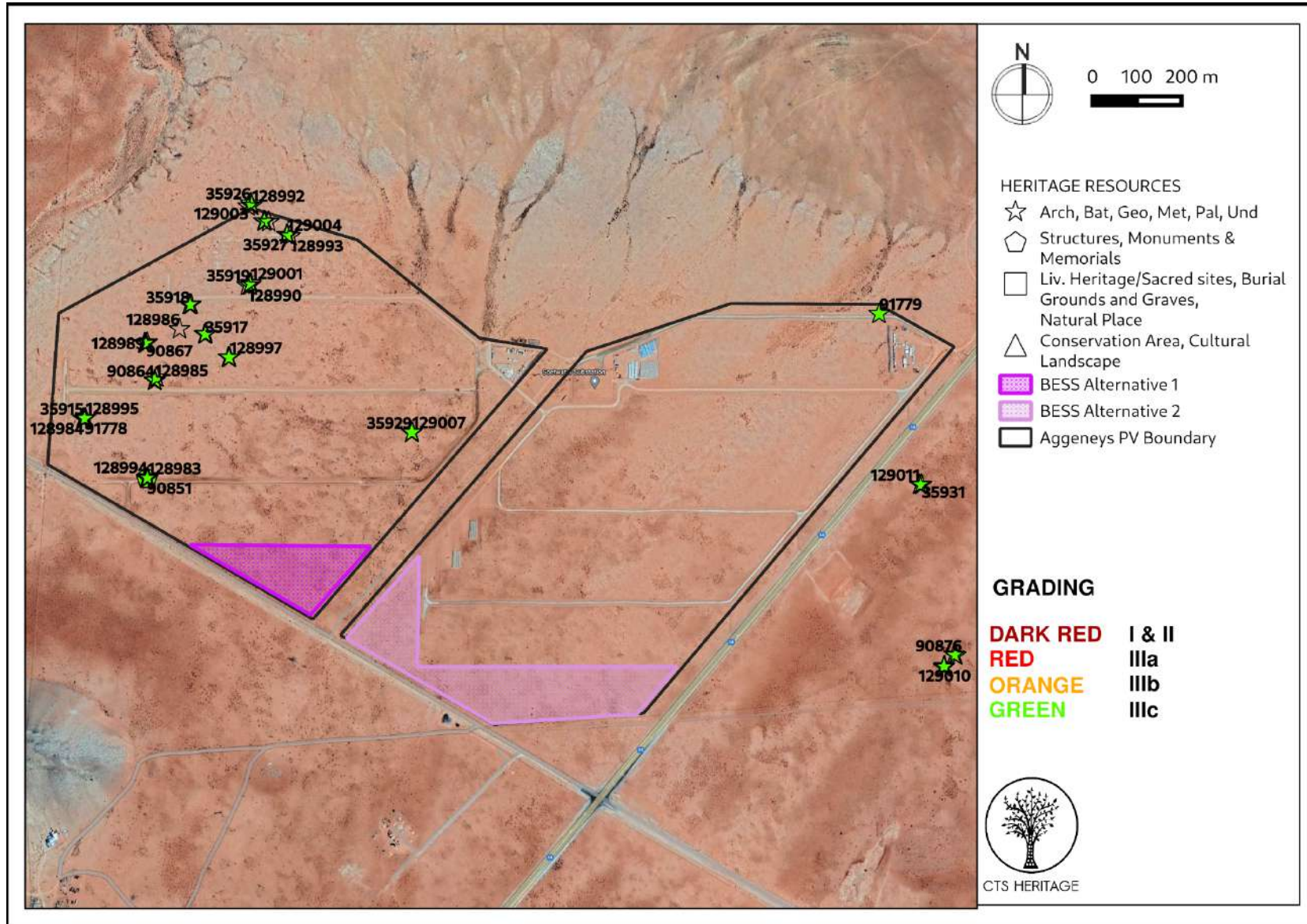


Figure 3. Heritage Resources Map. Heritage Resources previously identified within the study area, with SAHRIS Site IDs indicated in the insets below. Please See Appendix 4 for a full description of heritage resource types. Alternative 2 will be regarded as preferred location and Alternative 1 will be considered laydown area

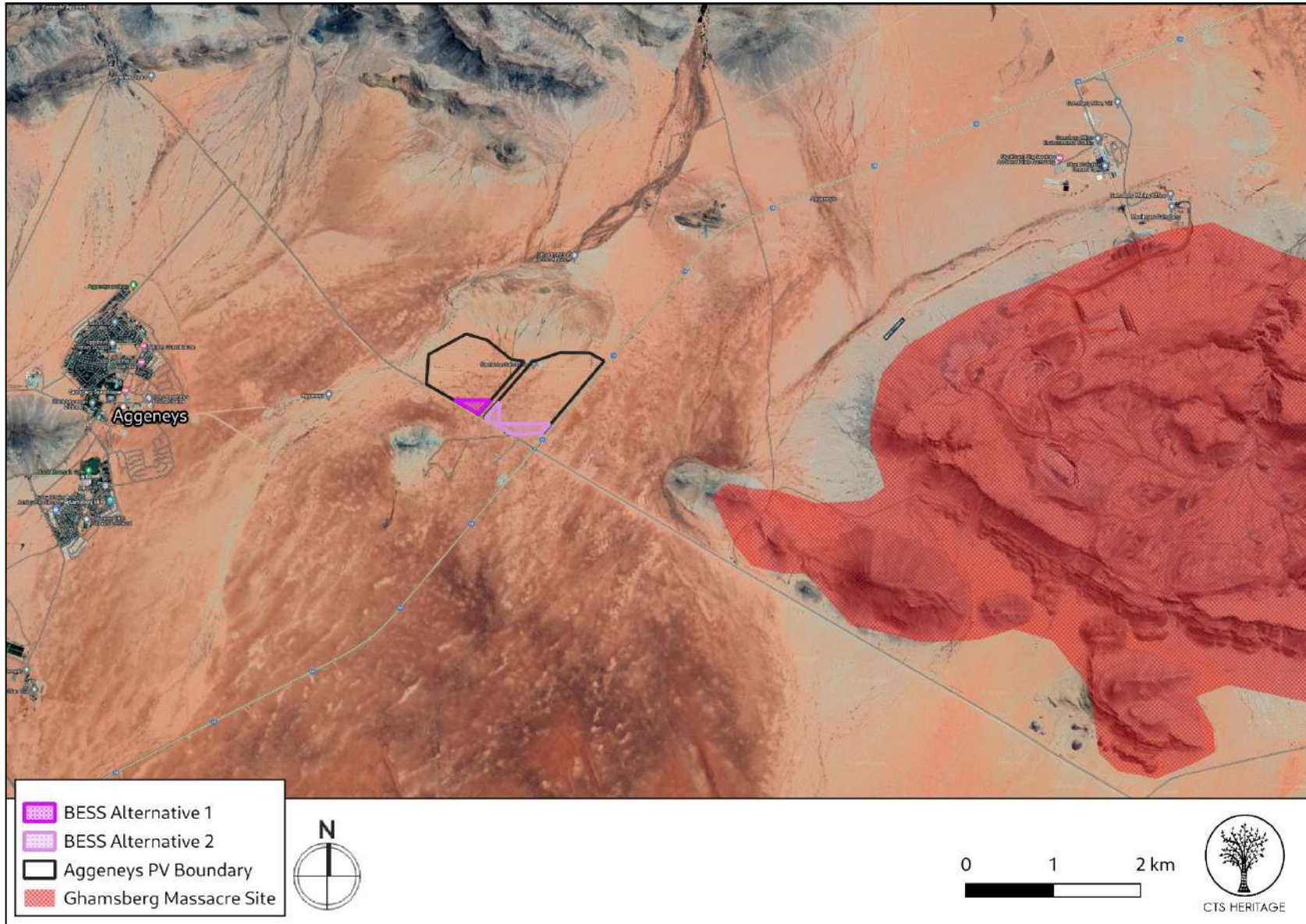


Figure 3a. Heritage Resources Map Location of proposed BESS alternatives relative to the Ghamsberg Massacre Site. Alternative 2 will be regarded as preferred location and Alternative 1 will be considered laydown area

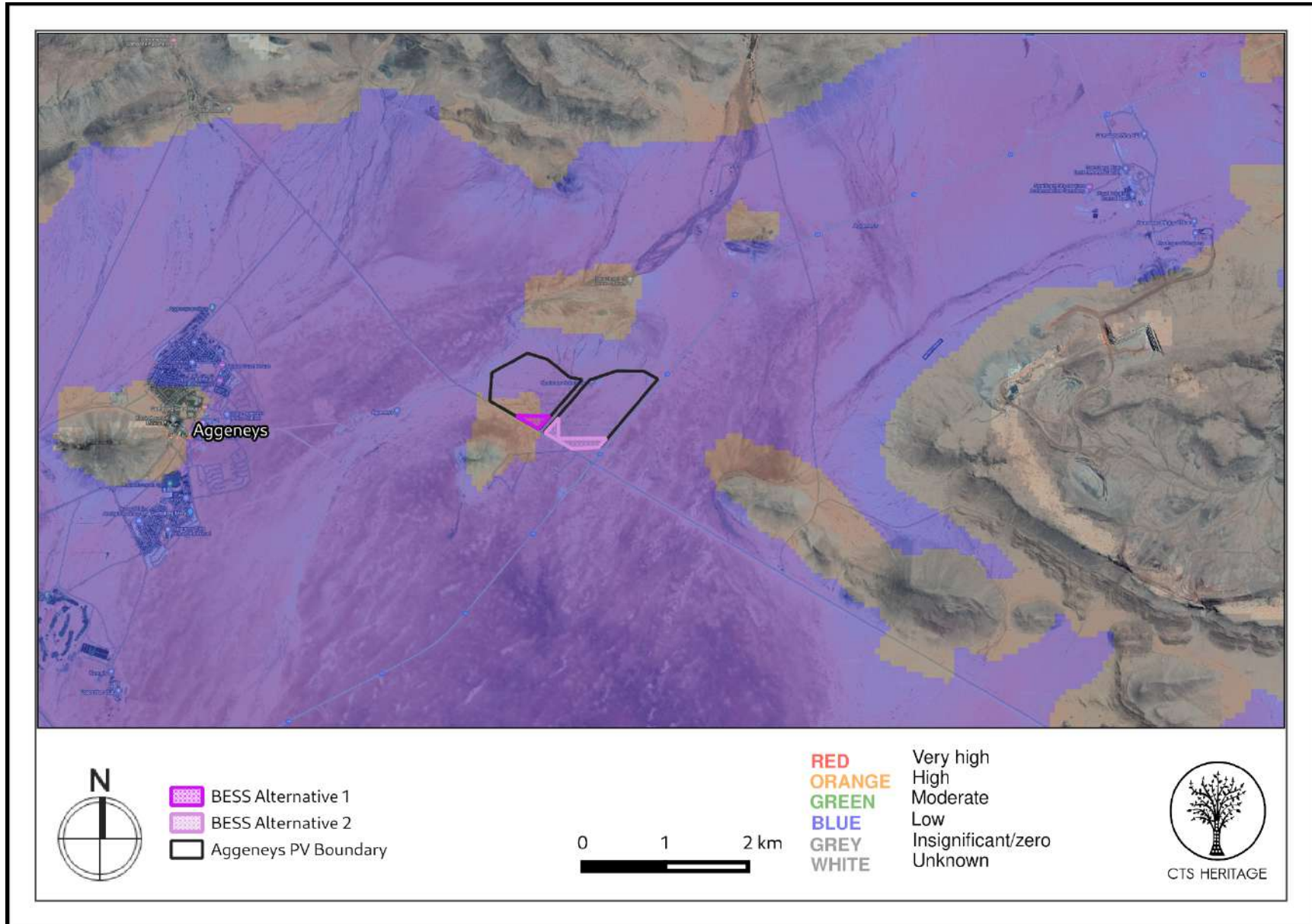


Figure 4a. Palaeosensitivity Map. Indicating fossil sensitivity underlying the study area. Please See Appendix 3 for a full guide to the legend.

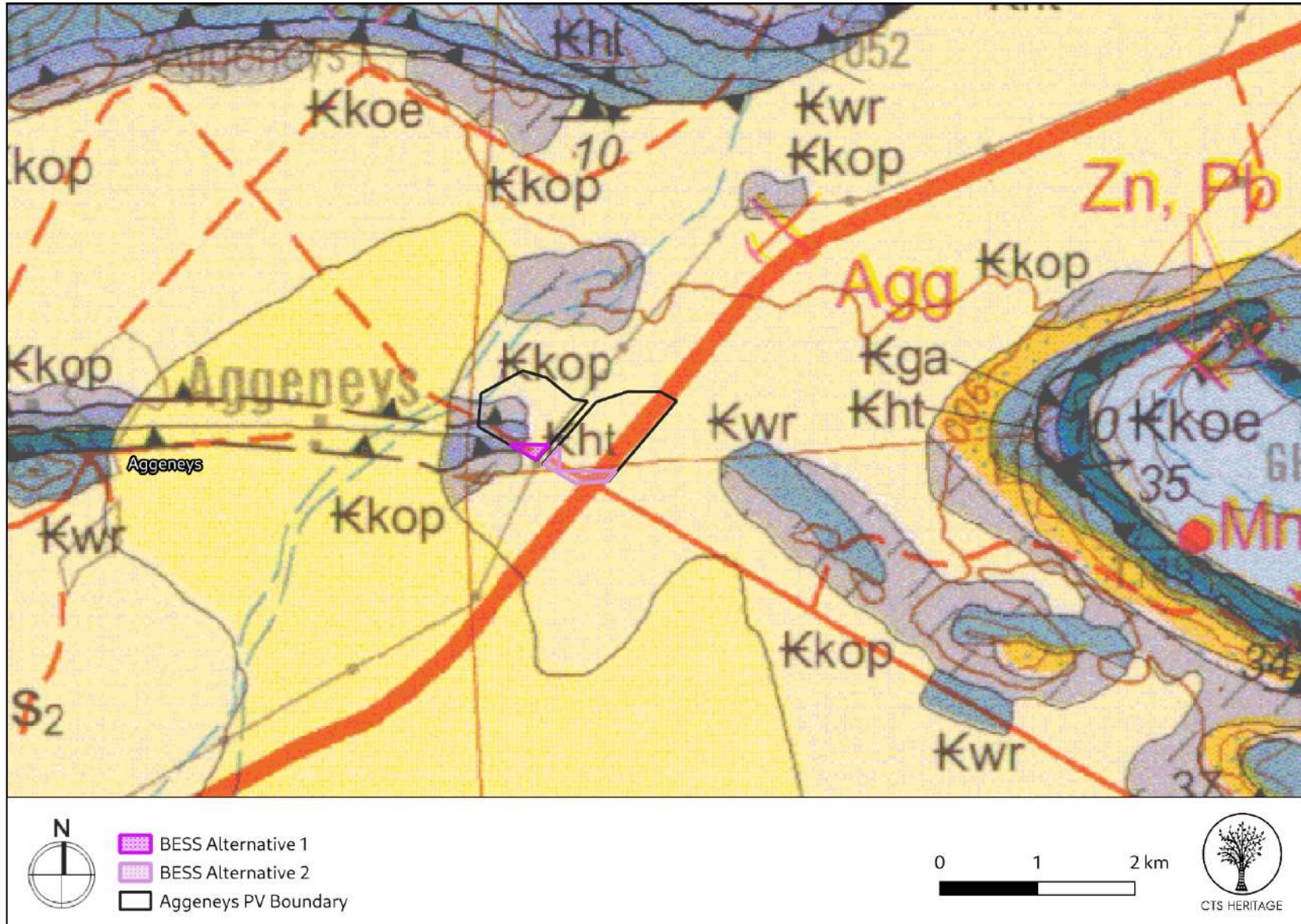


Figure 4b. Geology Map. Extract from the Council of GeoScience Geology Map tile 2918 for Pofadder indicating that the area proposed for development is underlain by Quaternary Sands



CTS HERITAGE

8. Desktop Heritage Assessment

Introduction

Aggeneys is a mining town established in 1976 on a farm of that name, situated between Pofadder and Springbok in the Northern Cape. Aggeneys 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 relict 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

The Aggeneys 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 3d) 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’).” The location of the massacre site relative to the proposed BESS alternatives is mapped in Figure 3a. Due to the approved PV infrastructure on site and the location of the development away from the Gamsberg, it is not anticipated that the proposed BESS development will negatively impact any significant cultural landscape heritage resources.

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 occurring in much lower densities and all known archaeological resources associated with rocky outcrops and dune 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) assessed the area proposed for development and 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

CTS Heritage

238 Queens Road, Simons Town

Email: info@ctsheritage.com Web: www.ctsheritage.com



significance on the site.”

The specific area proposed for development was also assessed by Orton (2015) who described the proposed development area as “very flat and the surface ranges from quite sandy to a mixture of sand and gravel. Larger lumps of quartzite in places hint at the likelihood that bedrock is just beneath the surface. There is generally very little vegetation and in places large expanses of open sand and gravel occur. In places there are small clumps of denser vegetation which occur in seasonally wetter areas. A few barely discernible ephemeral drainage lines were found to cross the site. Archaeological visibility on the ground surface was excellent. Orton (2015) found that “The archaeological resources present on the site are deemed to have very low cultural significance for their scientific value and are considered un-gradeable.” All of the heritage resources identified by both Orton (2015) and Webley and Halkett (2012) and located within the study area are mapped in Figure 3. Orton (2015) concludes by noting that “Only scattered archaeological artefacts of very low significance are present in the study area. No archaeological occupation sites were found. Because no significant archaeology is present in the study area no further archaeological studies are required. The development may proceed as planned within the proposed footprint. It is considered highly unlikely that any significant archaeological material would still be present in the area.” As such, it is not anticipated that the proposed BESS development will negatively impact on any significant archaeological resources.

Palaeontology

According to the SAHRIS Palaeosensitivity Map, the proposed development area is underlain by sediments of low to zero palaeontological sensitivity. The geology in this general area is largely overlain with Quaternary cover sands (of low palaeontological sensitivity). Towards the west, these coversands are underlain by granites of the Koeipoort Formation and quartzite of the Wortel Formation (of zero palaeontological sensitivity). The general area near to Aggeneys 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 not anticipated that the proposed BESS development will negatively impact on any significant palaeontological resources.

Conclusion

As noted above, Alternative 2 as mapped will be regarded as the preferred location and Alternative 1 will be considered a laydown area. The alternative locations proposed for the BESS infrastructure are all located within the previously assessed footprint of the approved Aggeneys PV Facility. The Aggeneys PV Facility is operational. Based on the information provided above, and the existing PV facility within which the BESS alternatives are located, it is not anticipated that the proposed development of the BESS in any of the alternative locations will have a negative impact on any archaeological, palaeontological, built environment or cultural landscape heritage resources. There is no preferred alternative BESS location from a heritage perspective.

RECOMMENDATION

Based on the information available, it is not likely that the proposed BESS development will impact on significant heritage resources and as such, it is recommended that no further heritage assessments are required.



CTS HERITAGE

APPENDIX 1

List of heritage resources within the development area

Site ID	Site no	Full Site Name	Site Type	Grading
35913	ARO006	Aggeneys Orlight 006	Artefacts	Grade IIIc
35914	ARO007	Aggeneys Orlight 007	Structures	Grade IIIc
35915	ARO008	Aggeneys Orlight 008	Artefacts	Grade IIIc
35916	ARO009	Aggeneys Orlight 009	Artefacts	Grade IIIc
35917	ARO010	Aggeneys Orlight 010	Artefacts	Grade IIIc
35918	ARO011	Aggeneys Orlight 011	Artefacts	Grade IIIc
35919	ARO012	Aggeneys Orlight 012	Artefacts	Grade IIIc
35925	ARO013	Aggeneys Orlight 013	Artefacts	Grade IIIc
35926	ARO014	Aggeneys Orlight 014	Artefacts	Grade IIIc
35927	ARO015	Aggeneys Orlight 015	Artefacts	Grade IIIc
35929	ARO017	Aggeneys Orlight 017	Artefacts	Grade IIIc
35930	ARO018	Aggeneys Orlight 018	Artefacts	Grade IIIc
35931	ARO019	Aggeneys Orlight 019	Archaeological	Grade IIIc
91778	ASEF001	Aggeneys Solar Energy Facility 001	Artefacts	Grade IIIc
91779	ASEF002	Aggeneys Solar Energy Facility 002	Artefacts	Grade IIIc
90852	AROA002	Aroams 57/ 002	Artefacts	Grade IIIc
90853	AROA003	Aroams 57/ 003	Artefacts	Grade IIIc

CTS Heritage

238 Queens Road, Simons Town

Email: info@ctsheritage.com Web: www.ctsheritage.com



CTS HERITAGE

90854	AROA004	Aroams 57/ 004	Artefacts	Grade IIIc
90856	AROA006	Aroams 57/ 006	Artefacts	Grade IIIc
90858	AROA008	Aroams 57/ 008	Artefacts	Grade IIIc
90859	AROA009	Aroams 57/ 009	Artefacts	Grade IIIc
90860	AROA010	Aroams 57/ 010	Artefacts	Grade IIIc
90862	AROA012	Aroams 57/ 012	Artefacts	Grade IIIc
90863	AROA013	Aroams 57/ 013	Artefacts	Grade IIIc
90864	AROA014	Aroams 57/ 014	Artefacts	Grade IIIc
90851	AROA001	Aroams 57/ 001	Artefacts	Grade IIIc
90861	AROA011	Aroams 57/ 011	Artefacts	Grade IIIc
90865	AROA015	Aroams 57/ 015	Artefacts	Grade IIIc
90866	AROA016	Aroams 57/ 016	Artefacts	Grade IIIc
90867	AROA017	Aroams 57/ 017	Artefacts	Grade IIIc
90868	AROA018	Aroams 57/ 018	Artefacts	Grade IIIc
90869	AROA019	Aroams 57/ 019	Artefacts	Grade IIIc
90870	AROA020	Aroams 57/ 020	Artefacts	Grade IIIc
90871	AROA021	Aroams 57/ 021	Artefacts	Grade IIIc
90872	AROA022	Aroams 57/ 022	Artefacts	Grade IIIc
90875	AROA025	Aroams 57/ 025	Artefacts	Grade IIIc
90876	AROA026	Aroams 57/ 026	Artefacts	Grade IIIc

CTS Heritage

238 Queens Road, Simons Town

Email: info@ctsheritage.com Web: www.ctsheritage.com



CTS HERITAGE

90877	AROA027	Aroams 57/ 027	Artefacts	Grade IIIc
90878	AROA028	Aroams 57/ 028	Archaeological	Grade IIIc
128983	2918BB/70MWSF/2012/L01	70MW Solar Facility-Slte L01	Artefacts	Ungraded
128984	2918BB/70MWSF/2012/L02	70MW Solar Facility-Slte L02	Artefacts	Ungraded
128985	2918BB/70MWSF/2012/L03	70MW Solar Facility-Slte L03	Artefacts	Ungraded
128986	2918BB/70MWSF/2012/L04	70MW Solar Facility-Slte L04	Artefacts	Ungraded
128989	2918BB/70MWSF/2012/L06	70MW Solar Facility-Slte L06	Artefacts	Ungraded
128990	2918BB/70MWSF/2012/L08	70MW Solar Facility-Slte L08	Artefacts	Ungraded
128991	2918BB/70MWSF/2012/L09	70MW Solar Facility-Slte L09	Artefacts	Ungraded
128992	2918BB/70MWSF/2012/L010	70MW Solar Facility-Slte L010	Artefacts	Ungraded
128993	2918BB/70MWSF/2012/L011	70MW Solar Facility-Slte L011	Artefacts	Ungraded
128994	2918BB/70MWSF/2012/001	70MW Solar Facility-Slte 001	Artefacts	Ungraded
128995	2918BB/70MWSF/2012/002	70MW Solar Facility-Slte 002	Artefacts	Ungraded
128996	2918BB/70MWSF/2012/003	70MW Solar Facility-Slte 003	Artefacts	Ungraded
128997	2918BB/70MWSF/2012/004	70MW Solar Facility-Slte 004	Artefacts	Ungraded
128998	2918BB/70MWSF/2012/005	70MW Solar Facility-Slte 005	Artefacts	Ungraded
128999	2918BB/70MWSF/2012/006	70MW Solar Facility-Slte 006	Artefacts	Ungraded
129000	2918BB/70MWSF/2012/007	70MW Solar Facility-Slte 007	Artefacts	Ungraded
129001	2918BB/70MWSF/2012/008	70MW Solar Facility-Slte 008	Artefacts	Ungraded
129002	2918BB/70MWSF/2012/009	70MW Solar Facility-Slte 009	Artefacts	Ungraded

CTS Heritage

238 Queens Road, Simons Town

Email: info@ctsheritage.com Web: www.ctsheritage.com



CTS HERITAGE

129003	2918BB/70MWSF/2012/010	70MW Solar Facility-Slte 010	Artefacts	Ungraded
129004	2918BB/70MWSF/2012/011	70MW Solar Facility-Slte 011	Artefacts	Ungraded
129007	2918BB/70MWSF/2012/014	70MW Solar Facility-Slte 014	Artefacts	Ungraded
129008	2918BB/70MWSF/2012/015	70MW Solar Facility-Slte 015	Artefacts	Ungraded
129010	2918BB/70MWSF/2012/016	70MW Solar Facility-Slte 016	Artefacts	Ungraded
129011	2918BB/70MWSF/2012/017	70MW Solar Facility-Slte 017	Artefacts	Ungraded

CTS Heritage

238 Queens Road, Simons Town

Email: info@ctsheritage.com Web: www.ctsheritage.com



CTS HERITAGE

APPENDIX 2

Reference List with relevant AIAs and PIAs

Heritage Impact Assessments				
Nid	Report Type	Author/s	Date	Title
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
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 PALAEOLOGICAL IMPACT ASSESSMENT Desktop Study
133532	Heritage Statement	David Morris	01/01/2010	Cultural Heritage Assessment: Gamsberg - Supplementary observations to a previous specialist report on archaeological resources.
145635	Heritage Impact Assessment Specialist Reports	David Morris	31/05/2013	Heritage Impact Assessment for Four Solar Energy Facilities on the Farm Zuurwater near Aggeneys, Northern Cape
145637	Palaeontological Specialist Reports	John E Almond	30/09/2011	Palaeontological studies
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
15982	PIA Phase 1	John Pether	23/04/2012	BRIEF PALAEOLOGICAL IMPACT ASSESSMENT PROPOSED ORLIGHT SA DEVELOPMENT OF A SOLAR PHOTOVOLTAIC POWER PLANT NEAR AGGENEYS, NORTHERN CAPE PROVINCE Portion 1 of Farm Aroams 57 RD
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

CTS Heritage

238 Queens Road, Simons Town

Email: info@ctsheritage.com Web: www.ctsheritage.com



CTS HERITAGE

330	HIA	Stefan de Kock	01/04/2012	DRAFT PHASE ONE INTEGRATED HERITAGE IMPACT ASSESSMENT COMPILED IN TERMS OF SECTION 38(8) OF THE NATIONAL HERITAGE RESOURCES ACT, 1999 (ACT 25 OF 1999) PROPOSED BOESMANLAND SOLAR FARM (75MW): PORTION (300HA) OF THE FARM ZUURWATER 62/6, NAMAQUALAND DISTRICT, NORTHERN CAPE PROVINCE
334	AIA Phase 1	Andrew B Smith	01/03/2012	ARCHAEOLOGICAL REPORT Proposed 75MW Solar Facility on Farm 62 Zuurwater, Aggeneys, Northern Cape Province
335254	Archaeological Specialist Reports	Jayson Orton	23/07/2015	Final Archaeological Survey for the Proposed Aggeneys Solar Energy Facility, Namakwaland Magisterial District, NC Province
337	PIA Phase 1	John E Almond	01/03/2012	RECOMMENDED EXEMPTION FROM FURTHER SPECIALIST PALAEOLOGICAL STUDIES OR MITIGATION: PROPOSED 75 MW SOLAR FACILITY ON FARM ZUURWATER 62 (PORTIONS 2 & 3) NEAR AGGENEYS, 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
4488	PIA Phase 1	Bruce Rubidge	06/08/2007	Palaeontological Desktop Study in Namaqualand
7871	AIA Phase 1	David Morris	04/12/2011	Sato Energy Holdings Zuurwater Photovoltaic energy generation facility development near Aggeneys, Northern Cape
9017	PIA Phase 1	John E Almond	28/09/2011	RECOMMENDED EXEMPTION FROM FURTHER SPECIALIST PALAEOLOGICAL STUDIES OR MITIGATION: Proposed Sato Energy Holdings (Pty) Ltd photovoltaic project on Portion 3 of Farm Zuurwater 62 near Aggeneys, 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

CTS Heritage

238 Queens Road, Simons Town

Email: info@ctsheritage.com Web: www.ctsheritage.com



CTS HERITAGE

APPENDIX 3 - Keys/Guides

Key/Guide to Acronyms

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

Full guide to Palaeosensitivity Map legend

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

CTS Heritage

238 Queens Road, Simons Town

Email: info@ctsheritage.com Web: www.ctsheritage.com



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 PALAEOLOGICAL SENSITIVITY

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

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

DETERMINATION OF THE COVERAGE RATING ASCRIBED TO A REPORT POLYGON

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

CTS Heritage

238 Queens Road, Simons Town

Email: info@ctsheritage.com Web: www.ctsheritage.com



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



CTS HERITAGE

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

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

Note:

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

APPENDIX 5 -Summary of Specialist Expertise

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

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

Since 2016, Jenna has drafted over 100 Heritage Impact Assessments throughout South Africa.

CTS Heritage

238 Queens Road, Simons Town

Email: info@ctsheritage.com Web: www.ctsheritage.com