

Heritage Report

Proposed extension of the EA granted for the proposed development of the Boesmanland Solar Farm near Aggeneys in the Northern Cape

SAHRA Case No: 56

Prepared by CTS Heritage



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**For
Savannah Environmental**

May 2023



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EXECUTIVE SUMMARY

1. Site Name:

Boesmanland Solar Farm

2. Location:

Immediately west of the Black Mountain Mine in Aggeneys

3. Locality Plan:

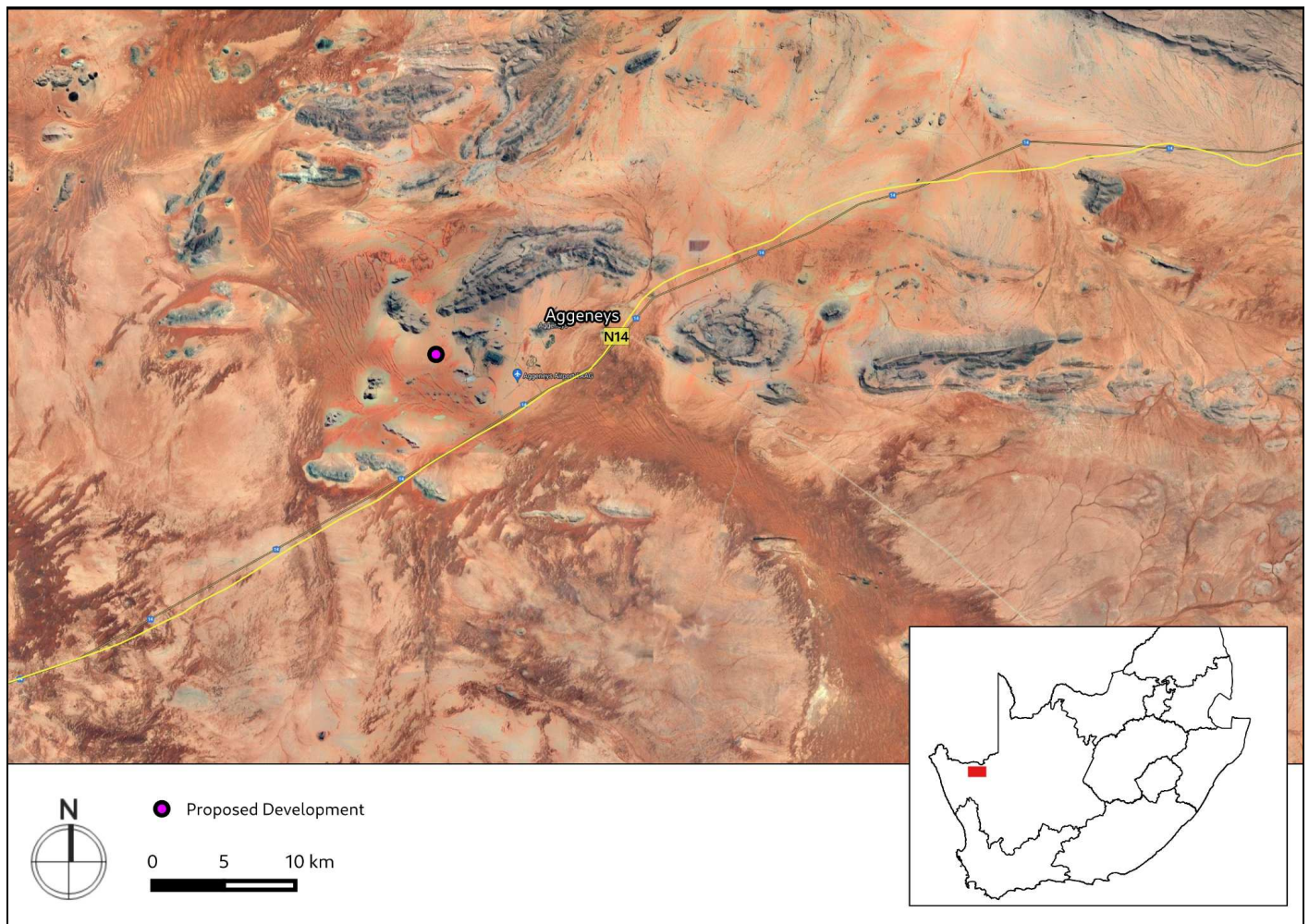
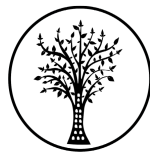


Figure 1: Location of the proposed development area



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4. Description of Proposed Development:

The proposed Boesmanland Solar Farm is to consist of solar photovoltaic panels with a feed-in capacity of 75MW (megawatts) Alternating Current (AC) / >90MW Direct Current (DC), as well as associated infrastructure, which will include:

- On-site substation
- Auxiliary buildings (administration / security, workshop, storage and ablution)
- Inverters, transformers and internal electrical reticulation (underground cabling);
- Access road and internal road network;
- Overhead electrical transmission line (to connect to existing Aggeneis Substation);
- Rainwater tanks
- Parameter fencing

EA for this project was granted in 2013 and is set to expire in 2023. This report is submitted in support of the extension of the EA for a period of a further 10 years.

5. Heritage Resources Identified:

No significant heritage resources were identified

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



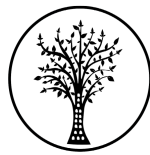
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Details of Specialist who prepared the HIA

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.

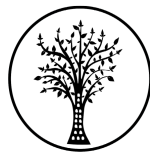
Since 2016, Jenna has drafted over 100 Heritage Impact Assessments throughout South Africa.



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1. INTRODUCTION

1.1 Background Information on Project

The proposed Boesmanland Solar Farm is to consist of solar photovoltaic panels with a feed-in capacity of 75MW (megawatts) Alternating Current (AC) / >90MW Direct Current (DC), as well as associated infrastructure, which will include:

- On-site substation
- Auxiliary buildings (administration / security, workshop, storage and ablution)
- Inverters, transformers and internal electrical reticulation (underground cabling);
- Access road and internal road network;
- Overhead electrical transmission line (to connect to existing Aggeneis Substation);
- Rainwater tanks
- Parameter fencing

EA for this project was granted in 2013 and is set to expire in 2023. This report is submitted in support of the extension of the EA for a period of a further 10 years.

1.2 Description of Property and Affected Environment

The proposed development of the Boesmanland solar PV project lies 6km west of the small mining town of Aggeneys in the Northern Cape and immediately adjacent to the Black Mountain Zinc Mine. Four prominent inselbergs surround the flat plain on which the PV facility is planned and are called Swartberg (northwest), Noeniepoort se Kop (northeast), Platjiesvlei se Kop (east) and Hoedkop (southwest). A connecting powerline route has also been planned which links the PV facility to the Aggeneys substation along the N14 highway.

A 220kV overhead powerline runs along the boundary of the PV area in a northwest-southeasterly direction and onto the substation. A single kraal and farm dam for sheep lies west of the development area closer to the slopes of Swartberg. The entire area is underlain by red Kalahari aeolian sands and is sparsely vegetated with grass and shrubs. The zinc mine dominates the landscape with very large industrial buildings, waste ponds and dams as the proposed PV facility is immediately to the west of the mine and the proposed grid connection traverses over ground between the mine and the substation.

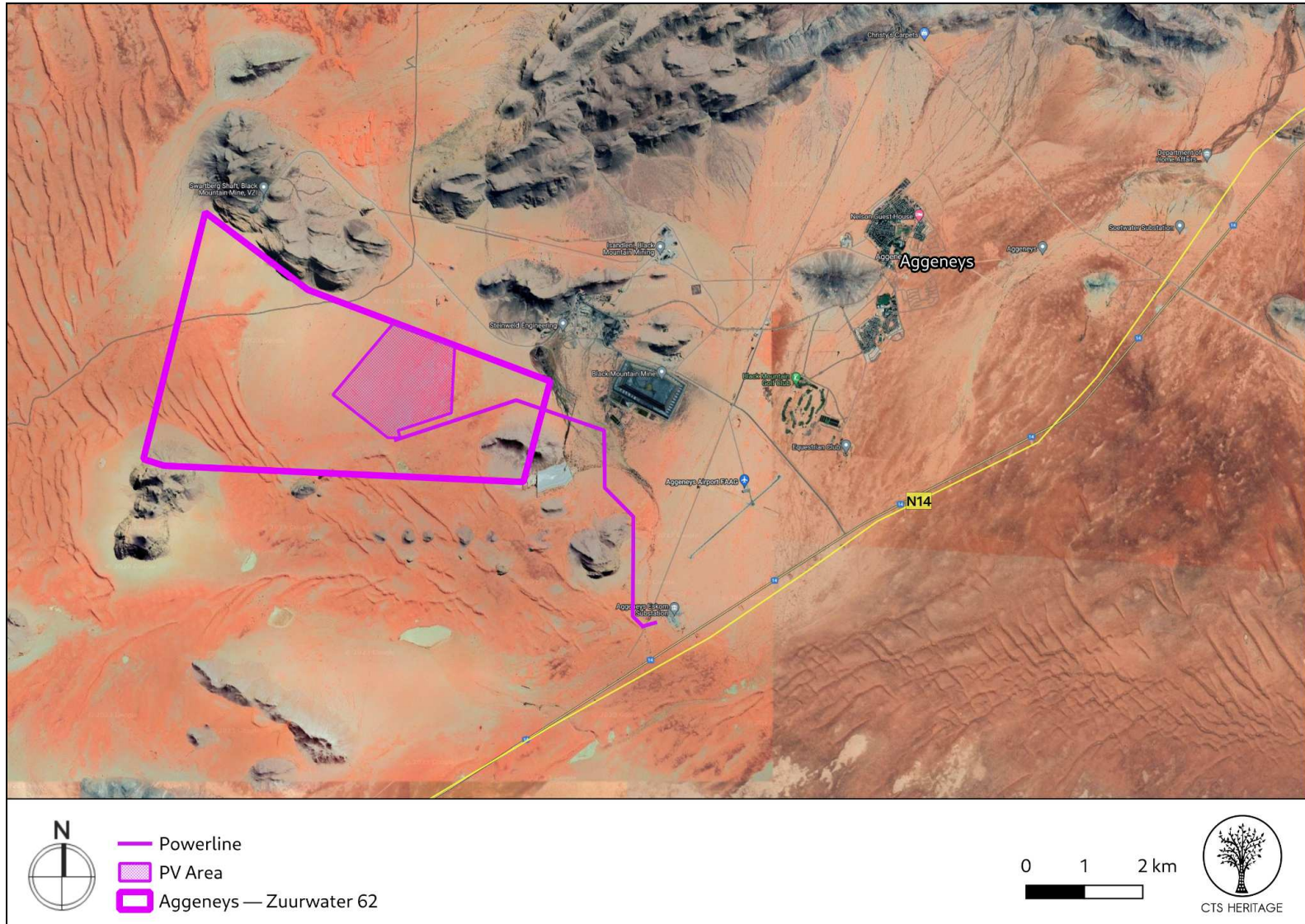


Figure 1.1: The proposed development area relative to Aggeneys.



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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 on 9 May 2023.
- 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.



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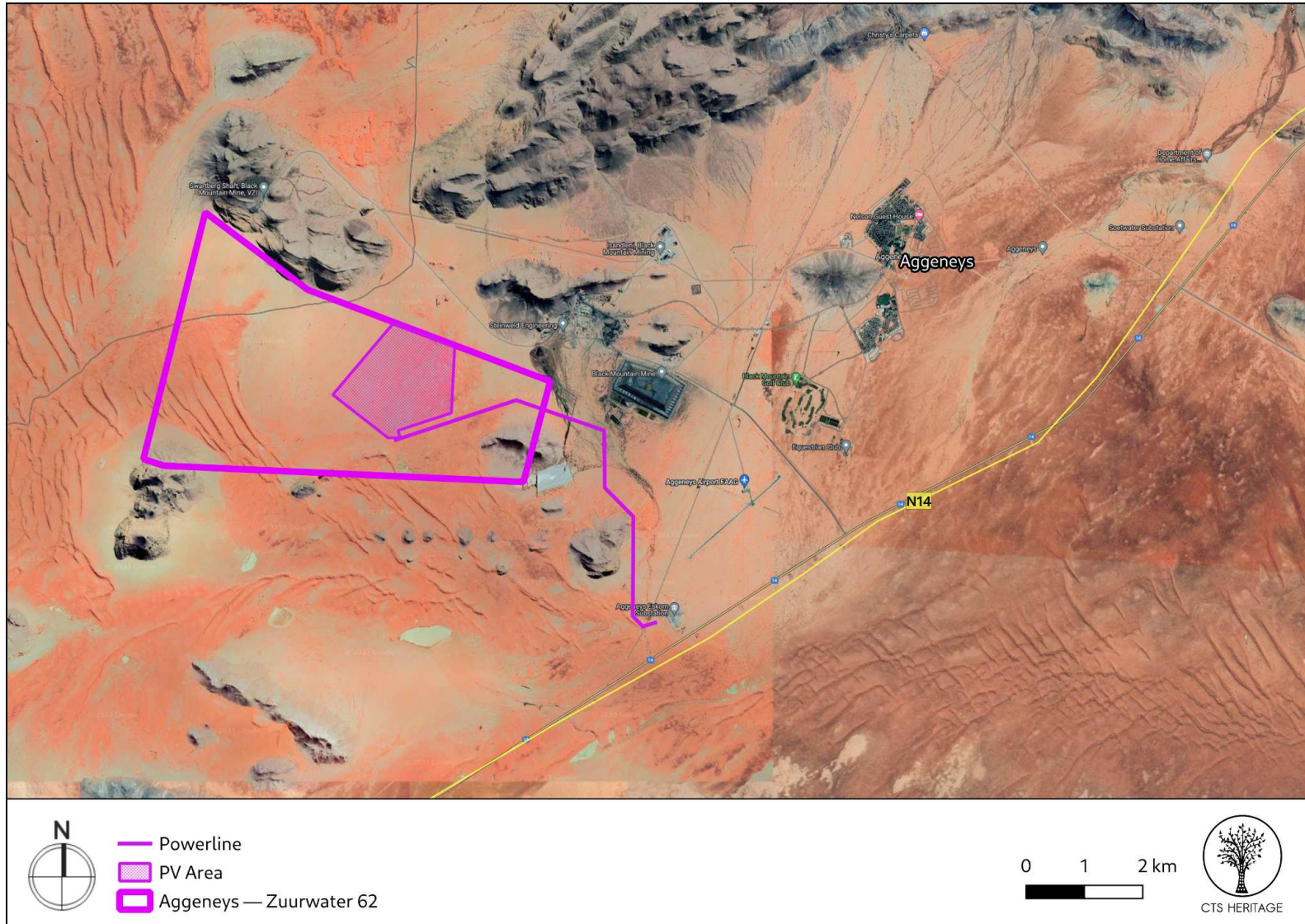
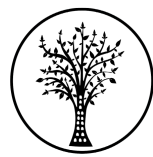


Figure 1.2: The proposed development area including the approved PV Facilities. .

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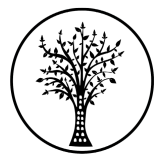
2.4 Constraints & Limitations

There was very little vegetation cover present on site and there were also previous surveys conducted on site for the same project. The field assessment supported the findings we made in our desktop screening study as well as previous field studies which found that this area has no heritage sensitivities.

2.5 Savannah Impact Assessment Methodology

Direct, indirect and cumulative impacts of the issues identified through the Basic Assessment process were assessed in terms of the following criteria:

- The nature, which shall include a description of what causes the effect, what will be affected and how it will be affected.
- The extent, wherein it will be indicated whether the impact will be local (limited to the immediate area or site of development) or regional, and a value between 1 and 5 will be assigned as appropriate (with 1 being low and 5 being high).
- The duration, wherein it will be indicated whether:
 - The lifetime of the impact will be of a very short duration (0 – 1 years) – assigned a score of 1.
 - The lifetime of the impact will be of a short duration (2 – 5 years) – assigned a score of 2.
 - Medium-term (5 – 15 years) – assigned a score of 3.
 - Long term (> 15 years) – assigned a score of 4.
 - Permanent – assigned a score of 5.
- The consequences (magnitude), quantified on a scale from 0 – 10, where 0 is small and will have no effect on the environment, 2 is minor and will not result in an impact on processes, 4 is low and will cause a slight impact on processes, 6 is moderate and will result in processes continuing but in a modified way, 8 is high (processes are altered to the extent that they temporarily cease), and 10 is very high and results in complete destruction of patterns and permanent cessation of processes.
- The probability of occurrence, which shall describe the likelihood of the impact actually occurring. Probability will be estimated on a scale of 1 – 5, where 1 is very improbable (probably will not happen), 2 is improbable (some possibility, but low likelihood), 3 is probable (distinct possibility), 4 is highly probable (most likely) and 5 is definite (impact will occur regardless of any prevention measures).
- The significance, which shall be determined through a synthesis of the characteristics described above and can be assessed as low, medium or high.
- The status, which will be described as either positive, negative or neutral.
- The degree to which the impact can be reversed.
- The degree to which the impact may cause irreplaceable loss of resources.
- The degree to which the impact can be mitigated.



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The significance is calculated by combining the criteria in the following formula:

$$S = (E + D + M) \times P$$

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

The significance weightings for each potential impact are as follows:

- < 30 points: Low (i.e. where this impact would not have a direct influence on the decision to develop in the area).
- 30 – 60 points: Medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated).
- > 60 points: High (i.e. where the impact must have an influence on the decision process to develop in the area).

In the previous heritage assessment completed for this project in 2012, no impact tables were drafted for the development. We have included impact tables in section 5 below.



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3. HISTORY AND EVOLUTION OF THE SITE AND CONTEXT

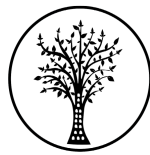
3.1 Desktop Assessment

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 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 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

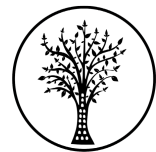


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the proposed development area - Figure 3d) being likely massacre sites”. This has resulted in moves to include the Gamsberg in a potential /Xam and Khomani Heartland World Heritage Site. According to Morris (2013), “the southern/south eastern side 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 proposed PV facility is located almost 20km from the location of the massacre site. 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 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 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). Smith (2012, SAHRIS NID 334) assessed the area proposed for development here and noted that “the flat, open terrain has a low archaeological signature and that there are no inhibitors from an archaeological perspective, preventing the solar facility from proceeding with construction.” As per the HIA completed by De Kock (2012) for this development, “The distinct lack of any concentration of cultural material across the property implies that this is not a rich archaeological environment, and would be similar to the observations by Beaumont et al. (1995), who state that in this dry environment; “Surveys of large areas... have failed to yield any signs of human occupation, except around granite inselbergs extruding above the peneplain.”



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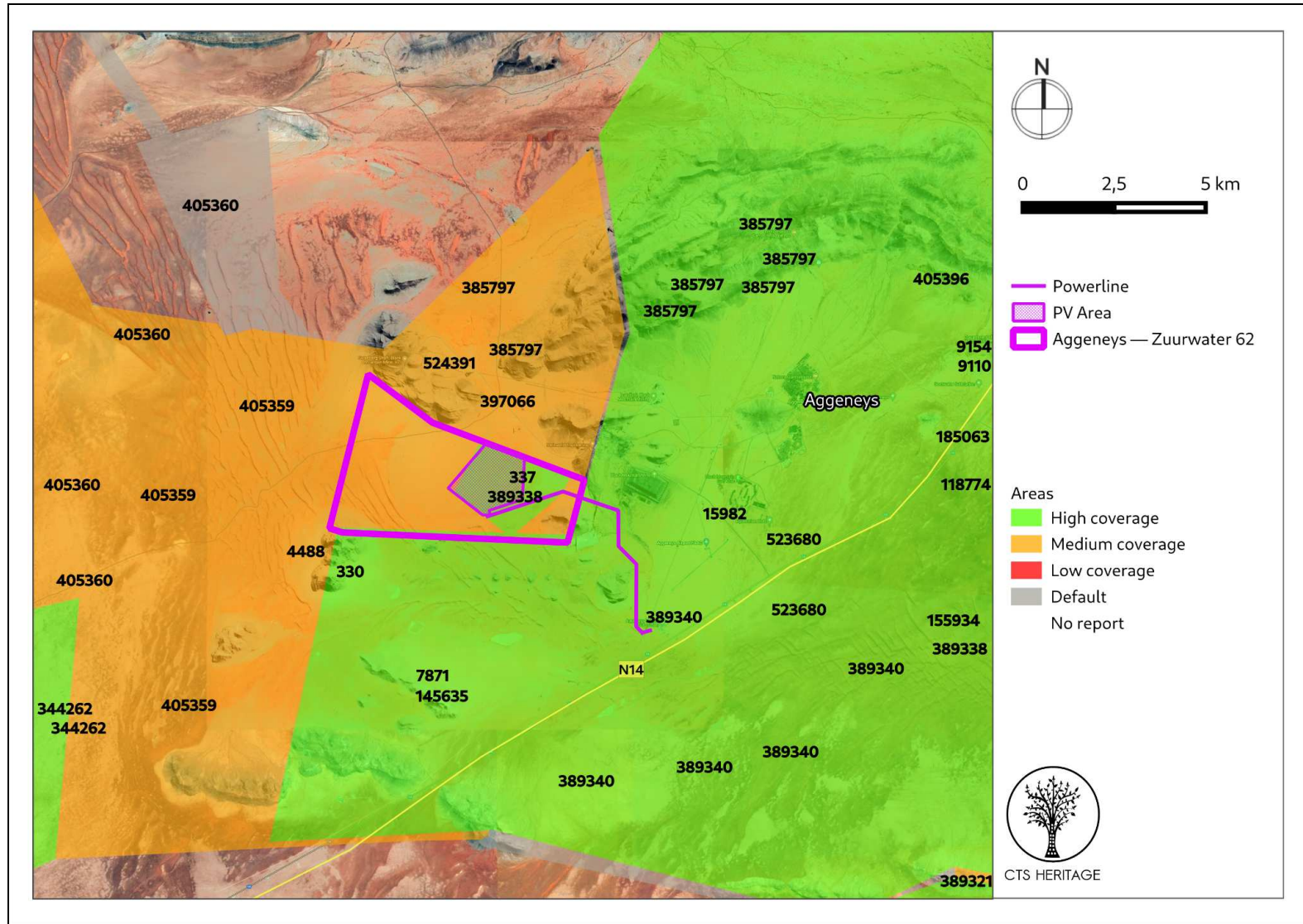
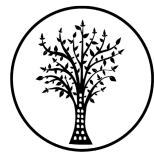


Figure 2.3. Previous HIAs Map. Previous Heritage Impact Assessments covering the proposed development area with SAHRIS NIDS indicated. Please see Appendix 2 for a full reference list.



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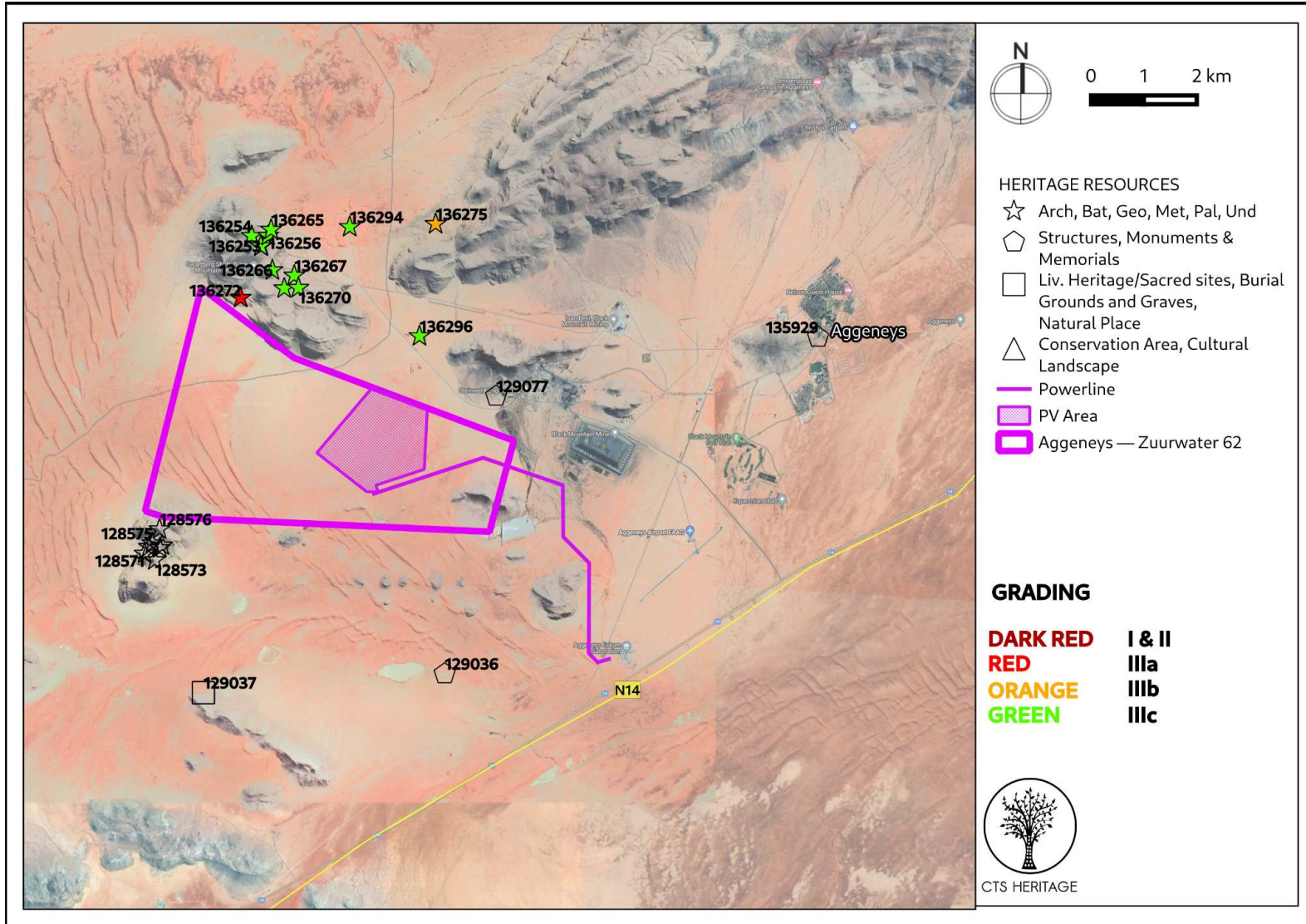
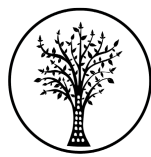


Figure 2.4. Heritage Resources Map. Heritage Resources previously identified within the study area, with SAHRIS Site IDs indicated in the insets below. Please See Appendix 4 for full description of heritage resource types.



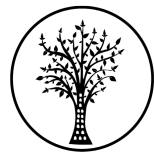
Palaeontology

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.”

Dr Almond (2012) drafted a letter of recommendation for exemption from further palaeontological studies for the original EA process followed for this development. Almond (2012) notes that “the proposed development site is underlain by a range of unconsolidated superficial sediments of the Late Caenozoic age including Quaternary to Recent sands and gravels of probably fluvial or sheet wash origin that are locally overlain; and perhaps also underlain, by unconsolidated aeolian sands of the Quaternary Gordonia Formation (Kalahari Group).” Almond (2012) concludes that most of the study area is underlain by unfossiliferous metamorphic basement rocks or mantled by superficial sediments of low palaeontological sensitivity and extensive deep excavations are unlikely to be involved in this sort of solar park project.” As such, it is not anticipated that the proposed 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



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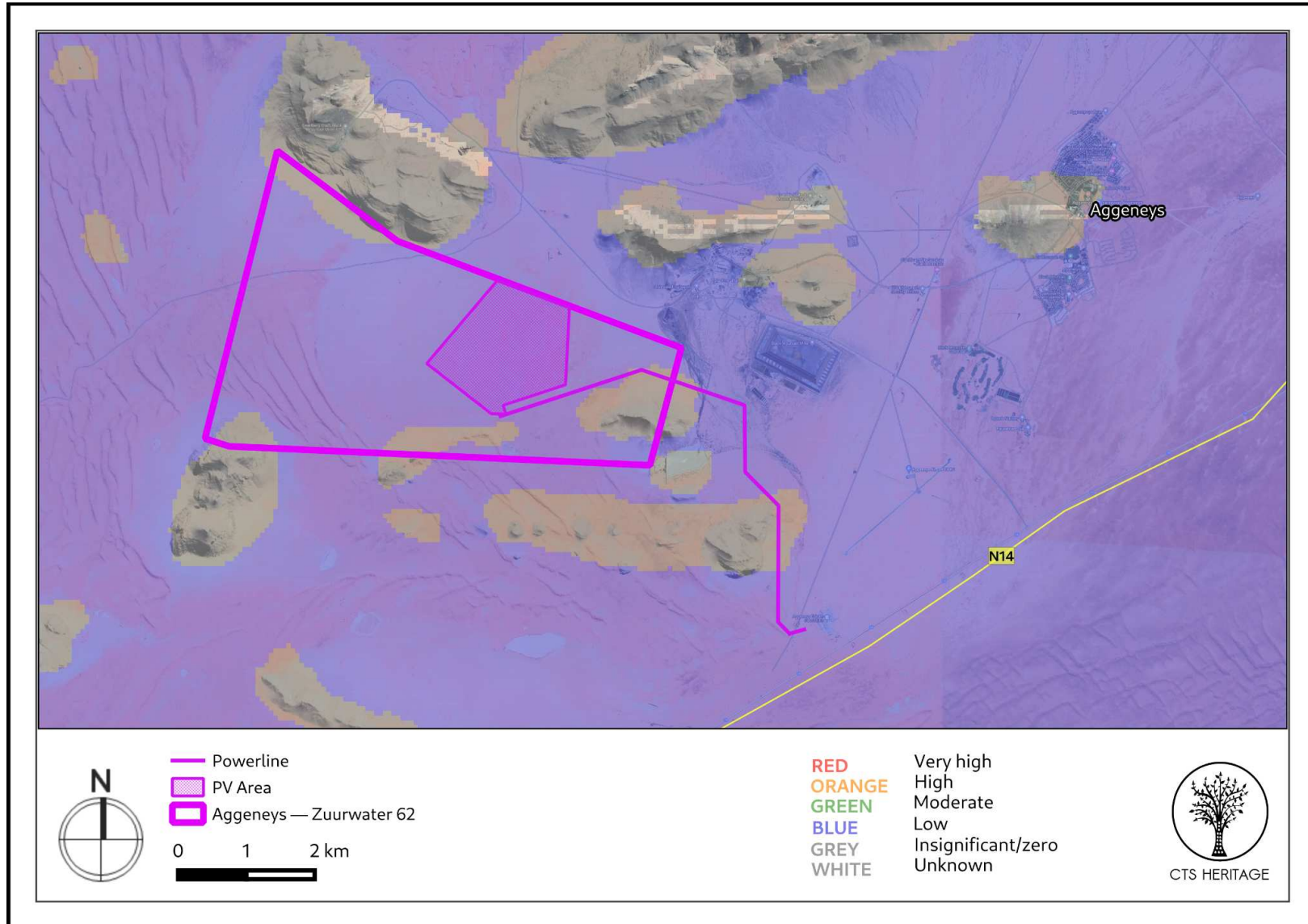


Figure 3.1: Palaeontological sensitivity of the proposed development area (low sensitivity)



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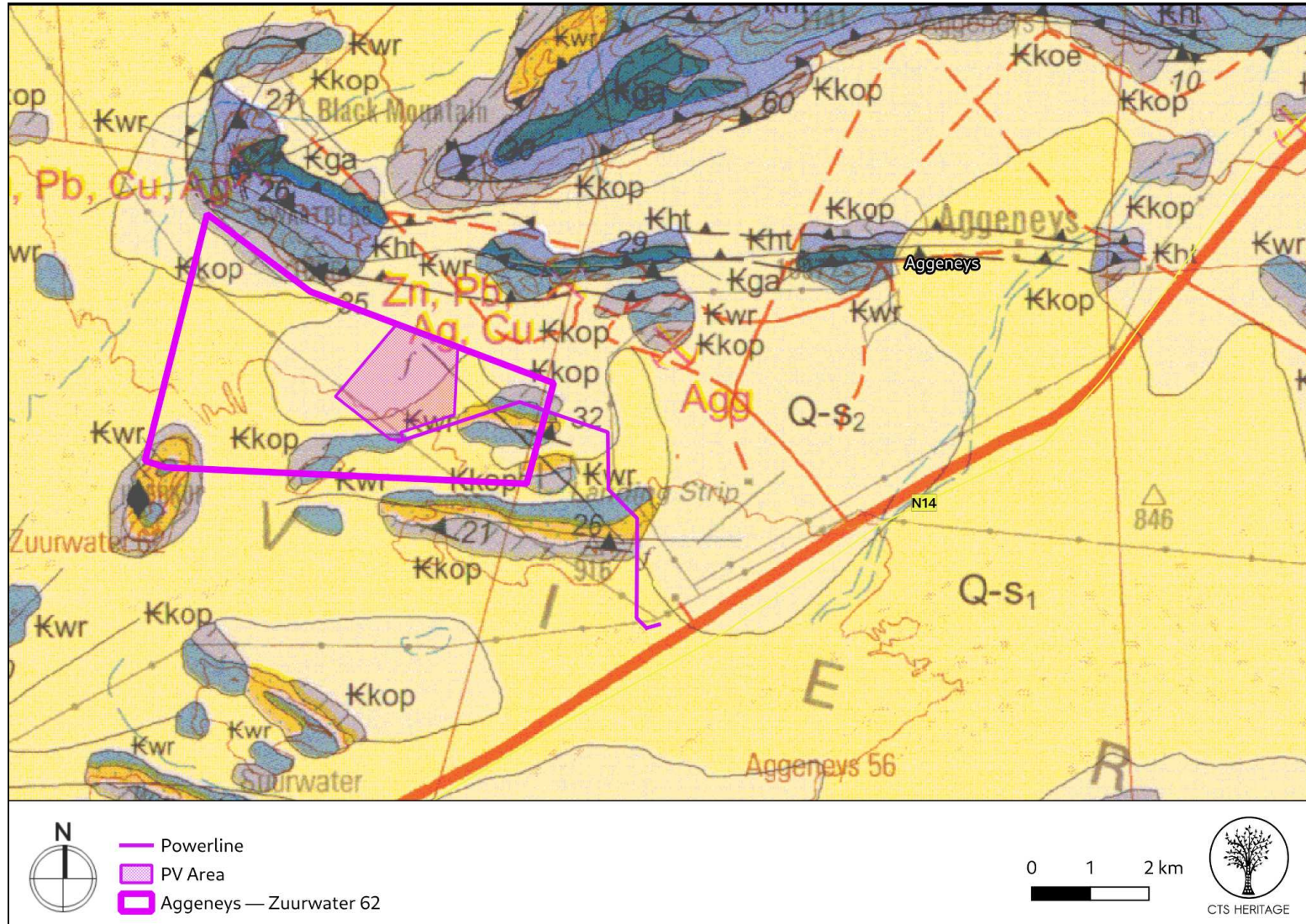


Figure 3.2. Geology Map. Extract from the CGS 2918 Pofadder Map indicating that the development area is underlain by sediments Q-s₁ and Q-s₂ (Quaternary Sands) with obvious granite intrusions that form part of the Aggeneys sub-group located outside of the project area



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4. IDENTIFICATION OF HERITAGE RESOURCES

4.1 Summary of findings of Specialist Reports

Cultural Landscape Impacts

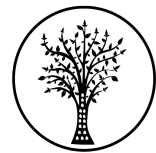
As noted above, Webley and Halkett (2012, SAHRIS NID 9110) note that appreciation has started emerging regarding the “genocide against the Bushmen in this area, with certain mountainous areas (like Gamsberg and Namiesberg located within close proximity to the proposed development area - Figure 3d) being 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 development is located well away (more than 20km) from this site, 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 May 2023 to verify that the previous assessment by Smith in 2012 was still valid and to see whether any additional observations could be made that could add to the body of work done on this site.. The area proposed for the solar PV facility is located on a level plain between four inselbergs covered by Kalahari sands. Three archaeological observations were made on site in addition to the twelve made by Smith (2012) in the original survey of the PV development. These consisted of various quartz and quartzite flakes, cores and debitage associated with the abundant availability of source material in the area, particularly as one moves closer to the outcrops. The density of archaeological material on the plain was very low and given the high aridity and lack of permanent water this was not surprising in this context. No further recording of the archaeological material is recommended before the project is approved.



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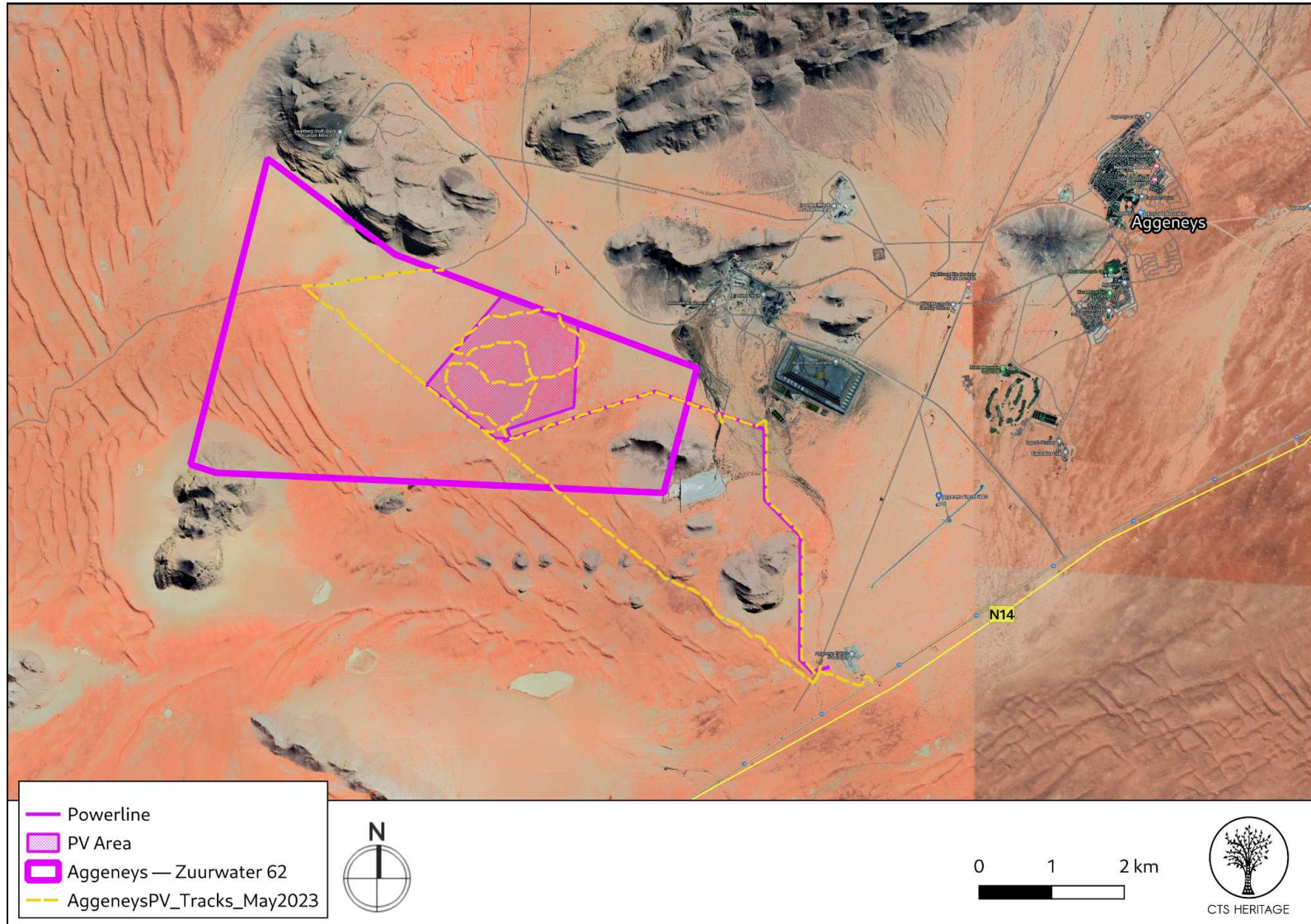


Figure 4. Track paths of archaeologist during the field assessment

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Figure 5.1 View of the 200kV overhead powerline route from the N14 highway



Figure 5.2 In the proposed ohl route showing the sparse vegetation cover.



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Figure 5.3 Deep Kalaharis sands bank up in places into dune cordons. Kranskop to the right.



Figure 5.4 View of Black Mountain Mine in the distance along the proposed ohl route.



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Figure 5.5 View in the PV area of the 200kV ohl, Platjiesvlei se Kop and the level plain.



Figure 5.6 View of Swartberg and the PV area.



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Figure 5.7 View of Swartberg and the PV area



Figure 5.8 View of Swartberg and the existing ohl in the PV area.

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4.2 Heritage Resources identified

The area proposed for the PV development was surveyed by Smith in 2012, and again in 2023 by CTS Heritage. The results of both field assessments are reflected in the table below and in Figure 7.

Table 2: Observations identified during the field assessment completed in 2023 and 2012 (by Smith)

Site Name	Description	Type	Period	Density	Co-ordinates		Grading	Mitigation
001	Quartz cores, flakes, mostly without retouch	Artefacts	MSA	10 to 30	-29.289149	18.795711	NCW	NA
002	Quartz core, point	Artefacts	MSA	0 to 5	-29.278612	18.79291	NCW	NA
003	Quartz point, hinge termination, LSA	Artefacts	LSA	0 to 5	-29.268199	18.753509	NCW	NA
WP122	MSA? quartzite flake	Artefacts	MSA	0 to 5	-29.25921197	18.77754836	NCW	NA
WP123	Quartzite flake	Artefacts	MSA	0 to 5	-29.25806886	18.77380792	NCW	NA
WP124	MSA flake on edge of small pan	Artefacts	MSA	0 to 5	-29.25588572	18.76385911	NCW	NA
WP125	Quartz small disc core/scrapper	Artefacts	MSA	0 to 5	-29.2559245	18.76363447	NCW	NA
WP126	ESA quartz core/axe	Artefacts	MSA	0 to 5	-29.25587172	18.76355536	NCW	NA
WP127	Hammerstone	Artefacts	MSA	0 to 5	-29.25937944	18.75667064	NCW	NA
WP130	Ostrich eggshell fragments + quartz core axe	Artefacts	MSA	0 to 5	-29.27216278	18.75173678	NCW	NA
WP131	Quartz flakes on deflation surface	Artefacts	MSA	0 to 5	-29.26357744	18.76809717	NCW	NA
WP151	Quartz axe introduced in road fill	Artefacts	MSA	0 to 5	-29.28606878	18.7757035	NCW	NA
WP152	Quartz flake in road fill	Artefacts	MSA	0 to 5	-29.28485222	18.77396133	NCW	NA
WP153	Quartz flake in road fill	Artefacts	MSA	0 to 5	-29.28463689	18.77354389	NCW	NA
WP154	Quartz tools on both sides of gate (road fill)	Artefacts	MSA	0 to 5	-29.28439264	18.77323981	NCW	NA



Figure 6.1: Observation 001



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Figure 6.2: Observation 002



Figure 6.3: Observation 003

4.3 Mapping and spatialisation of heritage resources

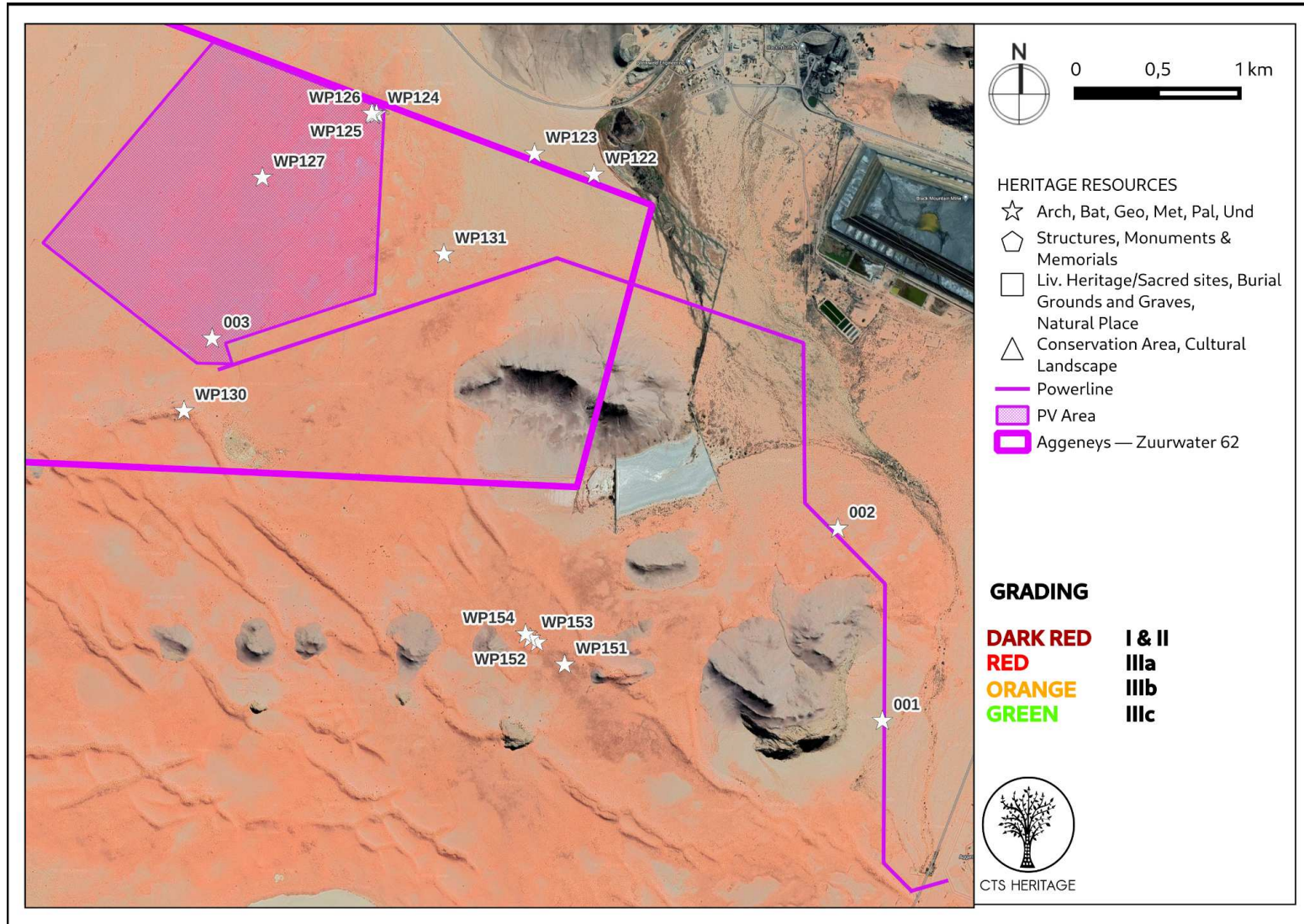


Figure 7: Heritage resources in the vicinity of the proposed development



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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 in 2023 were determined to be not conservation-worthy.

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). Almond (2012) drafted a letter of recommendation for exemption from further palaeontological studies for the original EA process followed for this development. Almond (2012) notes that “the proposed development site is underlain by a range of unconsolidated superficial sediments of the Late Caenozoic age including Quaternary to Recent sands and gravels of probably fluvial or sheet wash origin that are locally overlain; and perhaps also underlain, by unconsolidated aeolian sands of the Quaternary Gordonia Formation (Kalahari Group).” Almond (2012) concludes that most of the study area is underlain by unfossiliferous metamorphic basement rocks or mantled by superficial sediments of low palaeontological sensitivity and extensive deep excavations are unlikely to be involved in this sort of solar park project.” As such, it is not anticipated that the proposed development will negatively impact on any significant palaeontological resources.

Significant massacre sites are located in the broader area of 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.

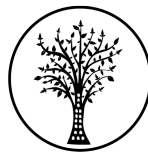
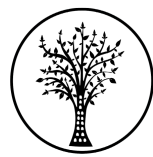


Table 4.1 Impacts of the proposed development to heritage resources

NATURE: The construction phase of the project will require excavation, which may impact on heritage resources if present.			
		Without Mitigation	With Mitigation
MAGNITUDE	M (3)	No heritage resources of significance were identified within the development footprint, however some were identified within the broader area	M (3) No heritage resources of significance were identified within the development footprint, however some were identified within the broader area
DURATION	H (5)	Where an impact to a resource occurs, the impact will be permanent.	H (5) Where an impact to resources occurs, the impact will be permanent.
EXTENT	L (1)	Localised within the site boundary	L (1) Localised within the site boundary
PROBABILITY	L (1)	It is unlikely that significant heritage resources will be impacted	L (1) It is unlikely that significant heritage resources will be impacted
SIGNIFICANCE	L	(3+5+1)x1=9	L (3+5+1)x1=9
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	Unlikely	L Unlikely
CAN IMPACTS BE MITIGATED		Yes	Yes
MITIGATION:			
<ul style="list-style-type: none"> - 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. 			
RESIDUAL RISK:			
Should any significant resources be impacted (however unlikely) residual impacts may occur, including a negative impact due to the loss of potentially scientific cultural resources.			



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5.2 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 associated 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.

5.3 Site Sensitivity Verification

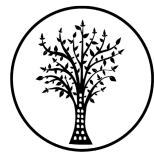
According to the DFFE Screening Tool analysis, the development area has LOW levels of sensitivity for impacts to palaeontological heritage and LOW levels of sensitivity for impacts to archaeological and cultural heritage resources. The results of this assessment in terms of site sensitivity are summarised below:

- The cultural value of the broader area has some significance in terms of its history associated with the Gamsberg Massacre sites (MODERATE)
- Some significant archaeological resources were identified within the broader area, especially on the Koppies (MODERATE)
- No highly significant palaeontological resources were identified within the development area, and the geology underlying the development area is not sensitive for impacts to significant fossils (LOW)

As per the findings of this assessment, and its supporting documentation, the outcome of the sensitivity verification confirms the results of the DFFE Screening Tool for Palaeontology and disputes the results of the screening tool for archaeology and cultural heritage - this should be considered to be MODERATE. This evidence is provided in the body of this report and in the appendices.

5.4 Statement on environmental processes impacting on archaeological and palaeontological heritage

Archaeological and palaeontological heritage resources reflect the environments of the deeper past and are unlikely to change significantly in as short a geological time span as 10 years. Some changes to heritage resources may result from processes of erosion and deflation but, in this particular ecological setting, would likely represent heavily disturbed contexts and consequently would be of limited scientific/heritage value.



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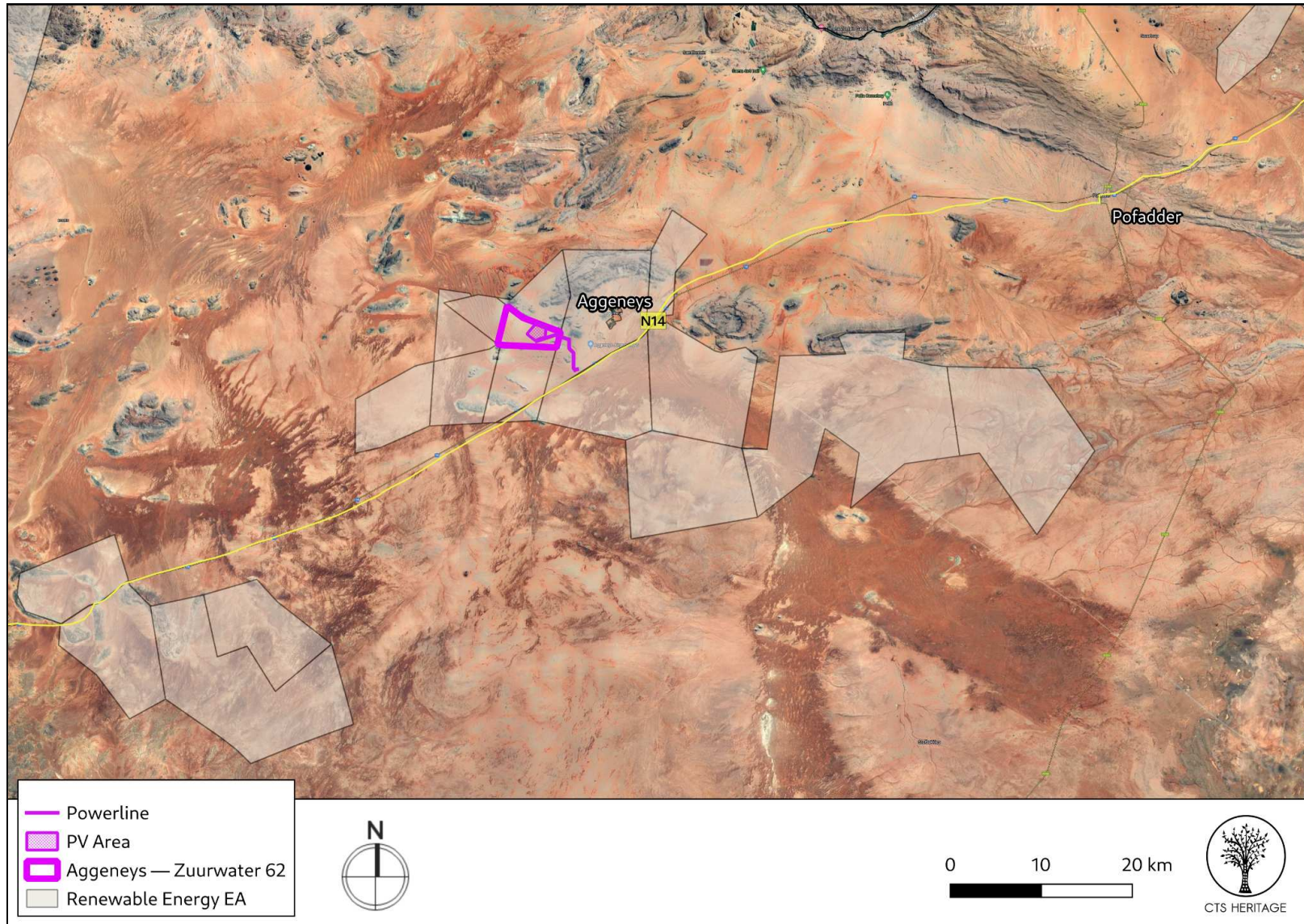


Figure 8: Approved REF projects within 20km of the proposed development area

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5.5 Validity Extension

In SAHRA's response to the 2012 HIA, they note that:

"SAHRA notes the possible sensitivity of the general area due to its being a potential site of historic massacres of San people. As such, it is possible that the area could be graded as a Provincial Heritage Site, which would have implications for development. This factor notwithstanding, the proposed development is in an area already disturbed by mining activity, which is situated between the development site and the Aggeneys mountain.

As the heritage resources in this area are of low significance, and are unlikely to be severely impacted by this development, the SAHRA Archaeology, Palaeontology and Meteorites Unit has no objection to the development (in terms of the archaeological and palaeontological components of the heritage resources) on condition that, if any new evidence of archaeological sites or artefacts, palaeontological fossils, graves or other heritage resources are found during development, construction or mining, SAHRA and an archaeologist and/or palaeontologist, depending on the nature of the finds, must be alerted immediately."

In light of the above, there is no heritage objection to granting the extension to the validity to develop the Boesmanland PV Facility and grid connection based on the current site conditions on condition that the recommendations made in the original HIA completed for this project (De Kock et al, 2012) are adhered to.

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 overall heritage sensitivity and it is not foreseen that the proposed development will impact on significant heritage resources.

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 or the previous assessment (2012). Therefore, there is no objection, from a heritage perspective, to the proposed extension of the EA for this proposed development.

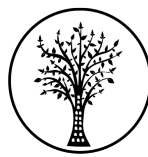


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8. RECOMMENDATIONS

There is no objection to the proposed extension of the EA for this development on heritage grounds and the following is recommended:

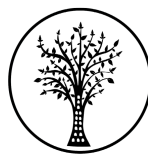
- The recommendations included in De Kock (2012) are implemented
- Should any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of 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



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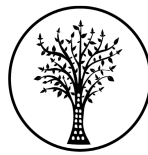
9. REFERENCES

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



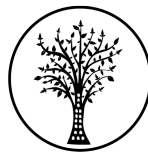
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		Halkett		SOLAR POWER PLANT ON PORTION 1 OF THE FARM AROAMS 57, NORTHERN CAPE PROVINCE
185156	Heritage Impact Assessment Specialist Reports	Timothy Hart, Lita Webley, Dave Halkett, Natalie Kendrick	24/11/2014	Heritage Impact Assessment for the Proposed 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



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APPENDICES



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APPENDIX 1: Heritage Screening Assessment



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HERITAGE SCREENER

CTS Reference Number:	CTS23_114
SAHRA Case No.	56
Client:	Savannah
Date:	May 2023
Title:	Proposed extension of the EA granted for the proposed development of the Boesmanland Solar Farm near Aggeneys in the Northern Cape

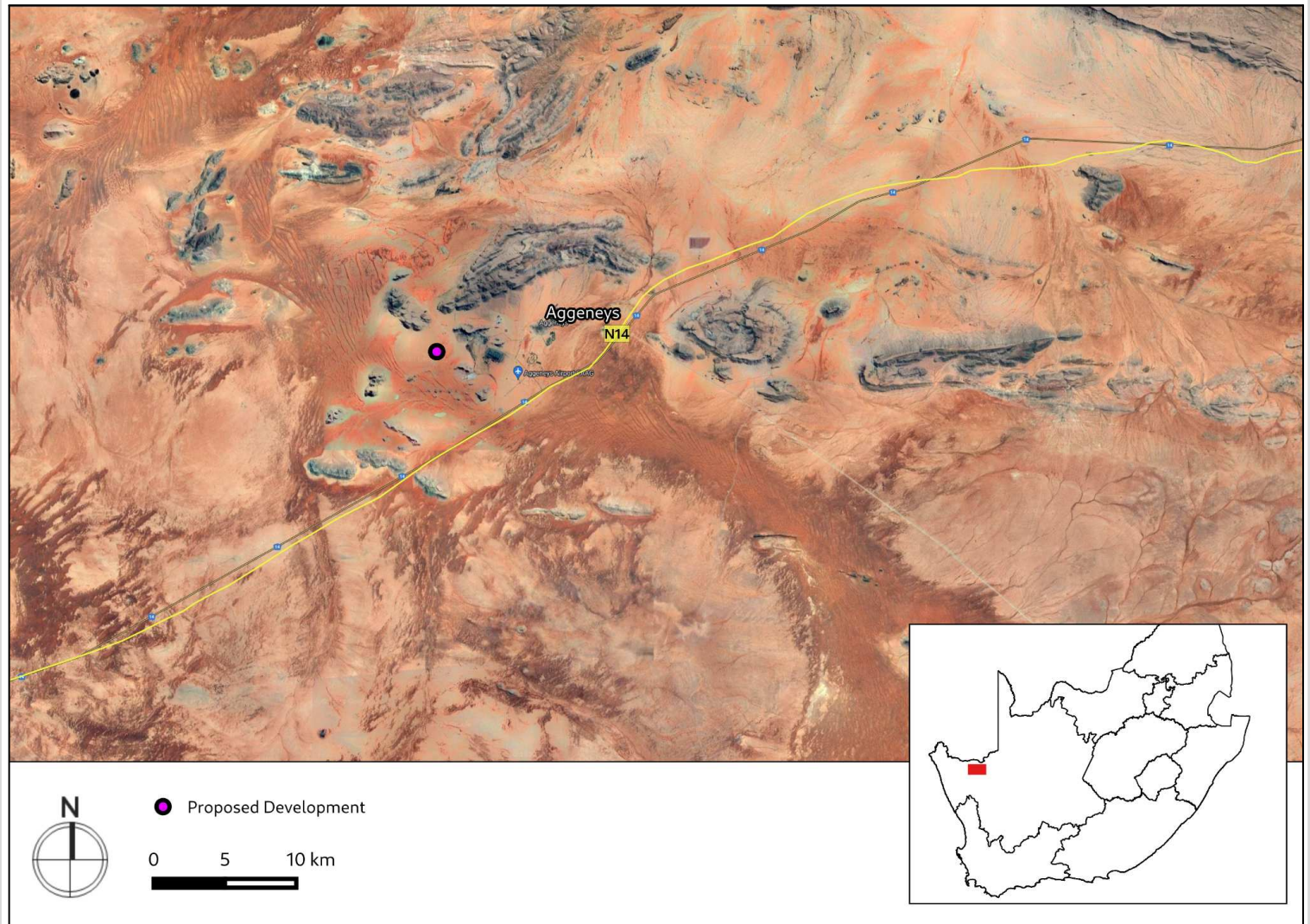
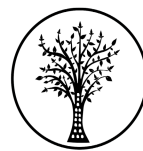


Figure 1a. Satellite map indicating the location of the proposed development in the Northern Cape

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1. Proposed Development Summary

The proposed Boesmanland Solar Farm is to consist of solar photovoltaic panels with a feed-in capacity of 75MW (megawatts) Alternating Current (AC) / >90MW Direct Current (DC), as well as associated infrastructure, which will include:

- On-site substation
- Auxiliary buildings (administration / security, workshop, storage and ablution)
- Inverters, transformers and internal electrical reticulation (underground cabling);
- Access road and internal road network;
- Overhead electrical transmission line (to connect to existing Aggeneis Substation);
- Rainwater tanks
- Parameter fencing

2. Application References

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

3. Property Information

Latitude / Longitude	29°15'39.41"S 18°45'17.37"E
Erf number / Farm number	Boesmanland Solar Farm on 6/2/62: Portion 6 (a portion of Portion 2) Farm 62 Zuurwater; Access road & transmission line may cross 3/62 (Maasdorp Farm) & 1/56 to the Aggeneis Substation on 2/56 (Black Mountain Mine)
Local Municipality	Khai-Ma Local Municipality
District Municipality	Namakwa District Municipality
Current Zoning	Agriculture

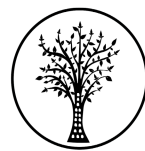
4. Nature of the Proposed Development

Total Area	Approximately 265ha
Depth of excavation (m)	<3m
Height of development (m)	Main equipment: Up to 4m

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5. Category of Development

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

6. Additional Infrastructure Required for this Development

NA

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

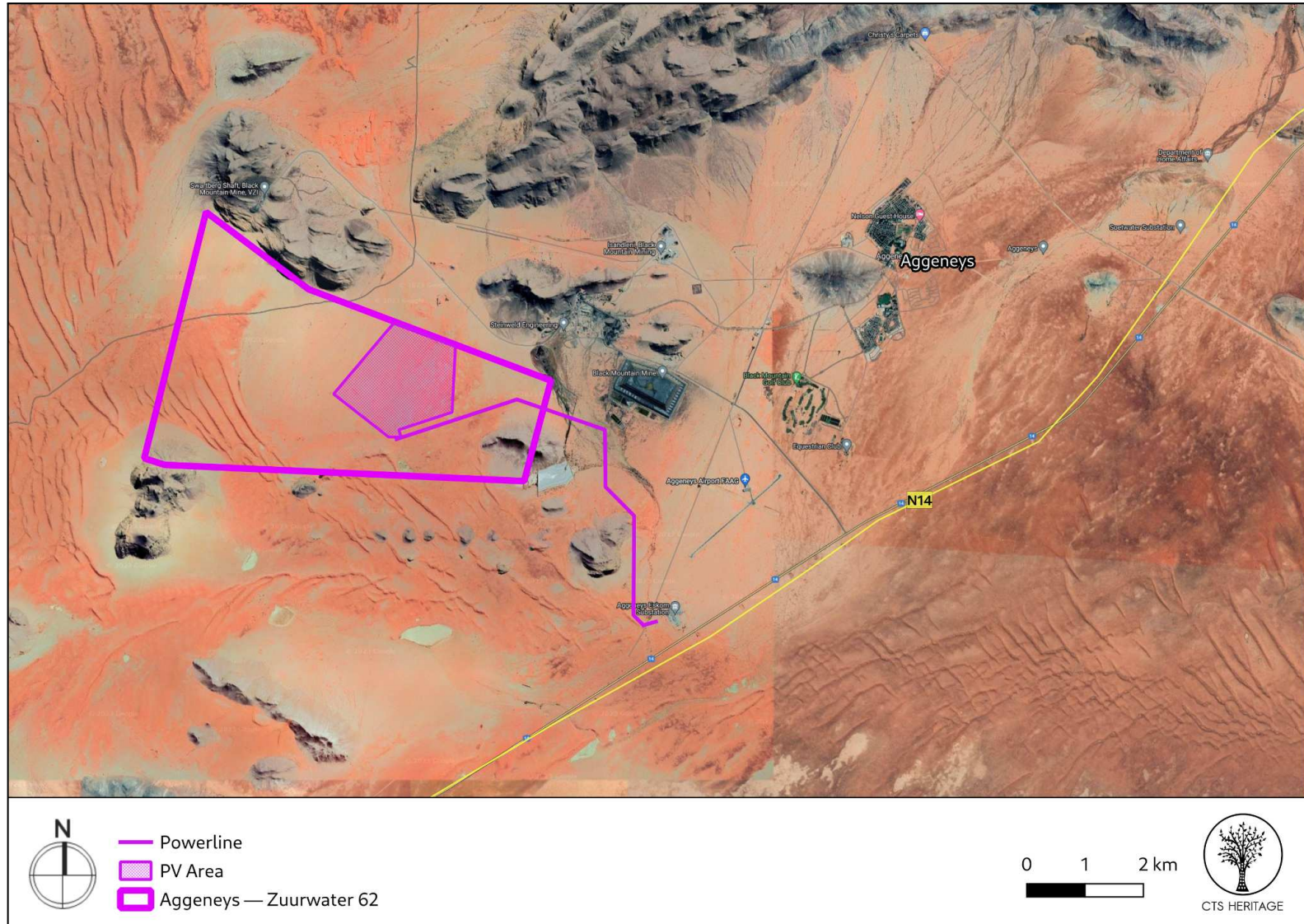


Figure 1b. Overview Map. Satellite image (2022) indicating the proposed development area.



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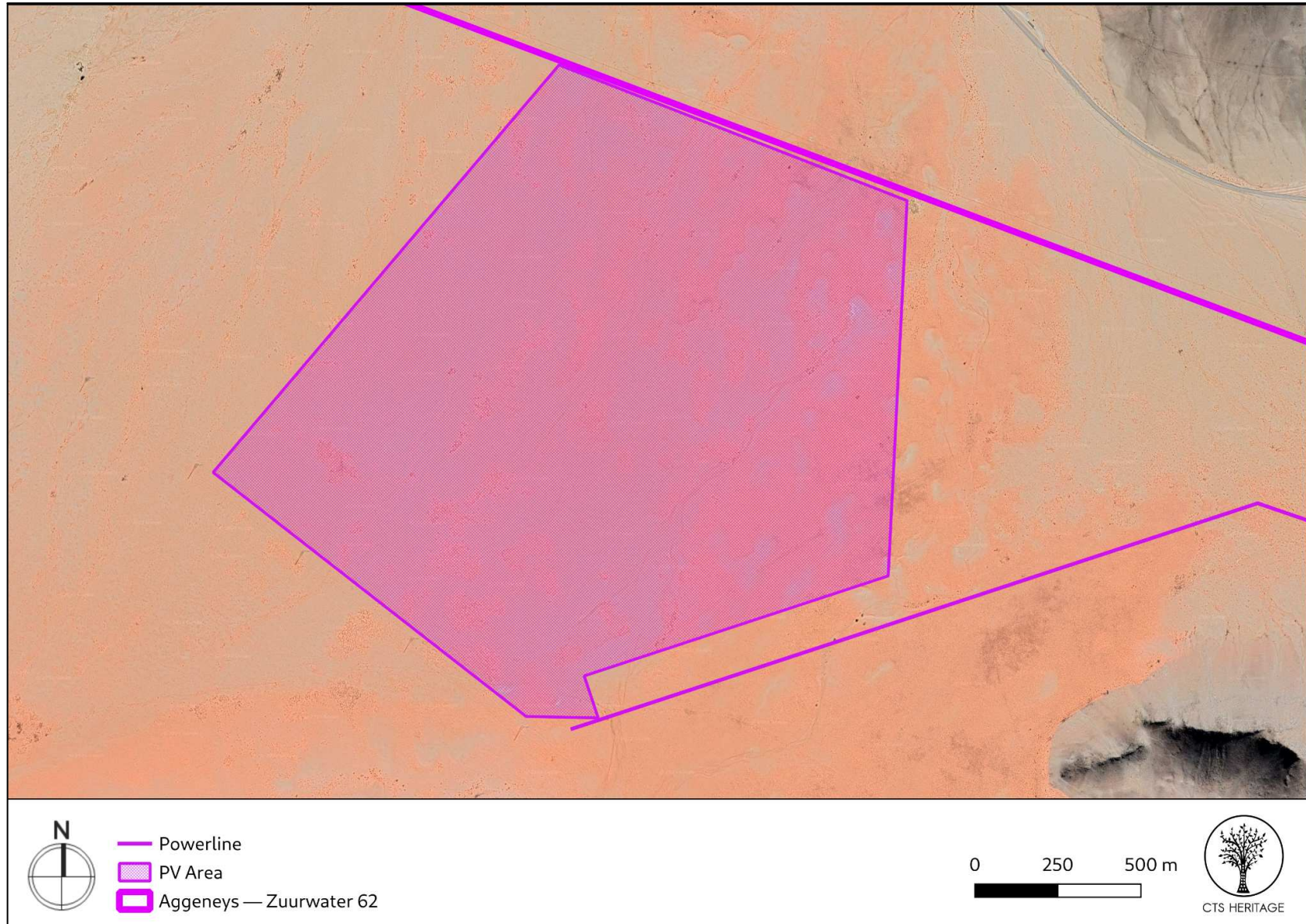
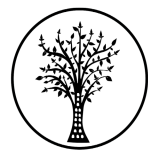


Figure 1c. Overview Map. Satellite image (2022) indicating the proposed development area in the Northern Cape.

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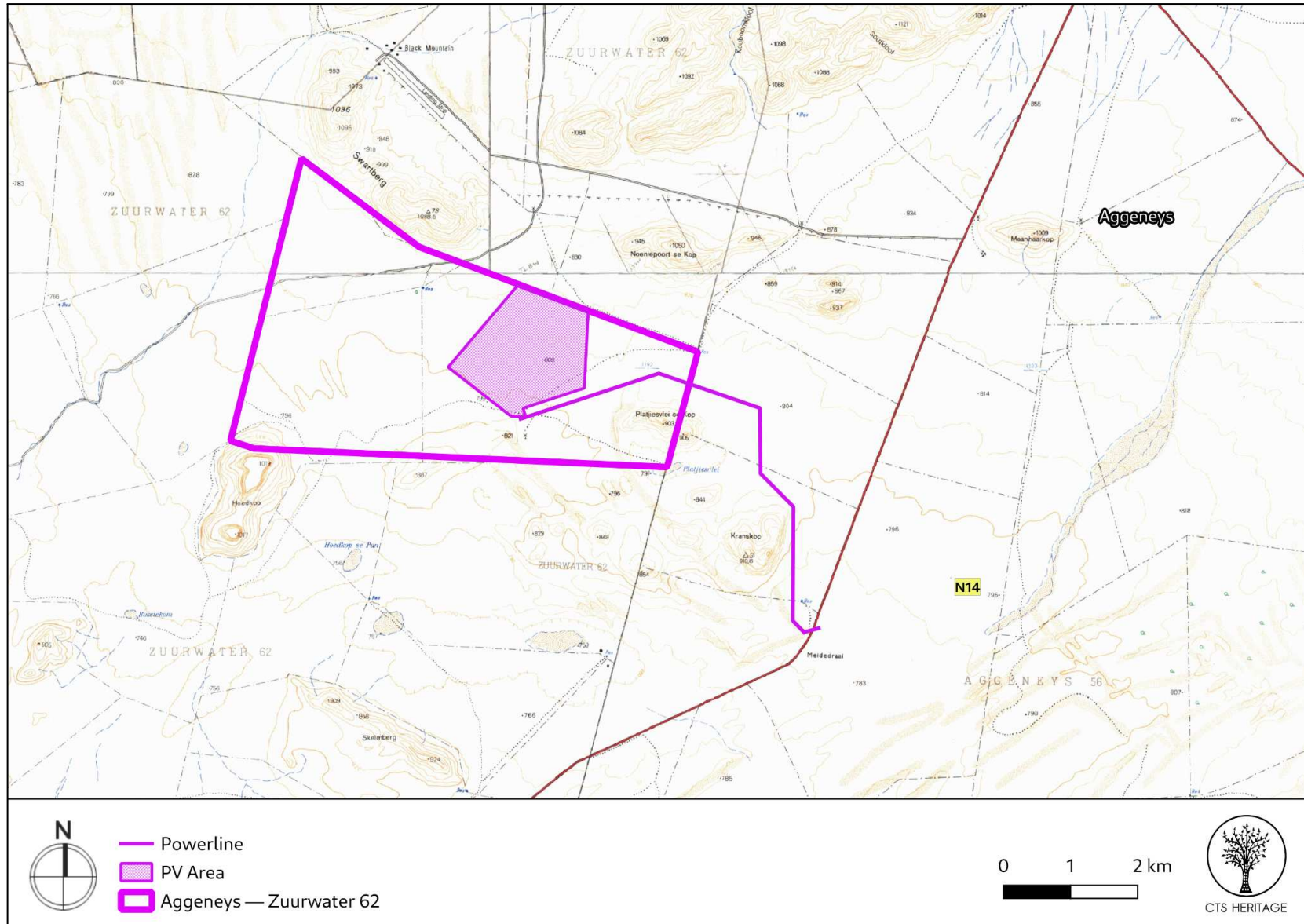


Figure 1d. Overview Map. Extract from the 1:50 000 Topo map indicating the proposed development area.

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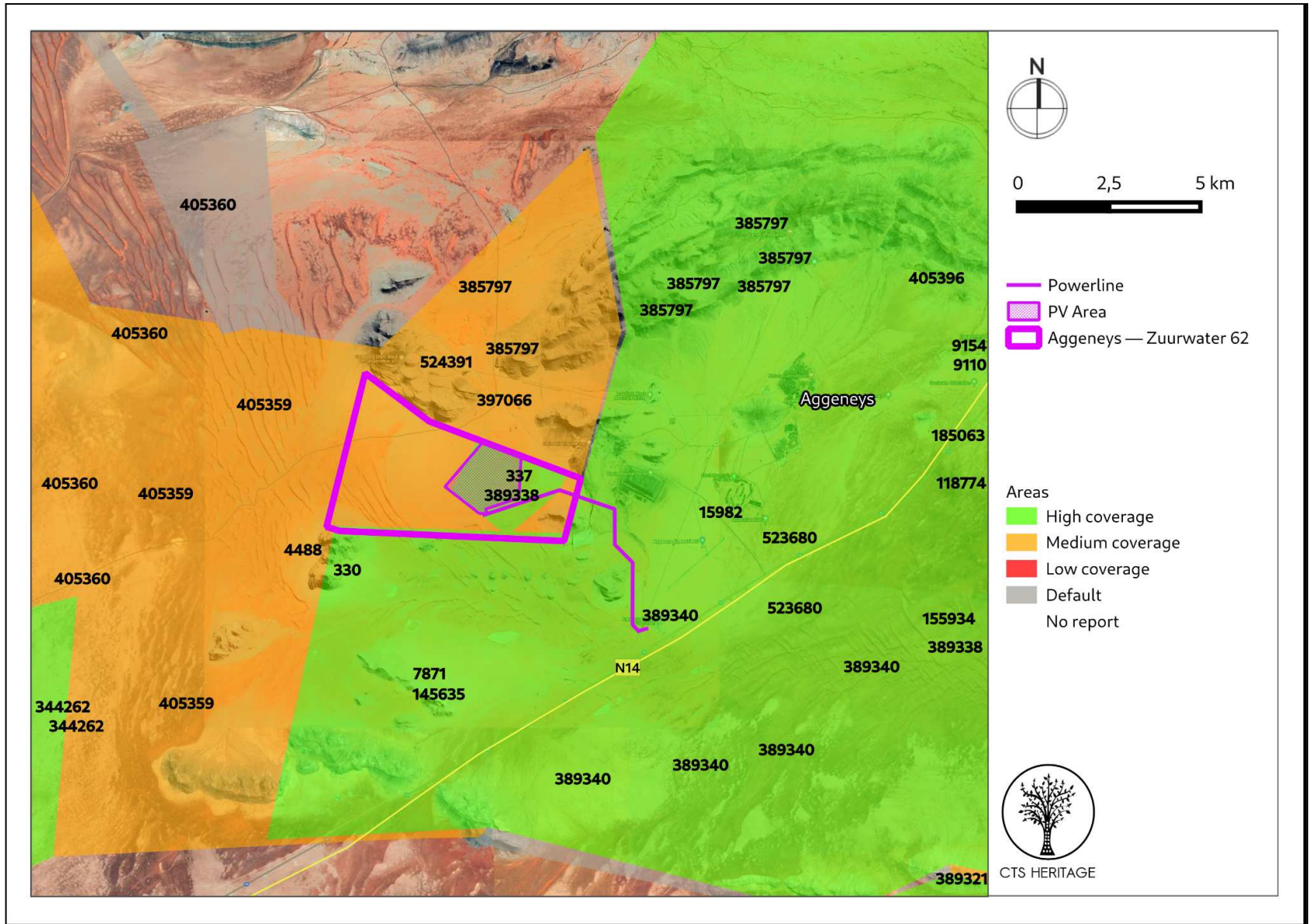


Figure 2a. Previous HIAs Map. Previous Heritage Impact Assessments covering the proposed development area with SAHRIS NIDS indicated. Please see Appendix 2 for a full reference list.

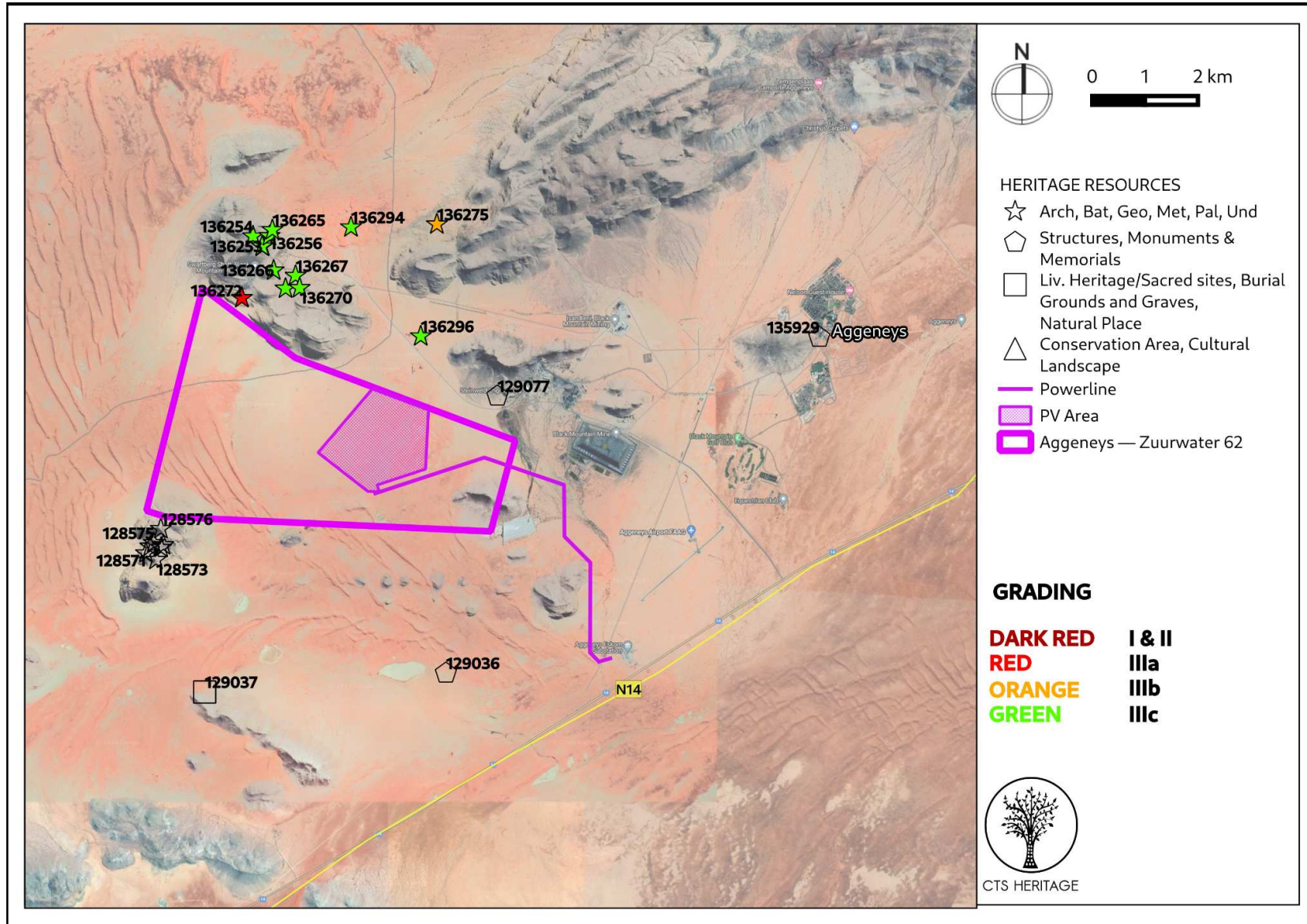


Figure 3. Heritage Resources Map. Heritage Resources previously identified within the study area, with SAHRIS Site IDs indicated in the insets below. Please See Appendix 4 for a full description of heritage resource types.



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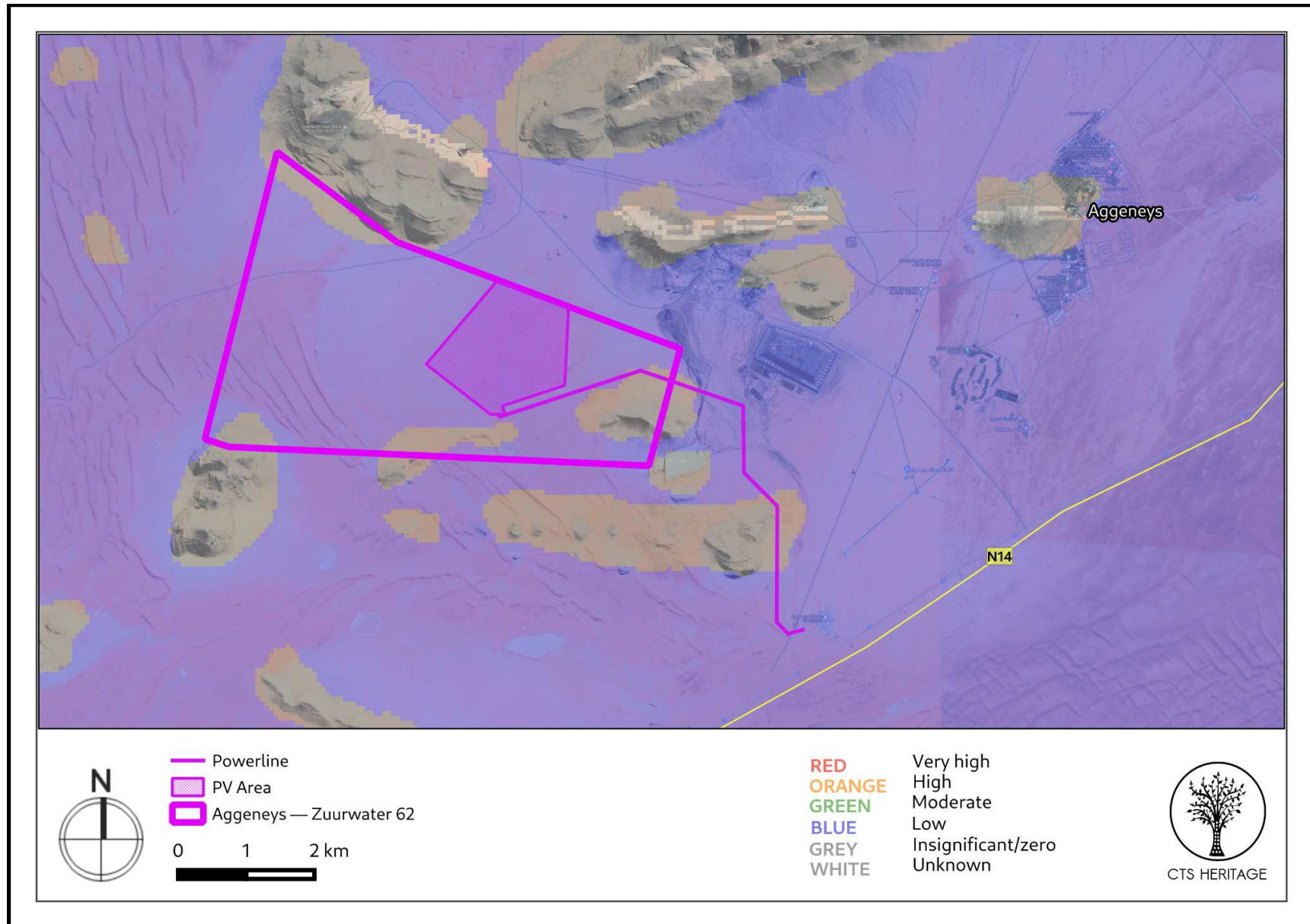


Figure 4a. Palaeosensitivity Map. Indicating fossil sensitivity underlying the study area. Please See Appendix 3 for a full guide to the legend.

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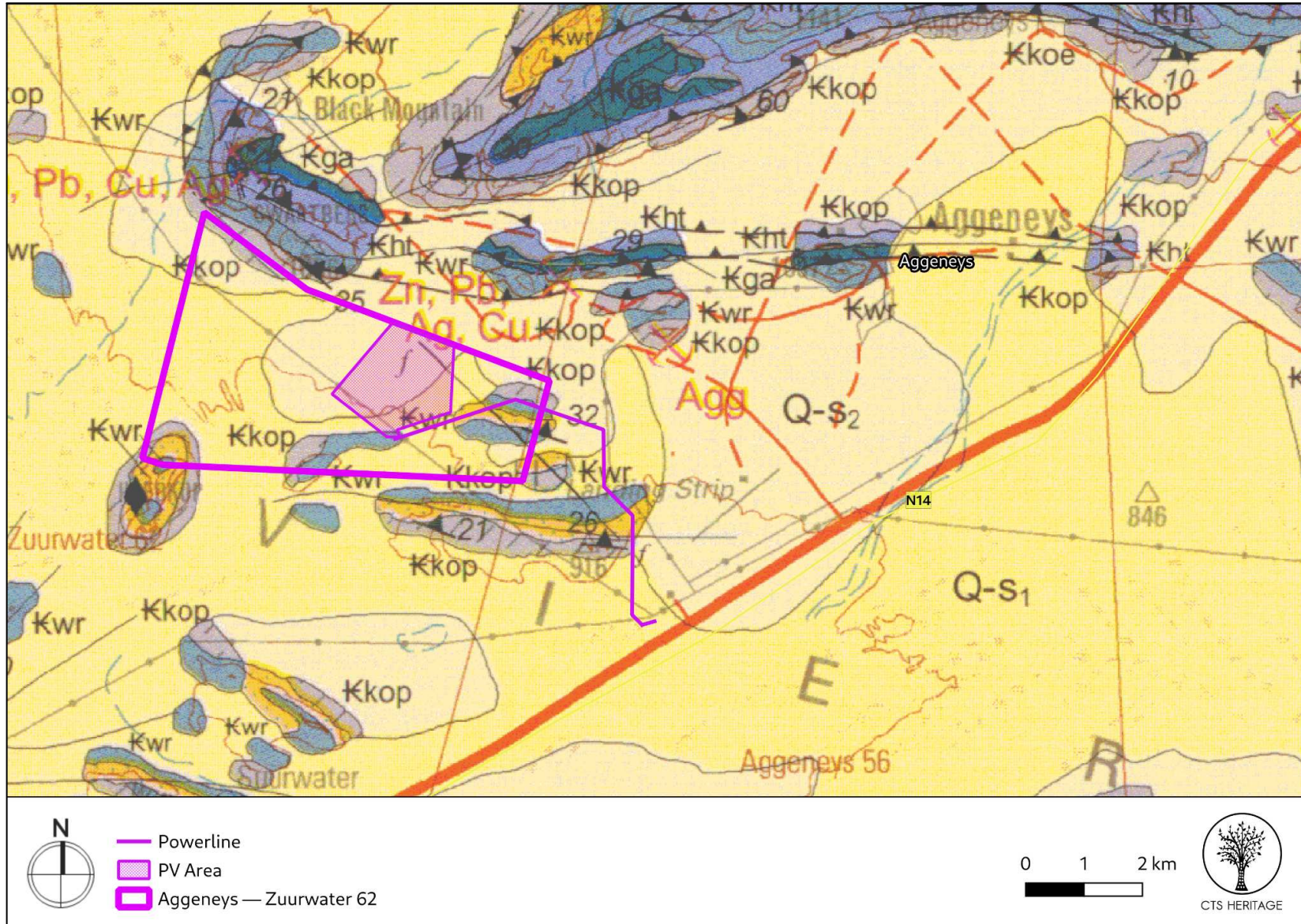
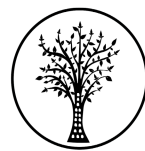


Figure 4b. Geology Map. Extract from the Council of GeoScience Geology Map tile 2918 for Pofadder indicating that the area proposed for development is underlain by Quaternary Sands



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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 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

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 proposed PV facility is located almost 20km from the location of the massacre site. 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 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). Smith (2012, SAHRIS NID 334) assessed the area proposed for development here and noted that “the flat, open terrain has a low archaeological signature and that there are no inhibitors from an archaeological perspective, preventing the solar facility from proceeding with construction.” As per the HIA completed by De Kock (2012) for this development, “The distinct lack of any concentration of cultural material across the property implies that this is not a rich archaeological environment, and would be similar to the observations by Beaumont et al. (1995), who state that in this dry environment; “Surveys of large areas... have failed to yield any signs of human occupation,

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except around granite inselbergs extruding above the peneplain.”

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.”

Dr Almond (2012) drafted a letter of recommendation for exemption from further palaeontological studies for the original EA process followed for this development. Almond (2012) notes that “the proposed development site is underlain by a range of unconsolidated superficial sediments of the Late Cenozoic age including Quaternary to Recent sands and gravels of probably fluvial or sheet wash origin that are locally overlain; and perhaps also underlain, by unconsolidated aeolian sands of the Quaternary Gordonia Formation (Kalahari Group).” Almond (2012) concludes that most of the study area is underlain by unfossiliferous metamorphic basement rocks or mantled by superficial sediments of low palaeontological sensitivity and extensive deep excavations are unlikely to be involved in this sort of solar park project.” As such, it is not anticipated that the proposed development will negatively impact on any significant palaeontological resources.

Conclusion

Based on the information provided above, it is not anticipated that the proposed development will have a negative impact on any archaeological, palaeontological, built environment or cultural landscape heritage resources.

RECOMMENDATION

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

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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

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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

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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

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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

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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

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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

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APPENDIX 3 - Keys/Guides

Key/Guide to Acronyms

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

Full guide to Palaeosensitivity Map legend

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

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APPENDIX 4 - Methodology

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

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

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

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

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

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

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

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

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

DETERMINATION OF THE PALAEOLOGICAL SENSITIVITY

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

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

DETERMINATION OF THE COVERAGE RATING ASCRIBED TO A REPORT POLYGON

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

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Low coverage will be used for:

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

Medium coverage will be used for

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

High coverage will be used for

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

RECOMMENDATION GUIDE

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

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

This recommendation is made when:

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

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

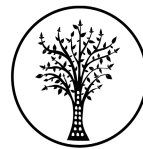
This recommendation is made in instances in which there are already some studies undertaken in the area and/or in the adjacent area for the proposed development. Further studies in a limited HIA may include:

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

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

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

Note:

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

APPENDIX 5 -Summary of Specialist Expertise

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

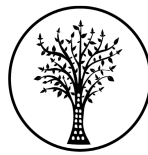
Jenna is a member of the Association of Professional Heritage Practitioners (APHP), and is also an active member of the International Committee on Monuments and Sites (ICOMOS) as well as the International Committee on Archaeological Heritage Management (ICAHM). In addition, Jenna has been a member of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

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

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APPENDIX 2: Environmental Authorisation



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

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Tel (+ 27 12) 310 3911 · Fax (+ 2712) 322 2682

NEAS Reference: DEA/EIA/0000773/2011

DEA Reference: 14/12/16/3/3/2/222 (12/12/20/2602)

Enquiries: Sindiswa Dlomo

Telephone: 012-395-1856 **Fax:** 012-320-7539 **E-mail:** Sdlomo@environment.gov.za

Ms Jade Feinberg
Boesmanland Solar Farm (Pty) Ltd
P.O. Box Suite 103
Dixon Street
CAPE TOWN
8001

Fax no: 086-297-7280

PER FACSIMILE / MAIL

Dear Ms Feinberg

APPLICATION FOR ENVIRONMENTAL AUTHORISATION IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998: GN R. 543/544/545/546: PROPOSED BOESMANLAND SOLAR FARM PORTION 6 (A PORTION OF PORTION 2), FARM 62 ZUURWATER, AGGENEYS, NORTHERN CAPE PROVINCE

With reference to the above application, please be advised that the Department has decided to grant authorisation. The environmental authorisation (EA) and reasons for the decision are attached herewith.

In terms of regulation 10(2) of the Environmental Impact Assessment Regulations, 2010 (the Regulations), you are instructed to notify all registered interested and affected parties, in writing and within 12 (twelve) days of the date of the EA, of the Department's decision in respect of your application as well as the provisions regarding the submission of appeals that are contained in the Regulations.

Your attention is drawn to Chapter 7 of the Regulations, which prescribes the appeal procedure to be followed. This procedure is summarised in the attached document. Kindly include a copy of this document with the letter of notification to interested and affected parties.

Should the applicant or any other party wish to appeal any aspect of the decision a notice of intention to appeal must be lodged by all prospective appellants with the Minister, within 20 days of the date of the EA, by means of one of the following methods:

By facsimile: 012 3207561;
By post: Private Bag X447,
Pretoria, 0001; or
By hand: 2nd Floor, Fedsure Building, North Tower,
Cnr. Lilian Ngoyi (Van der Walt) and Pretorius Streets, Pretoria.

If the applicant wishes to lodge an appeal, it must also serve a copy of the notice of intention to appeal on all registered interested and affected parties as well as a notice indicating where, and for what period, the appeal submission will be available for inspection, should you intend to submit an appeal.

Please include the Department (*Attention: Director: Integrated Environmental Authorisations*) in the list of interested and affected parties, notified through your notification letter to interested and affected parties, for record purposes.

Appeals must be submitted in writing to:

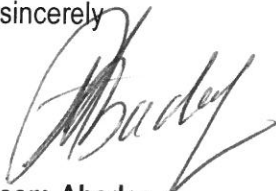
Mr Z Hassam Director: Appeals and Legal Review, of this Department at the above mentioned addresses or fax number. Mr Hassam can also be contacted at:

Tel: 012-310-3271

Email: AppealsDirectorate@environment.gov.za

The authorised activities shall not commence within twenty (20) days of the date of signature of the authorisation. Further, please note that the Minister may, on receipt of appeals against the authorisation or conditions thereof suspend the authorisation pending the outcome of the appeals procedure.

Yours sincerely



Mr Ishaam Abader

**Deputy Director-General: Legal, Authorisations, Compliance and Enforcement
Department of Environmental Affairs**

Date: 16/07/2013

CC:	Ms S Holder	Cape EAPrac	Tel: 044-874-0365	Fax: 044-874-0432
	Ms A Yaphi	Northern Cape: DEA&NC	Tel: 054-332-2885	Fax: 054-331-1155
	Mr I January	Khai-Ma Local Municipality	Tel: 054-933-1000	Fax: 054-933-0252
	Mr S Malaza	Compliance Monitoring (DEA)	Tel: 012-310-3397	Fax: 012-320-5744

APPEALS PROCEDURE IN TERMS OF CHAPTER 7 OF THE NEMA EIA REGULATIONS, 2010 (THE REGULATIONS) AS PER GN R. 543 OF 2010 TO BE FOLLOWED BY THE APPLICANT AND INTERESTED AND AFFECTED PARTIES UPON RECEIPT OF NOTIFICATION OF AN ENVIRONMENTAL AUTHORISATION (EA)

APPLICANT	INTERESTED AND AFFECTED PARTIES (IAPs)
1. Receive EA from the relevant Competent Authority (the Department of Environmental Affairs [DEA]).	1. Receive EA from Applicant/Consultant.
2. Within 12 days of date of the EA notify all IAPs of the EA and draw their attention to their right to appeal against the EA in terms of Chapter 7 of the Regulations.	2. N/A.
3. If you want to appeal against the EA, submit a notice of intention to appeal within 20 days of the date of the EA with the Minister of Water and Environmental Affairs (the Minister).	3. If you want to appeal against the EA, submit a notice of intention to appeal within 20 days of the date of the EA. with the Minister of Water and Environmental Affairs (the Minister).
4. After having submitted your notice of intention to appeal to the Minister, provide each registered IAP with a copy of the notice of intention to appeal within 10 days of lodging the notice.	4. After having submitted your notice of intention to appeal to the Minister, provide the applicant with a copy of the notice of intention to appeal within 10 days of lodging the notice.
5. The Applicant must also serve on each IAP: <ul style="list-style-type: none"> • a notice indicating where and for what period the appeal submission will be available for inspection. 	5. Appellant must also serve on the Applicant within 10 days of lodging the notice, <ul style="list-style-type: none"> • a notice indicating where and for what period the appeal submission will be available for inspection by the applicant.
6. The appeal must be submitted in writing to the Minister within 30 days after the lapsing of the period of 20 days provided for the lodging of the notice of intention to appeal.	6. The appeal must be submitted to the Minister within 30 days after the lapsing of the period of 20 days provided for the lodging of the notice of intention to appeal.
7. Any IAP who received a notice of intention to appeal may submit a responding statement to that appeal to the Minister within 30 days from the date that the appeal submission was lodged with the Minister.	7. An Applicant who received notice of intention to may submit a responding statement to the appeal to the Minister within 30 days from the date that the appeal submission was lodged with the Minister.

NOTES:

1. An appeal against a decision must be lodged with:-

- the Minister of Water and Environmental Affairs if the decision was issued by the Director- General of the Department of Environmental Affairs (or another official) acting in his/ her capacity as the delegated Competent Authority;
- the Minister of Justice and Constitutional Development if the applicant is the Department of Water Affairs and the decision was issued by the Director- General of the Department of Environmental Affairs (or another official) acting in his/ her capacity as the delegated Competent Authority;

2. An appeal lodged with:-

- the Minister of Water and Environmental Affairs must be submitted to the Department of Environmental Affairs;
- the Minister of Justice and Constitutional Development must be submitted to the Department of Environmental Affairs;

3. An appeal must be:-

- submitted in writing;
- accompanied by:
 - a statement setting out the grounds of appeal;
 - supporting documentation which is referred to in the appeal; and
 - a statement that the appellant has complied with regulation 62 (2) or (3) together with copies of the notices referred to in regulation 62.





environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

Environmental Authorisation

In terms of regulation 36 of the Environmental Impact Assessment Regulations, 2010

Boesmanland Solar Farm portion 6 (a portion of portion 2), Farm 62 Zuurwater, Aggeneys

Siyanda District Municipality

Authorisation register number:	14/12/16/3/3/2/222 (12/12/20/2602)
NEAS reference number:	DEA/EIA/0000773/2011
Last amended:	First issue
Holder of authorisation:	Boesmanland Solar Farm (Pty) Ltd
Location of activity:	NORTHERN CAPE PROVINCE: Within Khai-Ma Local Municipality

This authorisation does not negate the holder of the authorisation's responsibility to comply with any other statutory requirements that may be applicable to the undertaking of the activity.

Decision

The Department is satisfied, on the basis of information available to it and subject to compliance with the conditions of this environmental authorisation, that the applicant should be authorised to undertake the activities specified below.

Non-compliance with a condition of this authorisation may result in criminal prosecution or other actions provided for in the National Environmental Management Act, 1998 and the EIA regulations.

Details regarding the basis on which the Department reached this decision are set out in Annexure 1.

Activities authorised

By virtue of the powers conferred on it by the National Environmental Management Act, 1998 (Act 107 of 1998) and the Environmental Impact Assessment Regulations, 2010 the Department hereby authorises –

BOESMANLAND SOLAR FARM (PTY) LTD

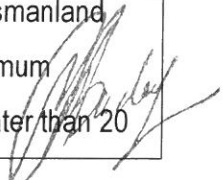
with the following contact details –

Ms Jade Feinberg
Boesmanland Solar Farm (Pty) Ltd
P.O. Box Suite 103
Dixon Street
CAPE TOWN
8001

Tel: (021) 418-3940
Fax: (086) 297-7280
E-mail: j.feinberg@buildingenergy.it



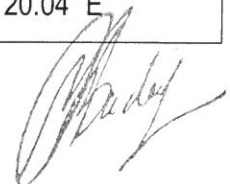
to undertake the following activities (hereafter referred to as “the activity”) indicated in Listing Notices 1, 2 or 3 (GN R. 544, 545 & 546):

Listed activities	Activity/Project description
<p><u>GN R. 544 Item 1:</u> <i>The construction of facilities or infrastructure for the generation of electricity where the output is more than 10 megawatts and the total extent of the facility covers an area in excess of 1 hectare or more</i></p>	<p>Construction of Boesmanland Solar Farm with a maximum capacity of 75 MW. The total area to be affected by the development will be approximately 265 ha</p>
<p><u>GN R. 544 Item 10:</u> <i>The construction of facilities or infrastructure for the transmission and distribution of electricity –</i> <i>(i) Outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 Kilovolts;</i></p>	<p>Overhead transmission power line greater than 33 kV linking the proposed Aggeneys Solar Facility to the existing Aggeneys Substation</p>
<p><u>GN R. 544 Item 11:</u> <i>The construction of</i> <i>(ii) channels</i> <i>(iii) bridges</i> <i>(v) weirs</i> <i>(x) building exceeding 50 m² in size, or</i> <i>(xi) Infrastructure or structures covering 50 m² or more, where such construction occurs within a watercourse or within a 22 of a watercourse, measured from the edge of the watercourse, excluding where such construction will occur behind the development line.</i> <i>Outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 Kilovolts;</i></p>	<p>The possible construction of roads/tracks & PV arrays across the on-site drainage systems. Stabilisation of streams/drainage line bed and banks may be required</p>
<p><u>GN R. 544 Item 22:</u> <i>The construction of a road, outside urban areas,</i> <i>With a reserve wider than 13,5 meters or ,</i> <i>Where no reserve exists where the road is wider than 8 metres,</i></p>	<p>Construction of access and internal roads for the Solar Facility for construction and operational phase outside urban edge.</p>
<p><u>GN R. 545 Item 1:</u> <i>The construction of facilities or infrastructure for the generation of electricity where the electricity output is 20 megawatts or</i></p>	<p>Construction of the Boesmanland Solar Farm (with a maximum generation capacity greater than 20</p> 

Listed activities	Activity/Project description
more	MW
<u>GN R. 545 Item 8:</u> <i>The construction of facilities or infrastructure transmission and distribution of electricity with a capacity of 275 kV or more, outside an urban area or industrial complex.</i>	Overhead transmission power line greater than 33kv linking the proposed Aggeneys Solar Facility to the existing Aggeneys Substation, outside the urban edge.
<u>GN R. 545 Item 15:</u> <i>Physical alteration of undeveloped, vacant or derelict land for residential, retail, commercial, recreational, industrial or institutional use where the total area to be transformed is 20 hectares or more;</i>	Development of the Aggeneys Solar Facility on vacant private land, of 450 ha outside the urban edge.
<u>GN R. 546 Item 4::</u> <i>The construction of a road wider than 4 metres with a reserve less than 13,5 metres</i> <i>(ii) Outside urban areas</i> <i>(bb) National Protected Area Expansion Strategy Focus areas</i>	Construction of access and internal roads wider than 4 metres for Solar facility, outside urban edge.
<u>GN R. 545 Item 14:</u> <i>The clearance of an area of 5 hectares or more of vegetation where 75% or more of the vegetation cover constitutes indigenous vegetation</i>	Vegetation clearing of an area greater than 5 ha for Photovoltaic Panels associated and infrastructure; access roads, cable trenches and control buildings etc. outside the urban edge. Solar Energy Plant to be constructed across a development area not exceeding 450 ha.

as described in the Environmental Impact Assessment Report (BAR) dated February 2013 at:

Preferred/mitigated layout - western layout	Latitude	Longitude
Middle point	29° 15' 40.72" S	18° 45' 20.04" E



Alternative Option 1	Latitude	Longitude
Starting point of activity	29° 16' 11.83" S	18° 45' 14.11" E
Middle point of activity	29° 16' 06.09" S	18° 47' 26.92" E
End point of activity	29° 17' 52.47" S	18° 47' 59.10" E

- for the proposed Boesmanland Solar Farm and associated infrastructure on Portion 6 (a portion of portion 2), farm 62 Zuurwater Aggeneys, Northern Cape Province, hereafter referred to as "the property".

The infrastructure associated with this facility includes:

- On site substation;
- Auxiliary buildings (administration/security, workshop, storage and ablution);
- Inverters, transformers and internal reticulation (underground cabling);
- Transmission Line;
- Access roads and internal road network;
- Overhead electrical transmission line (to connect to the existing Aggeneys Substation);
- Rainwater Tanks; and
- Parameter fencing.

Conditions of this Environmental Authorisation

Scope of authorisation

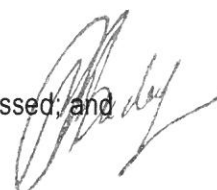
1. The 75 MW Photovoltaic Solar Facility (*preferred/mitigated layout-Western Section*), using a single-axis tracking system as the preferred technology and the transmission line- Option 1 are approved, as per the abovementioned GPS co-ordinates .
2. Option 5 (A-B-F=SO) is approved for the road construction and upgrade, the final route (including design and exact pegging of the road) must form part of the final EMPr.
3. Authorisation of the activity is subject to the conditions contained in this authorisation, which form part of the environmental authorisation and are binding on the holder of the authorisation.
4. The holder of the authorisation is responsible for ensuring compliance with the conditions contained in this environmental authorisation. This includes any person acting on the holder's behalf,

including but not limited to, an agent, servant, contractor, sub-contractor, employee, consultant or person rendering a service to the holder of the authorisation.

5. The activities authorised may only be carried out at the property as described above.
6. Any changes to, or deviations from, the project description set out in this authorisation must be approved, in writing, by the Department before such changes or deviations may be effected. In assessing whether to grant such approval or not, the Department may request such information as it deems necessary to evaluate the significance and impacts of such changes or deviations and it may be necessary for the holder of the authorisation to apply for further authorisation in terms of the regulations.
7. This activity must commence within a period of three (3) years from the date of issue of this authorisation. If commencement of the activity does not occur within that period, the authorisation lapses and a new application for environmental authorisation must be made in order for the activity to be undertaken.
8. Commencement with one activity listed in terms of this authorisation constitutes commencement of all authorised activities.
9. The holder of an environmental authorisation must notify the competent authority of any alienation, transfer and change of ownership rights in the property on which the activity is to take place.

Notification of authorisation and right to appeal

10. The holder of the authorisation must notify every registered interested and affected party, in writing and within 12 (twelve) calendar days of the date of this environmental authorisation, of the decision to authorise the activity.
11. The notification referred to must –
 - 11.1. specify the date on which the authorisation was issued;
 - 11.2. inform the interested and affected party of the appeal procedure provided for in Chapter 7 of the Environmental Impact Assessment Regulations, 2010;
 - 11.3. advise the interested and affected party that a copy of the authorisation will be furnished on request; and
 - 11.4. give the reasons of the competent authority for the decision.
12. The holder of the authorisation must publish a notice –
 - 12.1. informing interested and affected parties of the decision;
 - 12.2. informing interested and affected parties where the decision can be accessed; and



- 12.3. drawing the attention of interested and affected parties to the fact that an appeal may be lodged against this decision in the newspaper(s) contemplated and used in terms of regulation 54(2)(c) and (d) and which newspaper was used for the placing of advertisements as part of the public participation process.

Management of the activity

13. The Environmental Management Programme (EMPr) submitted as part of Application for EA must be amended and submitted to the Department for written approval prior to commencement of the activity. The recommendations and mitigation measures recorded in the Final Environmental Impact Assessment Report dated February 2013 must be incorporated as part of the EMPr. Once approved, the EMPr must be implemented and adhered to.
14. All declared aliens must be identified and managed in accordance with the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983). There should be an alien species monitoring and eradication program to prevent encroachment of these problem plants for the duration of the operation. This should form part of the EMPr and should aim to address alien plant problems within the whole site, not just the development footprint.

Monitoring

15. The applicant must appoint a suitably experienced independent Environmental Control Officer (ECO) for the construction phase of the development that will have the responsibility to ensure that the mitigation/rehabilitation measures and recommendations referred to in this authorisation are implemented and to ensure compliance with the provisions of the EMPr.
 - 15.1. The ECO must be appointed before commencement of any authorised activities.
 - 15.2. Once appointed, the name and contact details of the ECO must be submitted to the *Director: Compliance Monitoring* of the Department.
 - 15.3. The ECO must keep record of all activities on site, problems identified, transgressions noted and a task schedule of tasks undertaken by the ECO.
 - 15.4. The ECO must remain employed until all rehabilitation measures, as required for implementation due to construction damage, are completed and the site is ready for operation.



Recording and reporting to the Department

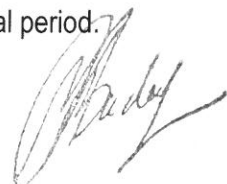
16. All documentation e.g. audit/monitoring/compliance reports and notifications, required to be submitted to the Department in terms of this authorisation, must be submitted to the *Director: Compliance Monitoring* at the Department.
17. The holder of the authorisation must submit an environmental audit report to the Department within 30 days of completion of the construction phase (i.e. within 30 days of site handover) and within 30 days of completion of rehabilitation activities.
18. The environmental audit report must indicate the date of the audit, the name of the auditor and the outcome of the audit in terms of compliance with the environmental authorisation conditions as well as the requirements of the EMPr.
19. Records relating to monitoring and auditing must be kept on site and made available for inspection to any relevant and competent authority in respect of this development.

Commencement of the activity

20. The authorised activity shall not commence within twenty (20) days of the date of signature of the authorisation.
21. An appeal under section 43 of the National Environmental Management Act (NEMA), Act 107 of 1998 (as amended), does not suspend an environmental authorisation or exemption, or any provisions or conditions attached thereto, or any directive, unless the Minister, MEC or delegated organ of state directs otherwise.
22. Should you be notified by the Minister of a suspension of the authorisation pending appeal procedures, you may not commence with the activity until such time that the Minister allows you to commence with such an activity in writing.

Notification to authorities

23. Fourteen (14) days written notice must be given to the Department that the activity will commence. Commencement for the purposes of this condition includes site preparation. The notice must include a date on which it is anticipated that the activity will commence, as well as a reference number. This notification period may coincide with the notice of intent to appeal period.



Operation of the activity

24. Fourteen (14) days written notice must be given to the Department that the activity operational phase will commence.

Site closure and decommissioning

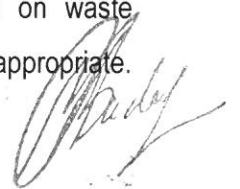
25. Should the activity ever cease or become redundant, the applicant shall undertake the required actions as prescribed by legislation at the time and comply with all relevant legal requirements administered by any relevant and competent authority at that time.

Specific conditions

26. Road and tracks must run along contours as much as possible and roads running down the slope must have water diversion structures to reduce erosion potential.
27. A storm water management plan must be developed to be implemented during the construction and operation of the facility. The plan must ensure compliance with applicable regulations and prevent off-site migration of contaminated storm water or increased soil erosion. The plan must include the construction of appropriate design measures that allow surface and subsurface movement of water along drainage lines so as not to impede natural and subsurface flows. Drainage measures must promote the dissipation of storm water runoff.
28. An annual plant survey in the footprint of the development submitted to the Department, in order to determine the impact of the shading factor, and to determine whether further mitigation is needed to prevent erosion. The reports should be submitted to the Directorate Biodiversity Conservation.
29. No activities will be allowed to encroach into a water resource without a water use authorisation being in place from the Department of Water Affairs.
30. The applicant must obtain a wayleave from the Department of Public Transport Roads and Works prior construction.
31. Anti-collision devices such as bird flappers must be installed where power lines cross avifaunal corridors, as recommended by the avifaunal specialist. The input of an avifaunal specialist must be obtained for the fitting of the anti-collision devices onto specific sections of the line once the exact positions of the towers have been surveyed and pegged.
32. Sensitive areas illustrated in the sensitivity map in Figure 8 Page 25 of the ecological report must be avoided, and where such areas cannot be avoided specific mitigation measures to reduce their

impact must be implemented. Furthermore, construction camps must not be constructed in these areas.

33. Precaution must be taken to avoid excessive disturbance and vegetation on the red sands of the site and vegetation must take place immediately after construction to avoid erosion.
34. A pre-construction survey of the final development footprint must be conducted to ascertain the identity and exact number of individuals of protected species affected by the proposed development. Prior to the commencement of construction, a rescue and rehabilitation operation for these species which could survive translocation such as Hoodia and Euphorbia must be conducted.
35. No construction activities can commence without having obtained the necessary permits for ToPS listed and provincially protected species within the study area from DENC.
36. The washing of panels during maintenance must be done with biodegradable soaps to avoid soil contamination and poisoning of small animals.
37. A botanist must be appointed to perform a final walkthrough of the facility footprint to identify sensitive plant species, and assist in identifying the areas that require protection.
38. A permit must be obtained from the relevant nature conservation agency for the removal or destruction of indigenous protected and endangered plant and animal species.
39. Copies of all permits required must be submitted to the Department for record keeping.
40. No exotic plants may be used for rehabilitation purposes. Only indigenous plants of the area may be utilised.
41. Electric fencing should not have any strands within 30 cm of the ground, which should be sufficient to allow smaller mammals, reptiles and tortoises to pass through (tortoises retreat into their shells when electrocuted and eventually succumb from repeated shocks), but still remain effective as a security barrier.
42. The applicant is required to inform the Department of Agriculture, Fisheries and Forestry and this Department should the removal of protected species, medicinal plants and "data deficient" plant species be required.
43. Vegetation clearing must be kept to an absolute minimum. Mitigation measures must be implemented to reduce the risk of erosion and the invasion of alien species.
44. Construction must include appropriate design measures that allow surface and subsurface movement of water along drainage lines so as not to impede natural surface and subsurface flows. Drainage measures must promote the dissipation of storm water run-off.
45. An integrated waste management approach must be implemented that is based on waste minimisation and must incorporate reduction, recycling, re-use and disposal where appropriate.



Any solid waste shall be disposed of at a landfill licensed in terms of section 20 (b) of the National Environment Management Waste Act, 2008 (Act 59 of 2008).

General

46. A copy of this authorisation and the approved EMPr must be kept at the property where the activities will be undertaken. The authorisation and approved EMPr must be produced to any authorised official of the Department who requests to see it and must be made available for inspection by any employee or agent of the holder of the authorisation who works or undertakes work at the property.
47. The holder of the authorisation must notify both the *Director: Integrated Environmental Authorisations* and the *Director: Compliance Monitoring* at the Department, in writing and within 48 (forty eight) hours, if any condition of this authorisation cannot be or is not adhered to. Any notification in terms of this condition must be accompanied by reasons for the non-compliance.
48. National government, provincial government, local authorities or committees appointed in terms of the conditions of this authorisation or any other public authority shall not be held responsible for any damages or losses suffered by the applicant or his successor in title in any instance where construction or operation subsequent to construction be temporarily or permanently stopped for reasons of non-compliance by the applicant with the conditions of authorisation as set out in this document or any other subsequent document emanating from these conditions of authorisation.

Date of environmental authorisation: 16/07/2013



Mr Ishaam Abader

Deputy Director-General: Legal, Authorisations, Compliance and Enforcement

Department of Environmental Affairs

Annexure 1: Reasons for Decision

1. Information considered in making the decision

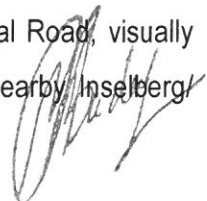
In reaching its decision, the Department took, *inter alia*, the following into consideration -

- a) The information contained in the Final Environmental Impact Assessment Report (FEIAR) dated February 2013;
- b) The comments received from the Department of Water Affairs, Nama Khoi Local Municipality, Khai-Ma Local Municipality, SAHRA, Eskom, Eskom – Land Development and Distribution Division, South African Civil Aviation Authority, DAFF, SANRAL and South African National Parks, organs of state and interested and affected parties as included in the FEIAR dated February 2013;
- c) Mitigation measures as proposed in the FEIAR dated February 2013 and the EMPr;
- d) The information contained in the specialist studies contained within Appendix D of the BAR;
- e) Findings of the site visit conducted on 29 April 2013; and
- f) The objectives and requirements of relevant legislation, policies and guidelines, including section 2 of the National Environmental Management Act, 1998 (Act 107 of 1998).

2. Key factors considered in making the decision

All information presented to the Department was taken into account in the Department's consideration of the application. A summary of the issues which, in the Department's view, were of the most significance is set out below.

- a) The findings of all the specialist studies conducted and their recommended mitigation measures.
- b) The area of land designated for the proposed Boesmanland Solar Farm forms part of the lease agreement with the landowner for approximately 450ha, located directly west of Vedanta Black Mountain Mine and towns of Aggeneys.
- c) The proposed solar development site is situated just north of the N14 National Road, visually screened from the N14 by a series of dunes extending from the N14 to a nearby Inselberg "Koppie" named Hoedekop

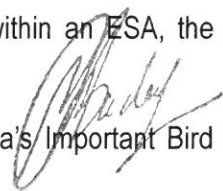


- d) The proposed project involves the development of a solar energy facility with a total generation capacity of approximately 75MW AC (Alternating Current) / > 90MW (Direct Current) renewable electricity to be supplied to the national Eskom grid via the existing Aggeneys Substation. The project infrastructure will not exceed approximately 270ha.
- e) The southern route parallels to the existing Eskom 220 kV line traverses more sensitive ground and a CBA (encompassing dunes, koppies and a large drainage line, in particular some fairly high dunes which are vulnerable to wind erosion when disturbed).
- f) A number of provincially protected species occur within the site including *Boscia foetida* and two *Euphorbia* species.
- g) Nama-Khoi Local Municipality confirmed water availability to meet the project requirements during the construction and operational phases of the proposed Boesmanland 75 MW Solar Energy Facility
- h) The FEIAR dated February 2013 identified all legislation and guidelines that have been considered in the preparation of the FEIAR dated February 2013.
- i) The EA will be amended in the future, in order to split; enabling Eskom to take over the management of the power line after it has been constructed by the Independent Power Producer.
- j) The methodology used in assessing the potential impacts identified in the FEIAR dated February 2013 and the specialist studies have been adequately indicated.
- k) A sufficient public participation process was undertaken and the applicant has satisfied the minimum requirements as prescribed in the EIA Regulations, 2010 for public involvement.

3. Findings

After consideration of the information and factors listed above, the Department made the following findings -

- a) The identification and assessment of impacts are detailed in the FEIAR dated February 2013 and sufficient assessment of the key identified issues and impacts have been completed.
- b) Given the close proximity of the site to the Black Mountain Mine, the fact that the footprint of the development area fall outside of the CBAs and only a small portion falls within an ~~ESA~~ ^{ESA}, the development is well placed on a landscape scale.
- c) The Western Layout (preferred) falls just outside one of Birdlife South Africa's Important Bird Areas.



- d) The property has low agricultural potential as a result of geology, climate and disturbed nature of the vegetation.
- e) It is unlikely that the development of the site would lead to broad- scale disruption of ecological process, since there is a large amount of less disturbed land to the north and south of the site which contains very similar habitat. The placement of the footprint will not significantly impact on the ability to achieve NPAES targets
- f) The procedure followed for impact assessment is adequate for the decision-making process.
- g) The proposed mitigation of impacts identified and assessed adequately curtails the identified impacts.
- h) The information contained in the FEIAR dated February 2013 is accurate and credible.
- i) EMPr measures for the pre-construction, construction and rehabilitation phases of the development were proposed and included in the BAR and will be implemented to manage the identified environmental impacts during the construction process.

In view of the above, the Department is satisfied that, subject to compliance with the conditions contained in the environmental authorisation, the proposed activity will not conflict with the general objectives of integrated environmental management laid down in Chapter 5 of the National Environmental Management Act, 1998 and that any potentially detrimental environmental impacts resulting from the proposed activity can be mitigated to acceptable levels. The environmental authorisation is accordingly granted.

A handwritten signature in black ink, appearing to be 'M. de Vries', is located in the lower right quadrant of the page.