

Phase 1a Archaeological Impact Assessment

Scoping Phase

Proposed Hotazel Solar and Grid Connection on Remaining Extent (Portion 0) of the Farm York A 279, Portion 0 of Hotazel 280, Portion 11 of the Farm York A 279, and Portion 3 of the Farm York A 279, District of Hotazel, Northern Cape Province

Conducted in terms of Section 38(8) of the National Heritage Resource Act (No. 25 of 1999)

prepared for

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1. Executive Summary

This report presents the archaeological component of the integrated Heritage Impact Assessment that is being compiled by Perception Planning as part of the EIA process for the proposed development of the Hotazel Solar and grid connection projects.

The desktop study and literature review has shown that the immediate surroundings of the affected properties are not highly sensitive from an archaeological perspective. It is not expected that significant heritage resources occur within the affected areas. Nevertheless, this needs to be verified through ground-truthing by means of an archaeological foot survey that will be performed once the preferred development layout plans have been determined through the scoping phase of the project.

At this time, and in the absence of field data, there is no assessment of impacts and no recommendations are made.

2. Name, Expertise and Declaration

I, Peter Nilssen (PhD in archaeology, University of Cape Town 2000), herewith confirm that I am a Professional member - in good standing - of the Association of South African Professional Archaeologists (ASAPA), including the Cultural Resource Management section of the same association since 1989 (ASAPA professional member # 097). I am an accredited Principal Investigator for archaeozoology (specialist analysis), coastal, shell midden and Stone Age archaeology; Field Director for Colonial Period archaeology; and Field Supervisor for Iron Age archaeology and Rock Art. I have worked as a professional archaeologist in Cultural Resource Management since 1989 and have completed more than 200 heritage-related impact assessments and mitigation projects as Principal Investigator. All submitted works were approved by provincial and national heritage authorities.

As the appointed independent specialist (archaeologist) for this project hereby declare that I:

- act as an independent specialist in this application;
- regard the information contained in this report as it relates to my specialist input/study to be true and correct;
- do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the NEMA, the Environmental Impact Assessment Regulations, 2014 and any specific environmental management Act;
- have and will not have no vested interest in the proposed activity proceeding;
- have disclosed, to the applicant, EAP and competent authority, any material information that have or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the NEMA, the Environmental Impact Assessment Regulations, 2014 and any specific environmental management Act;
- am fully aware of and meet the responsibilities in terms of NEMA, the Environmental Impact Assessment Regulations, 2014 (specifically in terms of regulation 13 of GN No. R. 982) and any specific environmental management Act, and that failure to comply with these requirements may constitute and result in disqualification;
- am aware that a false declaration is an offence in terms of regulation 48 of GN No. R. 982.



Signature of the specialist:

Name of company: Dr Peter Nilssen

Professional Archaeologist and Specialist Heritage Practitioner

Date: **11 July 2018**

3. NEMA Requirements for Specialist Reports

NEMA requirements for Specialist Reports		
Appendix 6	Specialist Report content as required by the NEMA 2014 EIA Regulations, as amended	Section
1 (1)(a)	(i) the specialist who prepared the report; and	Title page & Section 2; as well as the accompanying CV
	(ii) the expertise of that specialist to compile a specialist report including a curriculum vitae;	
(b)	a declaration that the specialist is independent in a form as may be specified by the competent authority;	Section 2
(c)	an indication of the scope of, and the purpose for which, the report was prepared;	Section 5.3
(cA)	an indication of the quality and age of the base data used for the specialist report;	desktop study up to 2018; see Section 5.6 and section 6
(cB)	a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Section 5.4 & Section 7
(d)	the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	Section 5.6 and Section 6.4
(e)	a description of the methodology adopted in preparing the report or carrying out the specialised process, inclusive of equipment and modelling used;	Section 5.6
(f)	details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	Section 5.6 and Section 6.4
(g)	an identification of any areas to be avoided, including buffers;	Section 6.4
(h)	a map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	Section 6.4 and associated Figures and Plates
(i)	a description of any assumptions made and any uncertainties or gaps in knowledge;	Section 5.7
(j)	a description of the findings and potential implications of such findings on the impact of the proposed activity, or activities;	Section 6
(k)	any mitigation measures for inclusion in the EMPr;	Section 6.4
(l)	any conditions for inclusion in the environmental authorisation;	Section 8
(m)	any monitoring requirements for inclusion in the EMPr or environmental authorisation;	Section 8
(n)	a reasoned opinion-	Section 8
	(i) whether the proposed activity or portions thereof should be authorised; and	
	(iA) regarding the acceptability of the proposed activity or activities; and (ii) if the opinion is that the proposed activity or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan;	
(o)	a description of any consultation process that was undertaken during the course of preparing the specialist report;	Part of the EIA process and integrated HIA
(p)	a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	Not yet done
(q)	any other information requested by the competent authority.	Not at this time
2	Where a government notice gazetted by the Minister provides for any protocol or minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply.	N/A

4. NHRA Requirements for Heritage Reports

NHRA requirements for Heritage Reports -National Heritage Resources Act (No 25 of 1999)		
Section 38(3)	The responsible heritage resources authority must specify the information to be provided in a report required in terms of subsection (2)(a): Provided that the following must be included:	Section
38 (3)(a)	The identification and mapping of all heritage resources in the area affected;	Awaiting field data
(b)	an assessment of the significance of such resources in terms of the heritage assessment criteria set out in section 6(2) or prescribed under section 7;	Awaiting field data
(c)	an assessment of the impact of the development on such heritage resources;	Awaiting field data
(d)	an evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;	Awaiting field data
(e)	the results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources;	To be part of the EIA Public Participation Process
(f)	if heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and	Awaiting field data
(g)	plans for mitigation of any adverse effects during and after the completion of the proposed development.	Awaiting field data

5. Introduction

5.1. Background to Development Proposal

The proposed development details provided below for the solar facility are taken, mostly verbatim, from the AEP Technical Development Layout Report (Miszczak 2018), while details of the proposed grid connection are taken from a company memo prepared by Atlantic Renewable Energy Partners (Pty) Ltd (22 May 2018).

ABO Wind Hotazel PV (Pty) Ltd is proposing the establishment of a commercial photovoltaic (PV) solar energy facility (SEF), called Hotazel Solar, on the farm known as the Remaining Extent (Portion 0) of the farm York A 279, situated in the District of Hotazel in the Northern Cape Province (Figures 1, 2 & 3). The current proposal is that the solar energy generated by the Hotazel Solar facility will be evacuated via overhead power lines to the nearby Hotazel substation by crossing over the Remainder of the Farm York A 279, Portion 0 of Hotazel 280 (purple), Portion 11 of York A 279 (green), and Portion 3 of York A 279 (blue) (Figures 4 & 5).

The proposed development activities trigger the National Heritage Resources Act (Act 25 of 1999), and therefore, this author was appointed to provide archaeological input to the broader integrated Heritage Impact Assessment that is being undertaken by Perception Planning in terms of Section 38(8) of the National Heritage Resources Act. Mr Dale Holder of Cape Environmental Assessment Practitioners (Cape EAPrac) is facilitating the EIA and BA processes.

5.2. Proposed Development Infrastructure

Solar Facility:

The technology under consideration is photovoltaic (PV) modules mounted on either fixed-tilt or tracking structures. Other infrastructure includes inverter stations, internal electrical reticulation, internal roads, an on-site switching station / substation, a 132 kV overhead transmission line (OHL), auxiliary buildings, construction laydown areas and perimeter fencing and security infrastructure. The on-site switching station / substation will locate the main power transformer/s that will step up the generated electricity to a suitable voltage level for transmission into the national electricity grid, via the OHL. Auxiliary buildings include, inter alia, a control building, offices, warehouses, a canteen and visitors centre, staff lockers and ablution facilities and gate house and security offices. Hotazel Solar will have a net output of 100 MW_{AC} with an estimated maximum footprint of ± 275 ha (or 43% out of a total of 636.8 ha).

It is customary to develop the final / detailed construction layout of the SEF only once an Independent Power Producer (IPP) is awarded a successful bid under the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP), after which major contracts are negotiated and final equipment suppliers identified. However, for the purpose of the Draft Scoping Report (DSR) in accordance with the minimum requirements prescribed by the Department of Environmental Affairs (DEA), two alternative layouts were identified. The following section elaborates on the layout options for the Hotazel Solar facility.

The Remaining Extent (Portion 0) of the farm York A 279 is highlighted in yellow in Figures 2 & 3 below. An initial/ conceptual area of ± 450 ha was identified for the ecologist to assess during his site visit in the initiation phase of the EIA (Scoping) for Hotazel Solar.

This initial/ conceptual area only considered the power lines over the Property, and the regional roads that segment the property into three sections and was thus driven primarily by its undivided space. The initial/ conceptual area did not consider any environmental sensitive areas (to be identified by the various specialist studies). Following the identification of the initial/ conceptual area, an ecological expert, Mr Simon Todd, was appointed to assess the area and advise suitable areas for the location of the SEF.

Layout Alternative 1 constitutes a preliminary layout area within the initial/ conceptual area restricted to the east of the Property (Figure 3). Layout Alternative 2 includes a bit more sensitive habitat in the west with a higher abundance of *Acacia haematoxylon*, however it would have a shorter grid connection to the Hotazel substation (Figure 3). The ecologist advised that the far west and far eastern sides of the site should be avoided as these areas have a high tree density.

An overview of the main components of the solar energy facility layout is as follows: 1) Solar PV modules connected in series to form a string. A number of strings are then wired in parallel to form an array of modules. PV modules are mounted on structures that are either fixed, north-facing at a defined angle, or mounted to a single or double axis tracker to optimise electricity yield, 2) There are various options for mounting structure foundations, which include cast / pre-cast concrete, driven / rammed piles, or ground / earth screws mounting systems.

The impact on agricultural resources and production of these mounting structure options are the same. Concrete, however, is least preferred due the effort required to remove the concrete from the soil in the decommissioning phase and the resulting impact on the environment. The Hotazel Solar facility will therefore aim to mostly use either driven / rammed piles, or ground / earth screws for mounting systems, and only resort to concrete foundations should geotechnical studies necessitate this.

The auxiliary buildings will comprise of the following as a minimum:

- Control Building / Centre ($\pm 31\text{m} \times 8\text{m}$);
- Office ($\pm 22\text{m} \times 11\text{m}$);
- 2 x Warehouses (each $\pm 50\text{m} \times 20\text{m}$);
- Canteen & Visitors Centre ($\pm 30\text{m} \times 10\text{m}$);
- Staff Lockers & Ablution ($\pm 22\text{m} \times 11\text{m}$); and
- Gate house / security offices ($\pm 6\text{m} \times 6\text{m}$).

The total area occupied is approximately 0.31 ha, excluding the facility substation.

Grid Connection & Cabling:

It is proposed to connect the SEF directly to Eskom's Hotazel Substation located $\pm 3\text{km}$ to the north west of the Property (Figure 4). The SEF substation will be approximately $100\text{m} \times 100\text{m}$ in size and feature a step-up transformer/s to transmit electricity via a 132 kV OHL directly to the Hotazel Substation. Depending on which layout alternative is selected, there are options for the SEF substation location, and the OHL routing to the Hotazel Substation, as shown below in Figure 5.

The longest OHL alternative (Alternative C from Substation Alternative B) is $\pm 6\text{km}$ in length. The OHL will be a maximum height of 24m and occupy a servitude width of between 31m – 51m.

A 100 MW_{AC} installation will require specific electrical components to meet the national grid code requirements in order to generate and supply electricity into the national grid. The conversion from DC (modules) to AC is achieved by means of inverter stations. A single inverter station is connected to a number of solar arrays, and will be placed along the internal service roads for ease of access. A number of inverter stations will be installed for the SEF (up to maximum of ± 80), each of which is connected to the on-site / facility substation.

Final placement of the inverter stations and on-site / facility substation will need to take ground conditions into consideration. Interconnecting electrical cabling will be trenched where practical and follow internal access roads as far as possible in order to reduce impacts. Sensitive areas will be avoided, and where necessary, cables will be fastened above-ground to the mounting structures so as to avoid excessive excavation works and clearing of vegetation.

Roads:

The internal road network of the SEF will consist of gravelled roads, 4 – 5m in width, around the solar array periphery. Roads located in-between the solar panels will be un-surfaced tracks to be used for maintenance and cleaning of solar PV panels.

Precautionary measures will be taken to mitigate the risk of ground disturbances where access roads will be constructed. Special attention will be given to drainage, water flow and erosion by applying appropriate building methods.

A detailed transport and traffic plan will be undertaken during the EIA phase of the project to determine the best route to site. Depending on the selected layout alternative, there are two existing access points that could be used for the SEF (Figure 5).

Layout:

At present there is no preference between the two layout alternatives. The preferred layout alternative will be determined through the scoping and impact assessment processes.

5.3. Purpose and Scope of the Study

The overall purpose of a Phase 1a Archaeological Impact Assessment (AIA) is to assess the sensitivity of archaeological resources in the affected area, to determine the potential impacts on such resources, and to avoid and/or minimize such impacts by means of management and/or mitigation measures. Note that the AIA presented here considers archaeological materials of prehistoric and historic origin as well as the cultural landscape. The study presented here provides input to the broader integrated Heritage Impact Assessment being undertaken by Perception Planning. This AIA was undertaken according to best practice principles and meets standards required by the heritage authorities in terms of the National Heritage Resources Act, No. 25 of 1999 (also see table in Section 4).

The objectives of the Phase 1a Archaeological Impact Assessment are:

- To assess the nature and sensitivity of archaeological resources in the affected parts of the receiving environment;
- To identify the impact of the proposed development on such resources as well as options for mitigation and/or management in order to minimize potential negative impacts and to make recommendations for mitigation / management where necessary; and

- To identify archaeological resources and issues that may require further investigation.

This scoping archaeological study is required for the Pre-application Public Participation phase associated with the pre-application Scoping report for the Hotazel Solar project. This archaeological scoping study also provides input for community consultation in terms of Section 38 (3) (e) of the NHRA. This report will be made available to all Interested and Affected Parties (I&APs) as part of the Public Participation Process being undertaken for the EIA process. In addition, heritage interest groups may then provide feedback as part of the official community consultation to fulfil NHRA requirements. Such feedback may result in further consultation in terms of Section 38 (3) (e) of the NHRA. Because the EIA process is iterative, the Hotazel Solar layout alternatives may change according to inputs from various stakeholders, interested and affected parties and specialists. Therefore, the scoping phase is based on the latest available information, and will be amended during the EIA phase should new information be made available.

The archaeological field investigation and scope of the archaeological impact assessment will focus on the preferred Hotazel Solar layout as determined during the scoping phase, which includes the solar facility and grid connection infrastructure detailed in section 5.2 above.

Since archaeological resources occur on ground surfaces or in sub-surface sediments, only those aspects of the proposed development that will impact on surface or sub-surface sediments are considered relevant.

Standard Terms of Reference (ToR) for a Phase 1a Archaeological Impact Assessment:

- a) Locate development impact areas including solar array and sub-station sites, routes of roads and cables, upgrades and changes to existing district and minor roads, specifically at intersections and at crossings of drainage lines.
- b) Conduct a detailed foot survey of the development impact areas to identify and record all archaeological resources.
- c) Assess the predicted impacts of the proposed development activities as well as the No-Go option on such resources according to the Cape EAPrac Impact Assessment Methodology.
- d) Recommend management and mitigation measures to reduce negative impacts and enhance positive impacts.
- e) Indicate if additional studies/ fieldwork are necessary.
- f) Prepare and submit a report that meets standards required by Heritage Authorities in terms of Section 38(3) of the National Heritage Resources Act, No. 25 of 1999 as well as NEMA.

The current phase of the AIA process involves a desktop study and literature review of the affected environment and surroundings with a view to inform the fieldwork phase and to determine if any fatal flaws are present in the affected areas. Because the proposed development activities - construction and installation - may have a permanent negative impact on archaeological resources in the development area, this report provides a summary of the findings made during heritage-related studies in the surrounding environment. A detailed archaeological survey of the preferred alternative and grid connection options will be undertaken once these have been determined. On completion of field work, a detailed Phase 1a Archaeological Impact Assessment report will be provided and will form part of the integrated Heritage Impact Assessment.

5.4. Study Area

Hotazel is a manganese mining village that services mine-workers on the Hotazel Mine, which started operations in 1955. The railway line between Hotazel and Sishen was constructed in 1959. The town has expanded as a result of the electrification of the railway line and the opening of the Wessels and Mamantwan manganese mines in the vicinity (De Jong & Van Schalkwyk 2010).

The proposed Hotazel Solar facility and associated grid connection to the Hotazel Substation are situated on the Remaining Extent (Portion 0) of the farm York A 279, Remainder of the Farm York A 279, Portion 0 of Hotazel 280, Portion 11 of the Farm York A 279 and Portion 3 of the Farm York A 279, in the District of Hotazel in the Northern Cape Province (Figures 1, 2 & 4). The site for the proposed solar facility is about 3.5km SSE of the town of Hotazel and some 50km NW of the Northern Cape town of Kuruman. The proposed solar facility is centred on S27.219093° E22.986271° and appears on the 1:50 000 maps 2722BB and 2723AA (WGS84, courtesy of Chief Directorate: National Geo-Spatial Information). The site for the Hotazel Solar facility is bordered in the west and south by the R31 road while a district road runs immediately east of the eastern boundary. The Hotazel manganese mine is situated to the north as is undeveloped agricultural or rural land. The western extent of the property is truncated by the Hotazel to Sishen railway line (Figures 1 & 2).

The following description is based on Google Earth imagery and descriptions given in heritage-related studies in the immediate surroundings of the affected area. Topographically, the surroundings of Hotazel are essentially flat with minor undulation. The exceptions are the Ga-Mogara River some 5km to the west and the Kuruman River about 10 to 15km to the NE. Vegetation is generally open, but not sparse, and consists of a cover of grass, bush, patches of swarthaak (*Acacia dentinens*) and a scatter of acacia trees (Beaumont 2008). Surface sediments consists of aeolian sands varying in colour from red, through orange to light brown that are present in depths of up to around 5m (Beaumont 2008). Surface sands are underlain by limestone and in places this is underlain by banded ironstone. Sub-surface sediments are rich in iron ore and manganese. Limestone or calcretes are exposed in places, and pebble gravels and red sands are often exposed adjacent to rivers and streams. It is at these exposures near water sources that Stone Age archaeological materials are commonly exposed and historical remnants are also mostly found near rivers, springs and other water sources.

The Google Earth imagery suggests that archaeological visibility should be excellent across the vast bulk of the study area. The surrounding land use includes manganese mining and associated village of Hotazel, agricultural, rural and undeveloped. Recent human related disturbances to the environment include mining, roads (R31), railway line, vehicle tracks, fencing and overhead power lines. Natural disturbances include animal tracks and burrowing by large and small mammals.

5.5. Legal Requirements

The following legal requirements - relevant to heritage - apply to the proposed Hotazel Solar and grid connection development:

- The National Environmental Management Act, No. 107 of 1998 (NEMA as amended): An Environmental Authorisation is required for Listed Activities in

Regulations pursuant to NEMA, and specialist assessments are required to inform the Scoping and EIA phases associated with the Application for Environmental Authorisation for the project;

- The National Heritage Resources Act, No. 25 of 1999 (NHRA): A full Heritage Impact Assessment is being undertaken for the South African Heritage Resources Agency (SAHRA) and Northern Cape Provincial Heritage Resources Authority.

The archaeological component of the EIA process is being undertaken to comply with the following clauses of Section 38(1) of the NHRA which trigger the requirement for a heritage impact assessment: (a) the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length; (c) any development or other activity which will change the character of a site (i) exceeding 5 000 m² in extent; or (ii) involving three or more existing erven or subdivisions thereof. See further details required for the heritage study in terms of the NHRA No 25 of 1999 in Section 38(3) in Appendix A (also see table in Section 4).

5.6. Approach to the Study - Methodology

This assessment was conducted according to best practice principles and in accordance with guidelines and minimum standards required by heritage authorities in respect of the NHRA (HWC 2007, 2016a, 2016b, SAHRA 2017, SAHRA APM 2007, 2012 & 2018), and as set out in Section 13, GN.R982 of NEMA (General requirements for EAPs and Specialists).

5.6.1. Desktop & Literature Review

The purpose of a desktop study and literature review is to gain an understanding of the archaeological and heritage background of the immediate surroundings and to establish the nature and type of archaeological remains that occur in the affected area, as well as the type of limitations and constraints encountered by specialists working in the area.

This author has work experience in the Northern Cape and is familiar with the main types of heritage resources and issues (e.g., Nilssen 2015a, 2015b, 2015c, 2016a, 2016b and 2016c). A desktop study and literature review was undertaken, which relied in part on this author's experience in the area and also focused on the SAHRIS database up to June 2018, which is by no means exhaustive (Figures 6 & 7). Previous heritage and archaeological studies in the immediate surroundings have already provided detailed descriptions of the history, heritage and archaeological record of the area (see for example and references in Beaumont & Morris 1990, De Jong & Van Schalkwyk 2010, Fourie 2015a, Fourie & van der Walt 2007a, Humphreys & Thackeray 1983, Hutten & Hutten 2013, Kruger 2015, 2016a, Küsel, U. *et al* 2009 and Webley & Halkett 2008). While giving a broad overview of the archaeological record presented in the above-named reports as well as those listed in the reference section below, the focus is on presenting key heritage concerns already identified in earlier studies and how they relate to the assessment being conducted here.

The desktop study also involved a detailed inspection of aerial imagery available through Google Earth. The main aim of examining aerial imagery was to determine which development activities encroached upon previously undisturbed and hence potentially

sensitive areas, and to locate man-made structures or ruins for potential future investigation in the event that they were threatened by proposed development activities. Existing disturbances and developments were also located via aerial imagery and can be inspected on foot where necessary.

5.6.2. Consultation

The Public Participation Process will be run as part of the EIA process, and where deemed necessary, community consultation will be conducted in terms of section 38(3)(e) of the NHRA. These processes will be undertaken as part of the integrated Heritage Impact Assessment process that is being compiled by Perception Planning.

5.6.3. Archaeological Foot Survey

The purpose of an AIA is to conduct a survey of the affected areas in order to identify, record and rate the significance of archaeological resources, to assess the impact of the proposed area and linear developments on such resources and to recommend mitigation and management measures where necessary.

To assess the nature and significance of the archaeological record in the affected area, it is necessary to conduct a comprehensive foot survey. The latter will focus specifically on the preferred Hotazel Solar development footprint, associated infrastructure and access roads, as well as the various grid connection options linking the solar facility to the Hotazel Substation (Figures 3 & 5).

The potential for different landforms, sediments or landscape features to contain archaeological traces is assessed according to type, such as rocky surfaces, sandy surfaces, cultivated areas, previously developed or disturbed areas, rock shelters, and so on. Overall, the significance of archaeological occurrences or sites is evaluated in terms of their content and context. Attributes to be considered in determining significance include artefact and/or ecofact types, rarity of finds, exceptional items, organic preservation, aesthetic appeal, potential for future research, density of finds and the context in which archaeological traces occur.

Based on previous work conducted in the immediate surroundings, it is likely that open vegetation and large expanses of exposed ground surfaces will provide excellent archaeological visibility and allow for a good understanding of the archaeological record in the area (Beaumont 2008, Orton 2016b, 2017). Due to good archaeological visibility, and based on the very sparse and low significance of archaeological occurrences identified during foot surveys on adjacent and nearby properties, survey walk tracks will be spaced initially between about 100 and 200m apart, but will be spaced more closely in the event that archaeological resources are more abundant than anticipated. Walk tracks will be fixed with a hand held GPS to record the search area. The position of archaeological occurrences, observations and photo localities will also be fixed by GPS and digital audio notes of observations and a comprehensive, high quality digital photographic record will be made.

Once archaeological traces have been identified, recorded and assessed in terms of their significance, the aim of the AIA is to assess the potential negative impacts of development on such resources and to make recommendations in mitigation. Below is the grading system and recommended mitigation provided by SAHRA (2007). Note that heritage

practitioners provide field ratings while the heritage authorities are responsible for grading heritage resources.

Site Significance	Field Rating	Grade	Recommended Mitigation
High Significance	National Significance	Grade I	Site conservation / site development
High Significance	Provincial Significance	Grade II	Site conservation / site development
High Significance	Local Significance	Grade III	Site conservation or extensive mitigation prior to development / destruction
High / Medium Significance	Generally Protected A	Grade IV-A	Site conservation or mitigation prior to development or destruction
Medium Significance	Generally Protected B	Grade IV-B	Site conservation or mitigation / test excavation / systematic sampling / monitoring prior to or during development / destruction
Low Significance	Generally Protected C	Grade IV-C	On-site sampling, monitoring or no archaeological mitigation required prior to or during development / destruction

The end product of the AIA is a report that forms part of the integrated Heritage Impact Assessment and that meets standards required by the South African Heritage Resources Agency (SAHRA) in terms of the National Heritage Resources Act, No. 25 of 1999. The AIA report will detail results from the literature review and fieldwork, and will assess potential negative impacts associated with the proposed development and make recommendations in mitigation where necessary.

5.7. Assumptions, Limitations and Gaps in Knowledge

This assessment assumes that all background information and layout plans provided by the applicant and Cape EAPrac are correct and current. This assessment will focus on the impact areas that will be determined during the scoping phase of the project, and does not apply to, and may not be used for any other future developments on the remainder of the affected properties outside the assessed areas that will be reflected by the archaeological survey tracks fixed by GPS.

At present the biggest gap in knowledge is due to the absence of ground truthing through field work, which will only be undertaken once the preferred development layout has been determined.

Due to the fact that much of the archaeological record, and that with potentially the best context, is covered by vegetation and surface sediments, this study will be limited to such resources exposed on the surface or in disturbed contexts. Consequently, it cannot be ruled out that additional heritage resources may be exposed during the construction phase of the development activity.

6. Results

6.1. Desktop & Literature Review

A literature review of previous archaeological and heritage-related work in the surrounding area was conducted in part by using information from the Report Mapping

Project of the SAHRA-APM Unit as well as SAHRIS. Most of the reports cited here were downloaded from the SAHRA web site (<http://www.sahra.org.za/sahris/map/reports>). At the time of this writing, and to the best of my knowledge, no archaeological research has been conducted in the immediate surroundings of Hotazel, but numerous heritage-related studies were undertaken for a variety of environmental applications including mining of mainly manganese, transport infrastructure, borrow pits, solar energy facilities, electrical infrastructure, and so on. A roughly circular area with a radius of between 10 and 20km from the proposed site for the Hotazel Solar facility was included during the literature search on SAHRIS (Figures 6 & 7). A total of 43 environmental application cases on SAHRIS were searched and 17 of these applications did not include heritage-related reports at the time of the search in June 2018. It follows that 26 of the 43 cases included heritage-related impact assessments which were reviewed for the study being conducted here. In addition to these are research papers and publications as well as impact assessments consulted during this author's work in this part of the Northern Cape and North West Province. Cited and consulted literature is listed in the references section below.

Earlier heritage and archaeological research as well as impact assessments in the surroundings have already provided detailed accounts of the history, heritage and archaeological riches of this part of the Northern Cape (see for example and references in Beaumont & Morris 1990, De Jong & Van Schalkwyk 2010, Fourie 2015a, Fourie & van der Walt 2007a, Humphreys & Thackeray 1983, Hutten & Hutten 2013, Kruger 2015, 2016a, Küsel, U. *et al* 2009, Morris 2008a, Morris & Beaumont 2004, and Webley & Halkett 2008).

The most important heritage sites in the surroundings include, but are not limited to Kathu Pan and Kathu Townlands (Stone Age & Pastoralist), Wonderwerk Cave (Stone Age & Pastoralist), Dithakong (Late Iron Age), Gamohana Shelters (Stone Age and Rock Art), Blinklipkop (prehistoric mining of specularite), Moffat Mission Station and the Kuruman Mission (Historic settlement by colonists) and "Die Oog" (critical water source and point of settlement; Kruger 2015).

The site of Kathu Pan includes a cluster of important Stone Age sites and is situated on a tributary of the Kuruman River about 5km NW of the town of Kathu (Beaumont & Morris 1990, Morris 2008a, Morris & Beaumont 2004, Webley & Halkett 2008). Early Stone Age tools and the remains of now extinct animals were observed in the exposed profiles of a sink hole at Kathu Pan 1 in 1974 (Beaumont 1990, Webley & Halkett 2008). Beaumont excavated numerous sites in the Kathu Pan that contain a very long sequence of Stone Age occupation of the Northern Cape from Early through Middle to Later Stone Age times (Beaumont 1990). More recent research on Stone Age implements from Kathu Pan dated to about 500 000 years ago, suggests that archaic humans (probably *Homo heidelbergensis*) were hafting stone implements some 200 000 years earlier than previously thought (Wilkins *et al.* 2012). The recent publication of evidence for the use of ochre / haematite / pigment in the Kathu area between 300 000 and 500 000 years ago has dramatically changed the way we view the origins of modern humans and modern human behaviour (Watts *et al.* 2016).

In addition to Kathu Pan, other less known, but significant archaeological sites in the area include the Kathu Reserve and Kathu Townlands sites as well as the Uitkoms sites with Stone Age elements including Howiesons Poort, "Late Pietersburg", Wilton, Oakhurst, Fauresmith, Ceramic LSA, Iron Age ceramic scatters and Acheulean materials (Beaumont 2006a, 2006b, 2007a and Dreyer 2007).

Wonderwerk Cave, situated in the Kuruman Hills some 90km SE of the present study area, is probably the best known and most significant archaeological site in the Northern Cape (Beaumont & Vogel 2006; Chazan *et al.* 2008, Humphreys & Thackeray 1983).

Excavations in this cave have revealed Early Stone Age (ESA; in excess of 780 000 years old), Fauresmith (270 000 to 500 000 years ago), Middle Stone Age (MSA; 70 000 to 220 000 years ago) and Later Stone Age (LSA; from about 1000 to 12 500 years ago) materials and it is thought that the ESA sediments may date back as far as 2 million years ago (Beaumont & Vogel 2006). Since 2004 an interdisciplinary team is re-dating the sequence and investigating the stone artefacts, faunal and botanical remains in the ESA sediments (Chazan *et al.* 2008). A more recent publication argues that early hominins were making and controlling fire as early as million years ago, and currently this is the earliest evidence for the controlled use of fire by human ancestors worldwide (Berna, F. *et al.* 2012). Conditions in Wonderwerk Cave have ensured excellent preservation of organic remains. The cave contains a 10 000 year long Later Stone Age sequence including; the Kuruman Industry (between 10 000 BP [Before Present] and 8 500 BP) that is dominated by large scarpers in dolomite and banded ironstone, and the Wilton Complex (starting around 8 500 BP) that includes a greater variety of formal tools made from chert, chalcedony and jasper (Webley & Halkett 2008). The walls of Wonderwerk Cave are adorned with paintings and rock engravings dating back to more than 10 000 years ago were discovered during excavations in the Later Stone Age horizons (Lewis-Williams & Dowson 1989).

Combining the evidence and chronometrically dated sequences from Wonderwerk Cave and the archaeological sites surrounding Kathu, it has been possible to reconstruct a technological and industrial sequence spanning nearly the entire span of hominin and human development in this part of Africa (Beaumont 2013).

Further afield, sites with rock engravings have been recorded at Beeshoek - about 10km NW of Postmasberg - and Bruce, and according to Morris, these sites were salvaged between the 1970s and 1990s as they were threatened by development and mining activities (Fock & Fock 1984, Morris 1992, Morris 2008a, Beaumont 1998). In addition to the rock art in Wonderwerk Cave, rock paintings occur in caves and rock shelters in the Kuruman Hills and the Ghaap Escarpment (Morris 1988). Rock engravings have also been recorded north of the town of Kuruman and are present in the larger landscape where suitable rocky outcrops occur (Kruger 2015a). Pecked engravings are more common north of the Orange River while scratched engravings are dominant to the south and in the Karoo (Morris 1988).

It turns out that mining in this part of South Africa is not restricted to the blooming of manganese extraction by colonists from the early-mid 1900s. Tsantsabane, better known as Blinkklipkop, is an ancient specularite mine approximately 5km NE of Postmasberg (Beaumont 1973, Thackeray *et al.* 1983). Specularite was mined from this site by indigenous peoples before colonial times, and the site was visited by many European travellers in the 19th century. The oldest archaeological sediments include the remains of sheep and/or goat, indicating that pastoralists were present in the Kuruman Hills by 1200 BP (Webley & Halkett 2008). Additional pre-historic specularite mines occur at Doornfontein north of Beeshoek and those at Lylyfeld, Demaneng, Mashwening, King, Rust en Vrede, Paling, Gloucester and Mount Huxley also contain Pottery LSA material as well as Fauresmith age stone implements (Beaumont & Boshier 1974, Beaumont 1973, Morris 2008a, Thackeray *et al.* 1983).

Iron Age farmers are known to have arrived in the Northern Cape after the 1600s with stone walling to the NE of Kuruman being the only archaeological evidence for their presence and settlement in the region (Humphreys & Thackeray 1983, Webley & Halkett 2008). Only Tswana speaking - Iron Age - people were occupying the area when the first colonists arrived and the primary Tswana settlement of Dithakong was situated NE of Kuruman, an area rich in fresh water springs (Webley & Halkett 2008).

The first colonists to arrive in this part of South Africa were missionaries, explorers, hunters and traders – including the better known names of Moffat, Burchell, Smith and Lichtenstein - who travelled through the area en route to Kuruman along what became known as the “missionary road”. As mentioned above, the only people present in the area at the arrival of colonists were the Tswana speakers. Kuruman has witnessed a 200 year long period of African-colonial interaction since the establishment of the Kuruman Mission by the London Missionary Society (LMS) in 1816. Robert Moffat (1795-1887) arranged with Chief Mothibi to relocate the Mission to the present position at Seodin in the valley of the Kuruman River, and it is now known as the Moffat Mission.

The Tswana areas were annexed by the British in 1885 and the Tswana were forced to live on reserves. The Tswana revolted against the British in 1895, but were quickly overthrown and their land taken by the British who then divided the land and granted it to colonist farmers (Snyman 1986 in van Schalkwyk 2016a, Fourie & van der Walt 2007b). The history of interaction – as in most parts of the colonized world – is one of conflict over land and territories.

The farms in the immediate surroundings were first surveyed in around 1914 by Wessels and Roos (Fourie 2015b). Much of the remainder of the history and human occupation of the Hotazel area involves live stock farming and the mining of manganese. The original mine, and point of origin for manganese mining in the area is at Black Rock, where a manganese outcrop is exposed at the surface some 15km NW of Hotazel (Küsel *et al.* 2009). In addition to open cast and sub-surface mining operations, the villages of Black Rock included housing for miners, shop(s) and transport infrastructure. Cemeteries are ubiquitous at human settlements and always present in close proximity to villages and homesteads. It has been proposed that, due to its significance in the history of manganese mining in South Africa, that Black Rock should be proclaimed as a National Heritage Site (Küsel *et al.* 2009).

Although the larger area surrounding Hotazel is rich in archaeological resources, these resources are not common in its immediate surroundings and are most commonly restricted to river banks, springs, pans, hills and rocky outcrops.

Archaeological finds made during heritage-related impact assessments in the immediate surroundings as shown in Figures 6 and 7 include:

- Stone Age materials that are dominated by specimens of Later Stone Age and Middle Stone Age origin (Coetzee 2012, Dreyer 2012, Fourie 2015b, 2016a, Fourie & van der Walt 2007b, Hutten & Hutten 2013, Kruger 2015, Küsel *et al.* 2009, Nel 2008, Orton 2016b, Pelser & van Vollenhoven 2011, Pistorius 2006, van der Ryst 2009, Van Schalkwyk 2016a, Webley & Halkett 2008);
- Historic period remains including farmsteads, structures, infrastructure, graves, dams, wells, boreholes, etc., (Coetzee 2012, Fourie 2015a, 2016a, Fourie & van der Walt 2007b, Hutten & Hutten 2013, Küsel *et al.* 2009, Orton 2016b, 2017, Webley & Halkett 2008); and
- Historic period remains of mining activities (Fourie 2015a, Küsel *et al.* 2009, and Pistorius 2006).

Several of the heritage-related impact assessments documented the entire absence of heritage resources (Beaumont 2008, Becker 2012, 2013, De Jong & Van Schalkwyk 2010, Dreyer 2014, Fourie & van der Walt 2007a, Huffman & Schoeman 2001, Kruger 2014, 2016a, 2016b, Orton 2016a, 2017, Van Schalkwyk 2010 & 2016b).

Since the bulk of the archaeological record in the immediate surroundings is that of the Stone Age period, a brief overview of the technology associated with the development of archaic and modern humans during this era is given below.

Early Stone Age (ESA) materials including Acheulean hand axes, cleavers and chopping tools that may date from as early as 2.7 million years ago and come to end about 300 000 years ago is the earliest evidence for the tool-making human ancestors occupying this area. Such artefacts are usually found among alluvial gravels. While present, ESA artefacts are fairly rare and are usually found in disturbed or derived contexts where they are mixed with artefacts of more recent Stone Age times. No definitively ESA materials were identified in the present study area.

The Middle Stone Age (MSA) starts about 300 000 years ago and the interface between the ESA and MSA is sometimes marked by a stone tool industry known as the Fauresmith, where small hand axes appear to indicate the transition from archaic humans to *Homo sapiens*. In the main, however, MSA stone artefacts are characterised by flake and blade industries where evidence for core preparation - also known as the Levallois technique - is seen on prepared or faceted platforms of flakes and blades. Convergent flakes or points are also one of the markers of the MSA period. Like the ESA specimens, though more numerous, stone artefacts of MSA origin also occur among alluvial gravels and are commonly mixed with artefacts of Later Stone Age origin. Unfortunately, no other cultural materials or faunal remains are associated with these artefacts when found in exposed contexts.

The Later Stone Age (LSA) starts about 40 000 years ago and is characterised by substantial technological improvements over the MSA industries. Advancements on previous technologies and new technologies as well as cultural developments include the widespread occurrence of rock art (cave paintings and rock engravings), decorative objects (ostrich egg shell beads, marine shell pendants and beads, ochre), human burials with grave goods including painted stones, an expanded stone tool kit, microlithic stone tool industries (often associated with composite tools such as bow and arrow hunting), bone tools, tortoise carapace bowls, ostrich egg shell containers, fire making sticks and so on. Due to the non-preservation of organic remains in exposed contexts such as the affected environment, the archaeological traces of the LSA occupants is limited to stone artefacts. While LSA stone artefacts are present in the landscape, they occur in low densities - often in isolation, are sometimes mixed with MSA specimens and lack organic and cultural remains. As a result, these materials are generally of low scientific value.

The bulk of archaic human (ESA) and human (MSA to recent) occupation of this area involves the Stone Age era, and therefore, the most significant cultural layer in this area involves the pre-colonial cultural landscape and its sense of place (see UNESCO 2008 for definitions, significance and preservation of cultural landscapes). Overlying the Stone Age cultural layer is the Iron Age and Khoekhoe layer which accounts for the earliest farmers in the Northern Cape. The most recent cultural layer in the landscape is that of colonists who initially occupied the land as live stock farmers, but their most recent use of the land is for the mining of manganese and for the farming of solar energy.

6.2. Consultation

The Public Participation Process will be undertaken as part of the EIA process, and therefore, there is nothing to report at present.

6.3. Archaeological Foot Survey

Since the comprehensive archaeological foot survey will only be conducted once the preferred development layout has been determined, there is nothing to report at this time.

7. Sources of Risk, Impact Identification and Assessment

Tangible heritage resources are non-renewable and each archaeological occurrence is unique, it is important, therefore, that areas affected by development are assessed for the presence and sensitivity of such resources prior to development. The proposed Hotazel Solar and grid connection project will involve both area and linear developments that could have a permanent negative impact on archaeological resources if they were to occur in the area. This scoping study has shown that archaeological resources do occur in the surrounding environment, but that they are generally scarce and commonly of low heritage value. The purpose of the broader EIA process is to assess the sensitivity of environmental resources in the affected area, to determine the potential impacts on such resources, and to avoid and/or minimize such impacts by means of management and/or mitigation measures. The future AIA, to be completed after field work, will serve the same purpose concerning archaeological resources.

Because the planning and design phase of the development is being informed by the broader EIA, any direct negative impacts on significant environmental resources can be avoided or minimized by altering the design and layout plans accordingly. A construction phase Environmental Management Plan (EMP) will further avoid or minimize direct negative impacts.

Potential direct and cumulative negative impacts on archaeological and tangible heritage resources may occur during the construction and installation phase of the proposed development. Indirect and cumulative impacts may occur during the operational phase, but these can be avoided or minimized by means of an EMP that should be implemented during the operational phase of the development.

Based on results from previous archaeological research and heritage impact studies in the surrounding environment it is unlikely that significant archaeological sites will be identified during the AIA.

The assessment of impacts can only be completed after the conclusion of field work. Nevertheless, based on background information and inspection of Google Earth imagery, there is currently no preference for either of the two Hotazel Solar layouts nor for any one of the four grid connection options.

8. Conclusions and Recommendations

Because the archaeological field work component for this assessment is still outstanding, it is not possible to provide recommendations at this time.

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9. Figures and Plates (on following pages)

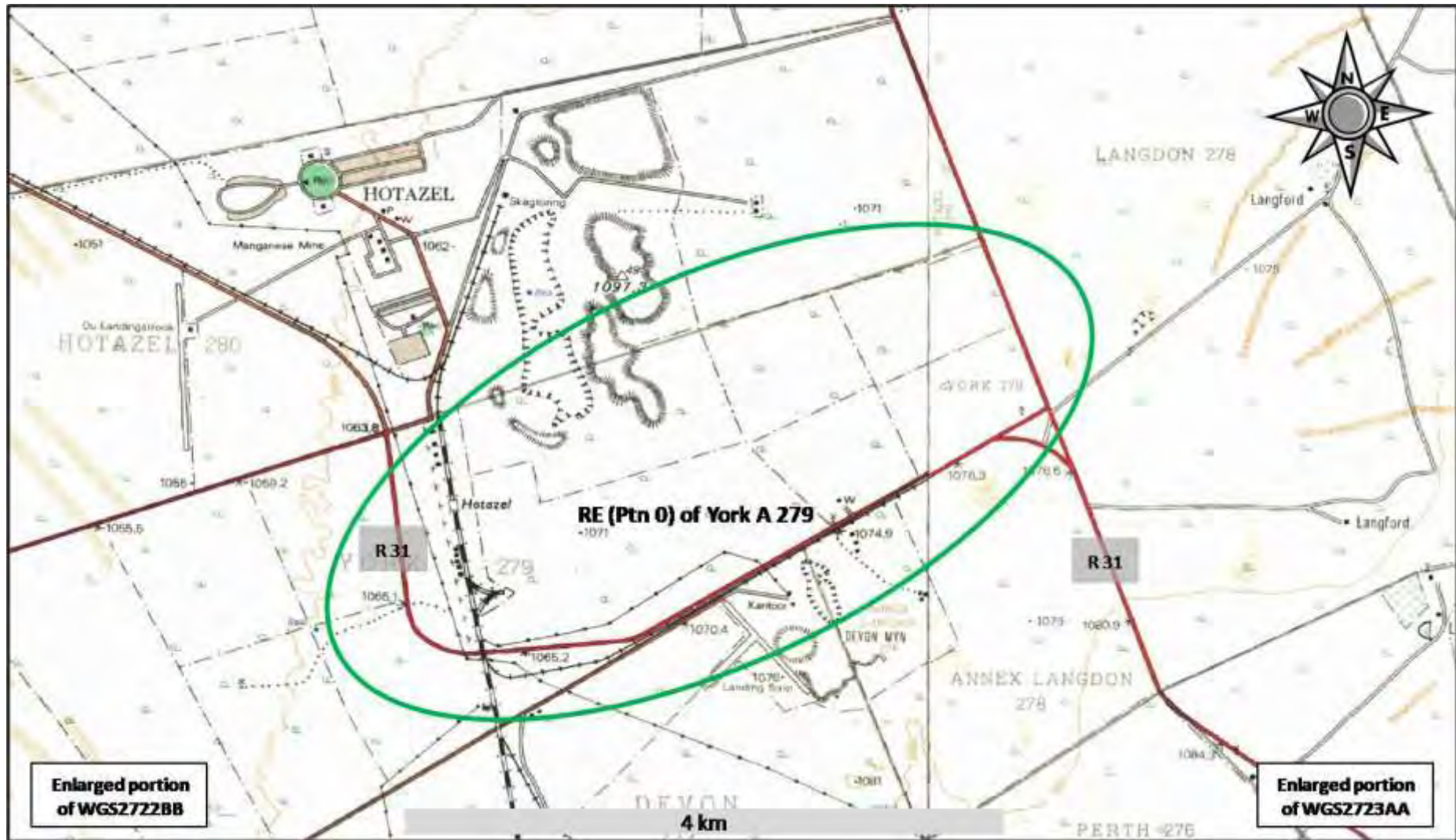


Figure 1. Location of RE (Ptn 0) of York A 279 (green ellipse) relative to the mining village of Hotazel in the Northern Cape Province. Courtesy of The Chief Directorate: National Geo-Spatial Information.

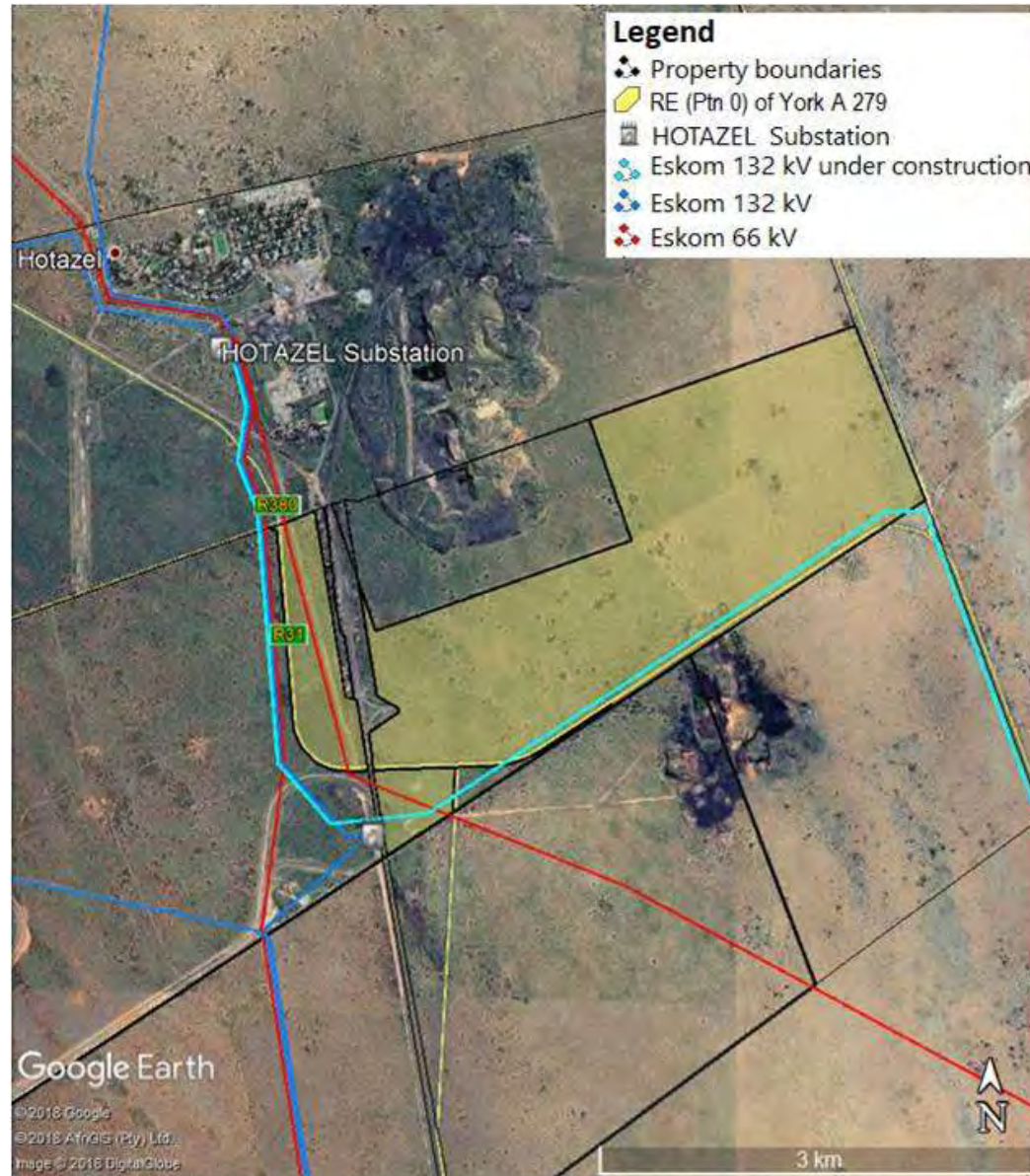


Figure 2. Google Earth image of the study area relative to the mining village of Hotazel as indicated on the map in Figure 1. Courtesy of the client, Cape EAPrac and Google Earth 2018.

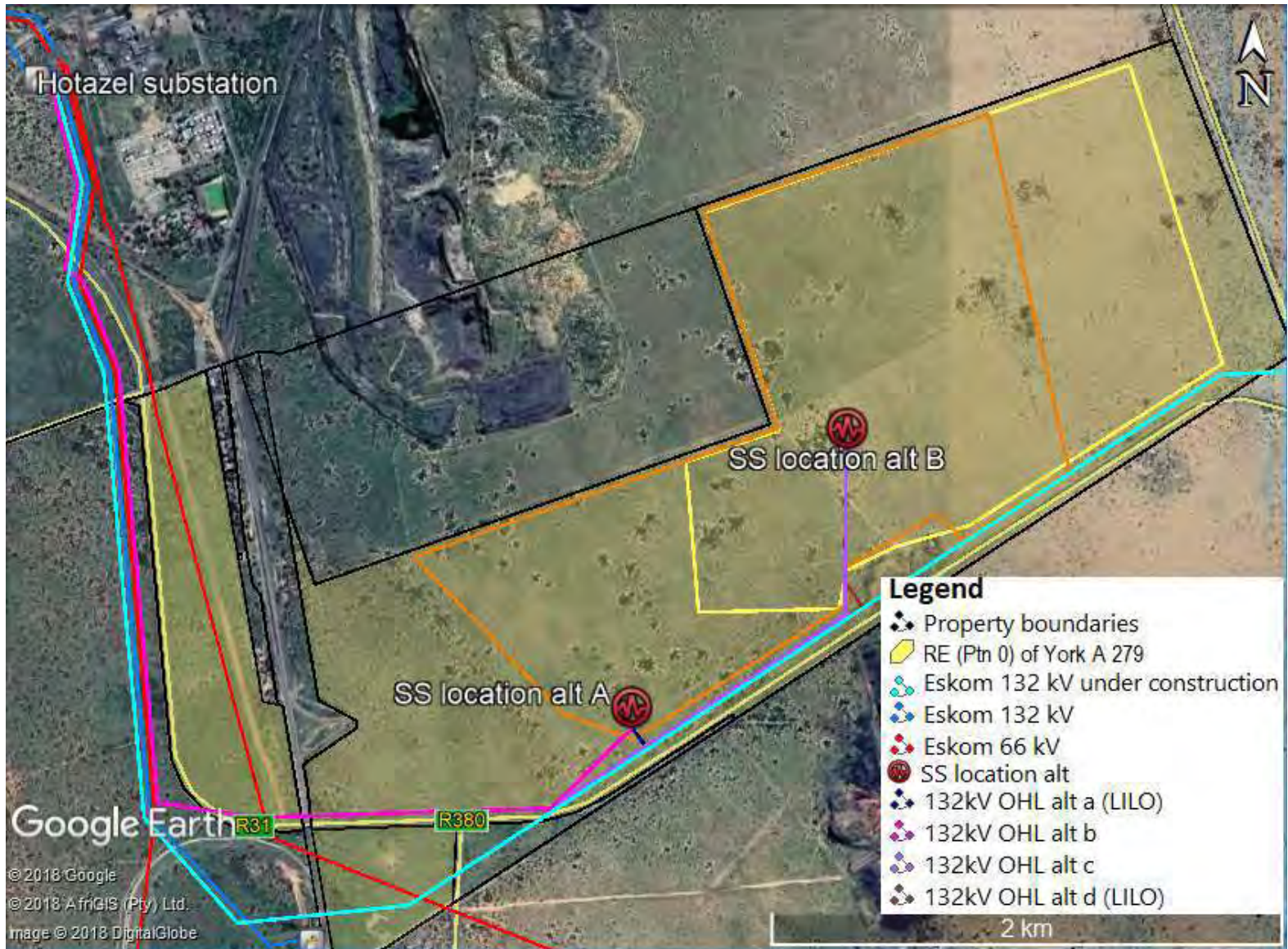


Figure 3. Google Earth image of the study area showing the Hotazel Solar layout alternatives and grid connection options to the Hotazel Substation. Note that only one of the 2 alternative layouts (orange and yellow) will be developed. Courtesy of the client, Cape EAPrac and Google Earth 2018.



Figure 4. Google Earth image of the study area showing the properties crossed by the over head power line routes. Courtesy of the client, Cape EAPrac and Google Earth 2018.

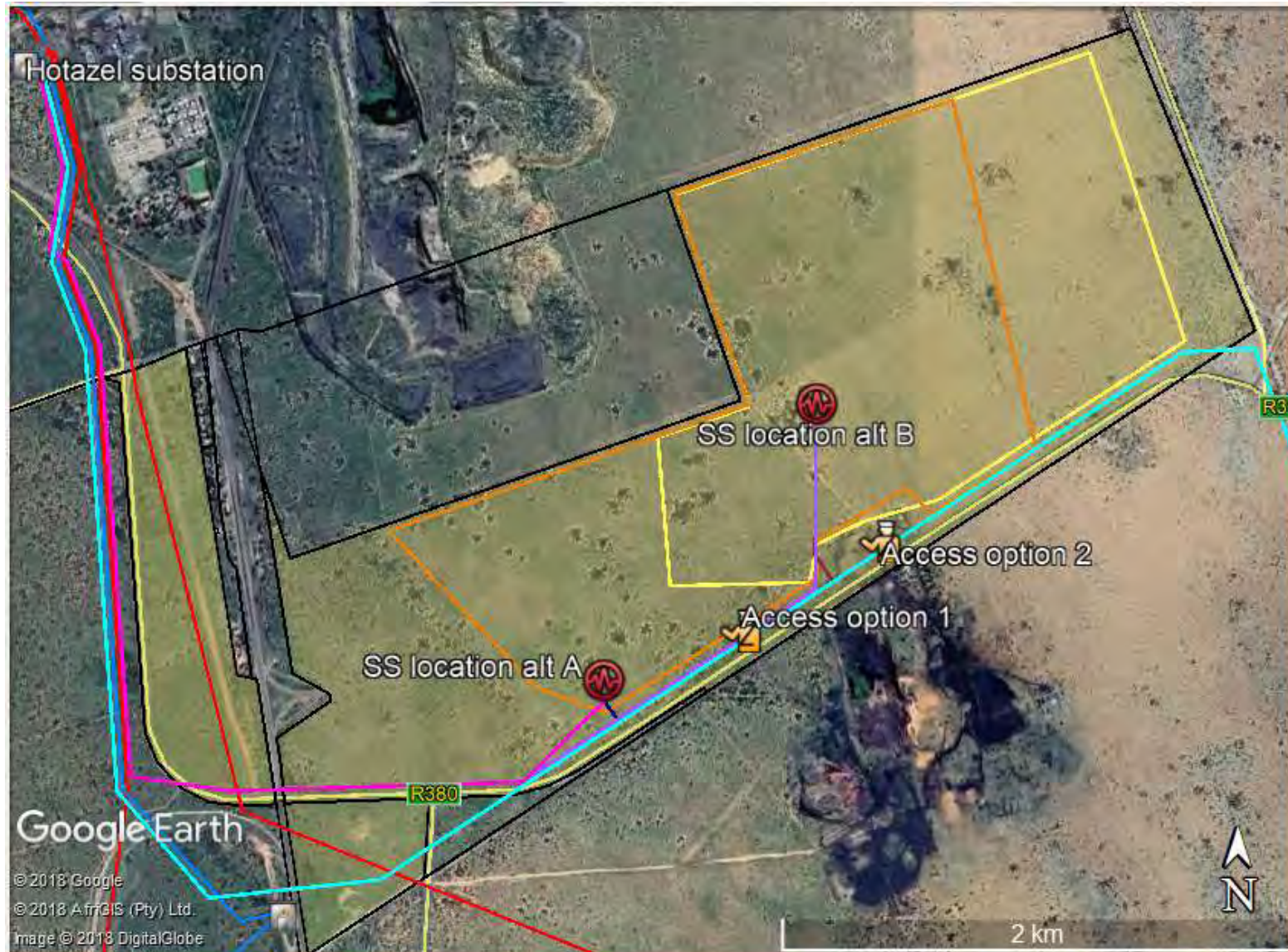


Figure 5. The study area; showing the four grid connection options from the on-site substations to the Hotazel Substation, and the access road options. Note that only one of the 2 alternative layouts (orange and yellow) will be developed. Courtesy of the client, Cape EAPrac and Google Earth 2018.

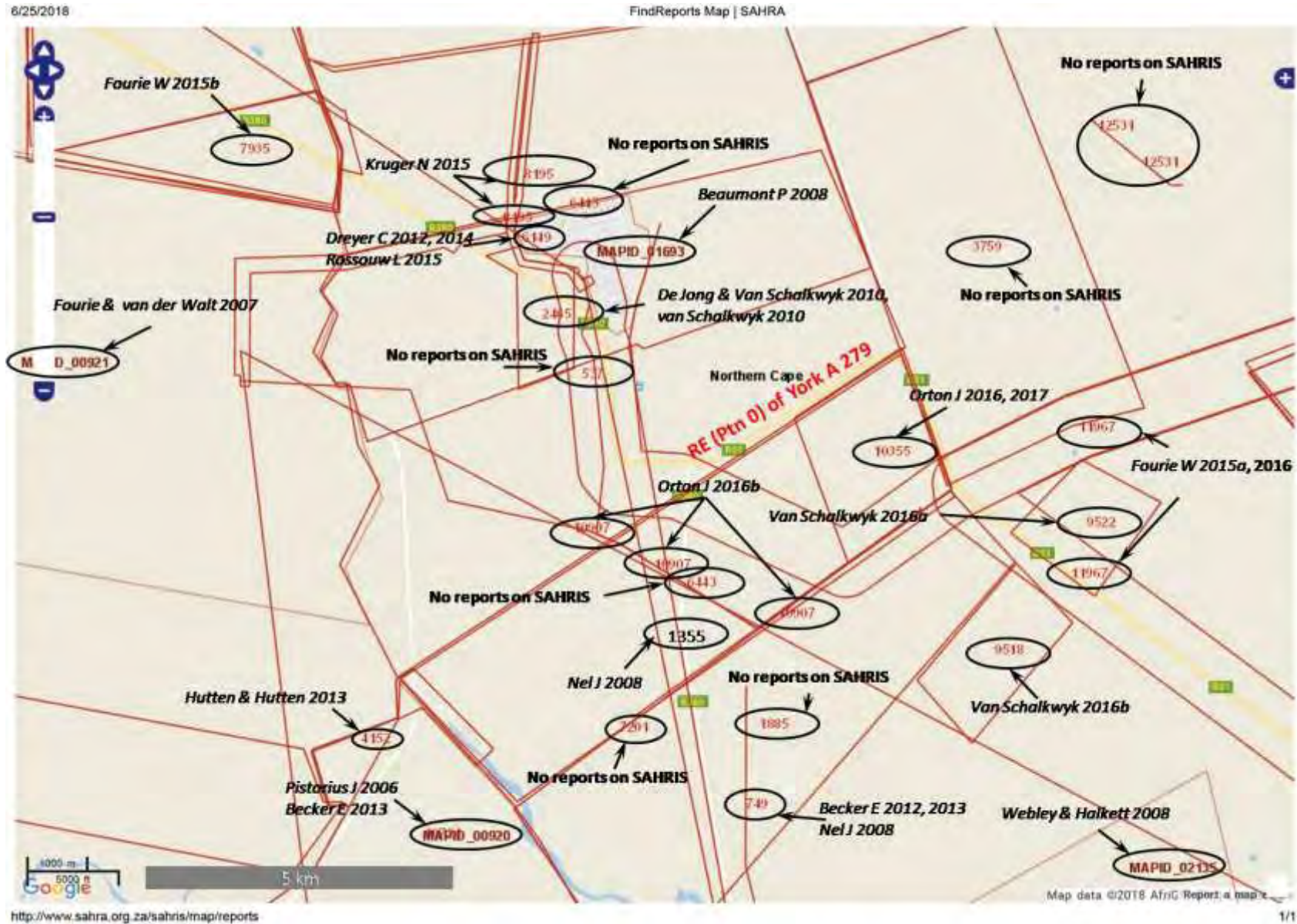


Figure 6. A “screen-print” from the SAHRIS website showing the cases (black ellipses) consulted during the desktop study and literature review. The affected property for the Hotazel Solar facility is labelled in bold red font. Courtesy of www.sahra.org.za/sahris/map/reports 25 June 2018.

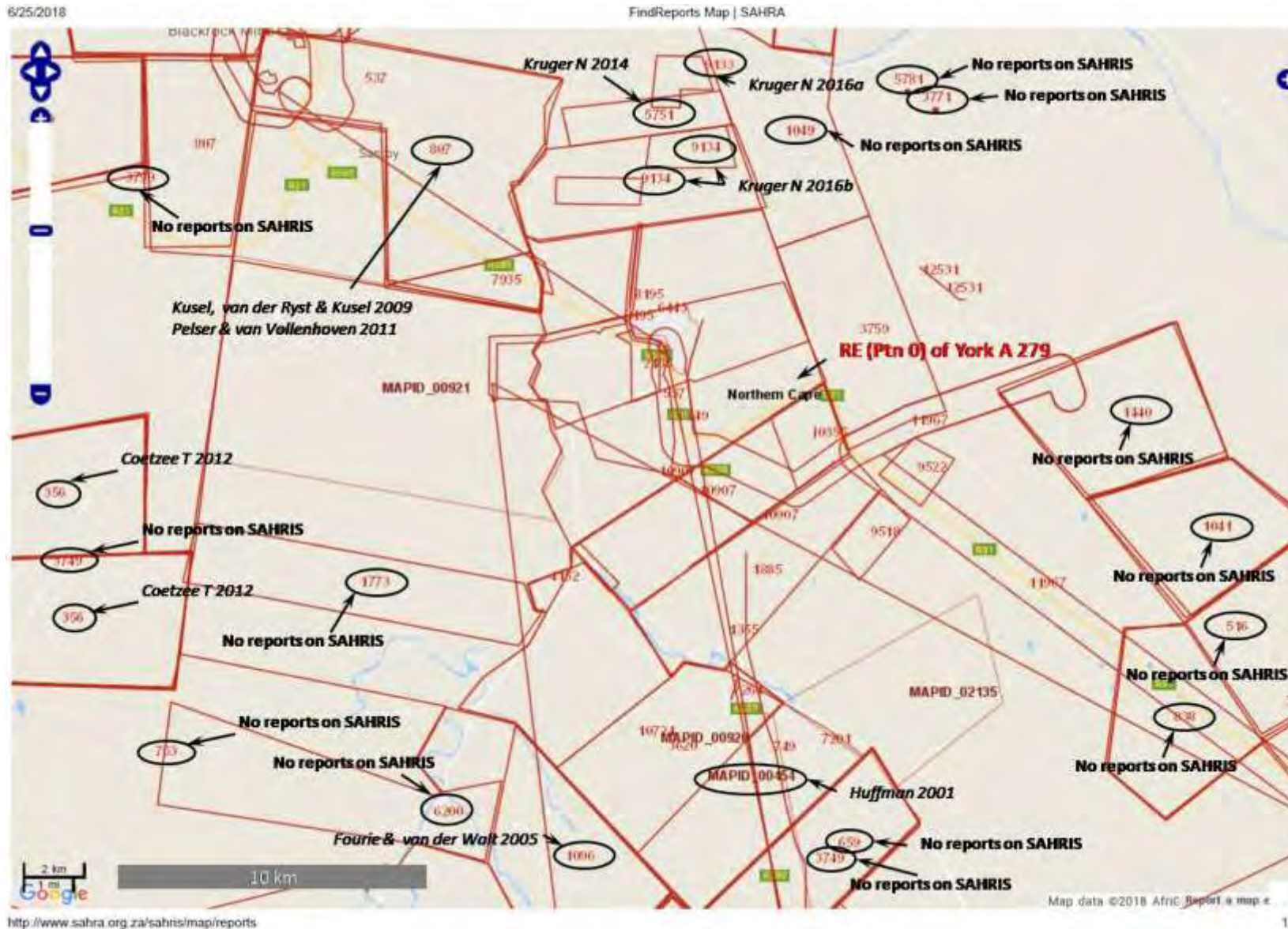


Figure 7. A “screen-print” from the SAHRIS website showing the cases (black ellipses) consulted during the desktop study and literature review. The affected property for the Hotazel Solar facility is labelled in bold red font. Courtesy of www.sahra.org.za/sahris/map/reports 25 June 2018.

Appendix A

Legislation regarding the general protection of heritage resources taken from the National Heritage Resources Act (Act 25 of 1999)

Provisional protection

29. (1) SAHRA, or a provincial heritage resources authority, may, subject to subsection (4), by notice in the Gazette or the Provincial Gazette, as the case may be—

(a) provisionally protect for a maximum period of two years any—

(i) protected area;

(ii) heritage resource, the conservation of which it considers to be threatened and which threat it believes can be alleviated by negotiation and consultation; or

(iii) heritage resource, the protection of which SAHRA or the provincial heritage resources authority wishes to investigate in terms of this Act; and

(b) withdraw any notice published under paragraph (a).

(2) A local authority may, subject to subsection (4), by notice in the Provincial Gazette—

(a) provisionally protect for a maximum period of three months any place which it considers to be conservation-worthy, the conservation of which the local authority considers to be threatened and which threat it believes can be alleviated by negotiation and consultation; and

(b) withdraw any notice published under paragraph (a): Provided that it notifies the provincial heritage resources authority within seven days of such provisional protection.

(3) A provincial heritage resources authority may, by notice in the Provincial Gazette, revoke a provisional protection by a local authority under subsection (2) or provisionally protect a place concerned in accordance with subsection (1).

(4) A heritage resources authority or a local authority may not provisionally protect any heritage resource unless it has notified the owner of the resource in writing of the proposed provisional protection.

(5) A heritage resource shall be deemed to be provisionally protected for 30 days from the date of service of a notice under subsection (4) or until the notice is withdrawn or the resource is provisionally protected by notice in the Gazette or the Provincial Gazette, whichever is the shorter period.

(6) A heritage authority or a local authority may at any time withdraw a notice which it has issued under subsection (4).

(7) SAHRA shall inform the relevant provincial heritage authority and local authority within 30 days of the publication or withdrawal of a notice under subsection (1).

(8) A provincial heritage resources authority shall inform the relevant local authority within 30 days of the publication or withdrawal of a notice under subsection (1).

(9) A local authority shall inform the provincial heritage authority of the withdrawal of a notice under subsection (2)(b).

(10) No person may damage, deface, excavate, alter, remove from its original position, subdivide or change the planning status of a provisionally protected place or object without a permit issued by a heritage resources authority or local authority responsible for the provisional protection.

Legislation relevant to Heritage Areas taken from the National Heritage Resources Act (Act 25 of 1999)

Heritage areas

31. (1) A planning authority must at the time of revision of a town or regional planning scheme, or the compilation or revision of a spatial plan, or at the initiative of the provincial heritage resources authority where in the opinion of the provincial heritage resources authority the need exists, investigate the need for the designation of heritage areas to protect any place of environmental or cultural interest.

(2) Where the provincial heritage resources authority is of the opinion that the need exists to protect a place of environmental or cultural interest as a heritage area, it may request a planning authority to investigate its designation in accordance with proposals submitted by the provincial heritage resources authority with its request. The planning authority must inform the provincial heritage resources authority within 60 days of receipt of such a request whether it is willing or able to comply with the request.

(3) Where the planning authority informs the provincial heritage resources authority that it is willing and able, the provincial heritage resources authority must assist the planning authority to investigate the designation of the place as a heritage area.

(4) Where the planning authority does not so inform the provincial heritage resources authority, or informs the provincial heritage resources authority that it is not so willing and able, the provincial heritage resources authority may investigate the designation of the place as a heritage area and, with the approval of the MEC, designate such place to be a heritage area by notice in the Provincial Gazette.

(5) A local authority may, by notice in the Provincial Gazette, designate any area or land to be a heritage area on the grounds of its environmental or cultural interest or the presence of heritage resources, provided that prior to such designation it shall consult—

(a) the provincial heritage resources authority; and

(b) owners of property in the area and any affected community, regarding inter alia the provisions to be established under subsection (7) for the protection of the area.

(6) The MEC may, after consultation with the MEC responsible for local government, publish regulations setting out the process of consultation referred to in subsection (5).

(7) A local authority must provide for the protection of a heritage area through the provisions of its planning scheme or by-laws under this Act, provided that any such protective provisions shall be jointly approved by the provincial heritage resources authority, the provincial planning authority and the local authority, and provided further that—

(a) the special consent of the local authority shall be required for any alteration or development affecting a heritage area;

(b) in assessing an application under paragraph (a) the local authority must consider the significance of the area and how this could be affected by the proposed alteration or development; and

(c) in the event of any alteration or development being undertaken in a heritage area without the consent of the local authority, it shall have the power to require the owner to stop such work instantly and restore the site to its previous condition within a specified period. If the owner fails to comply with the requirements of the local authority, the local authority shall have the right to carry out such restoration work itself and recover the cost thereof from the owner.

(8) A local authority may erect signage indicating its status at or near a heritage area.

(9) Particular places within a heritage area may, in addition to the general provisions governing the area, be afforded further protection in terms of this Act or other heritage legislation.

Legislation relevant to archaeology and palaeontology taken from the National Heritage Resources Act (Act 25 of 1999)

Archaeology, palaeontology and meteorites

35. (1) Subject to the provisions of section 8, the protection of archaeological and palaeontological sites and material and meteorites is the responsibility of a provincial heritage resources authority: Provided that the protection of any wreck in the territorial waters and the maritime cultural zone shall be the responsibility of SAHRA.

(2) Subject to the provisions of subsection (8)(a), all archaeological objects, palaeontological material and meteorites are the property of the State. The responsible heritage authority must, on behalf of the State, at its discretion ensure that such objects are lodged with a museum or other public institution that has a collection policy acceptable to the heritage resources authority and may in so doing establish such terms and conditions as it sees fit for the conservation of such objects.

(3) Any person who discovers archaeological or palaeontological objects or material or a meteorite in the course of development or agricultural activity must immediately report the find to the responsible heritage resources authority, or to the nearest local authority offices or museum, which must immediately notify such heritage resources authority.

(4) No person may, without a permit issued by the responsible heritage resources authority—

(a) destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;

(b) destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;

(c) trade in, sell for private gain, export or attempt to export from the Republic any category of archaeological or palaeontological material or object, or any meteorite; or

(d) bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assist in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites.

(5) When the responsible heritage resources authority has reasonable cause to believe that any activity or development which will destroy, damage or alter any archaeological or palaeontological site is under way, and where no application for a permit has been submitted and no heritage resources management procedure in terms of section 38 has been followed, it may—

(a) serve on the owner or occupier of the site or on the person undertaking such development an order for the development to cease immediately for such period as is specified in the order;

(b) carry out an investigation for the purpose of obtaining information on whether or not an archaeological or palaeontological site exists and whether mitigation is necessary;

(c) if mitigation is deemed by the heritage resources authority to be necessary, assist the person on whom the order has been served under paragraph (a) to apply for a permit as required in subsection (4); and

(d) recover the costs of such investigation from the owner or occupier of the land on which it is believed an archaeological or palaeontological site is located or from the person proposing to undertake the development if no application for a permit is received within two weeks of the order being served.

(6) The responsible heritage resources authority may, after consultation with the owner of the land on which an archaeological or palaeontological site or a meteorite is situated, serve a notice on the owner or any other controlling authority, to prevent activities within a specified distance from such site or meteorite.

(7) (a) Within a period of two years from the commencement of this Act, any person in possession of any archaeological or palaeontological material or object or any meteorite which was acquired other than in terms of a permit issued in terms of this Act, equivalent provincial legislation or the National Monuments Act, 1969 (Act No. 28 of 1969), must lodge with the responsible heritage resources authority lists of such objects and other information prescribed by that authority. Any such object which is not listed within the prescribed period shall be deemed to have been recovered after the date on which this Act came into effect.

(b) Paragraph (a) does not apply to any public museum or university.

(c) The responsible authority may at its discretion, by notice in the Gazette or the Provincial Gazette, as the case may be, exempt any institution from the requirements of paragraph (a) subject to such conditions as may be specified in the notice, and may by similar notice withdraw or amend such exemption.

(8) An object or collection listed under subsection (7)—

(a) remains in the ownership of the possessor for the duration of his or her lifetime, and SAHRA must be notified who the successor is; and

(b) must be regularly monitored in accordance with regulations by the responsible heritage authority.

Legislation relevant to burial grounds and graves taken from the National Heritage Resources Act (Act 25 of 1999)

Burial grounds and graves

36. (1) Where it is not the responsibility of any other authority, SAHRA must conserve and generally care for burial grounds and graves protected in terms of this section, and it may make such arrangements for their conservation as it sees fit.

(2) SAHRA must identify and record the graves of victims of conflict and any other graves which it deems to be of cultural significance and may erect memorials associated with the grave referred to in subsection (1), and must maintain such memorials.

(3) (a) No person may, without a permit issued by SAHRA or a provincial heritage resources authority—

(a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;

(b) destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or

(c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation equipment, or any equipment which assists in the detection or recovery of metals.

(4) SAHRA or a provincial heritage resources authority may not issue a permit for the destruction or damage of any burial ground or grave referred to in subsection (3)(a) unless it is satisfied that the applicant has made satisfactory arrangements for the exhumation and re-interment of the contents of such graves, at the cost of the applicant and in accordance with any regulations made by the responsible heritage resources authority.

(5) SAHRA or a provincial heritage resources authority may not issue a permit for any activity under subsection (3)(b) unless it is satisfied that the applicant has, in accordance with regulations made by the responsible heritage resources authority—

(a) made a concerted effort to contact and consult communities and individuals who by tradition have an interest in such grave or burial ground; and

(b) reached agreements with such communities and individuals regarding the future of such grave or burial ground.

(6) Subject to the provision of any other law, any person who in the course of development or any other activity discovers the location of a grave, the existence of which was previously unknown, must immediately cease such activity and report the discovery to the responsible heritage resources authority which must, in co-operation with the South African Police Service and in accordance with regulations of the responsible heritage resources authority—

(a) carry out an investigation for the purpose of obtaining information on whether or not such grave is protected in terms of this Act or is of significance to any community; and

(b) if such grave is protected or is of significance, assist any person who or community which is a direct descendant to make arrangements for the exhumation and re-interment of the contents of such grave or, in the absence of such person or community, make any such arrangements as it deems fit.

(7) (a) SAHRA must, over a period of five years from the commencement of this Act, submit to the Minister for his or her approval lists of graves and burial grounds of persons connected with the liberation struggle and who died in exile or as a result of the action of State security forces or agents provocateur and which, after a process of public consultation, it believes should be included among those protected under this section.

(b) The Minister must publish such lists as he or she approves in the Gazette.

(8) Subject to section 56(2), SAHRA has the power, with respect to the graves of victims of conflict outside the Republic, to perform any function of a provincial heritage resources authority in terms of this section.

(9) SAHRA must assist other State Departments in identifying graves in a foreign country of victims of conflict connected with the liberation struggle and, following negotiations with the next of kin, or relevant authorities, it may re-inter the remains of that person in a prominent place in the capital of the Republic.

Legislation relevant to the proposed activity under consideration taken from the National Heritage Resources Act (Act 25 of 1999)

Heritage resources management

38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as—

(a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;

(b) the construction of a bridge or similar structure exceeding 50 m in length;

(c) any development or other activity which will change the character of a site—

(i) exceeding 5 000 m² in extent; or

(ii) involving three or more existing erven or subdivisions thereof; or

(iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or

(iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;

(d) the re-zoning of a site exceeding 10 000 m² in extent; or

(e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

(2) The responsible heritage resources authority must, within 14 days of receipt of a notification in terms of subsection (1)—

(a) if there is reason to believe that heritage resources will be affected by such development, notify the person who intends to undertake the development to submit an impact assessment report. Such report must be compiled at the cost of the person proposing the development, by a person or persons approved by the responsible heritage resources authority with relevant qualifications and experience and professional standing in heritage resources management; or

(b) notify the person concerned that this section does not apply.

(3) The responsible heritage resources authority must specify the information to be provided in a report required in terms of subsection (2)(a): Provided that the following must be included:

(a) The identification and mapping of all heritage resources in the area affected;

(b) an assessment of the significance of such resources in terms of the heritage assessment criteria set out in section 6(2) or prescribed under section 7;

(c) an assessment of the impact of the development on such heritage resources;

(d) an evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;

(e) the results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources;

(f) if heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and

(g) plans for mitigation of any adverse effects during and after the completion of the proposed development.

(4) The report must be considered timeously by the responsible heritage resources authority which must, after consultation with the person proposing the development, decide—

(a) whether or not the development may proceed;

(b) any limitations or conditions to be applied to the development;

(c) what general protections in terms of this Act apply, and what formal protections may be applied, to such heritage resources;

(d) whether compensatory action is required in respect of any heritage resources damaged or destroyed as a result of the development; and

(e) whether the appointment of specialists is required as a condition of approval of the proposal.